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INTERNATIONAL OFFSHORE PETROLEUM CONTRACTS:
Towards the Compatibility of Energy Need and
Sustainable Development

by
Zhiguo Gao

Submitted in partial fulfilment of the requirements
for the degree of Doctor in the Science of
Law (J.S.D.)

at

Dalhousie University
Halifax, Nova Scotia
July, 1993

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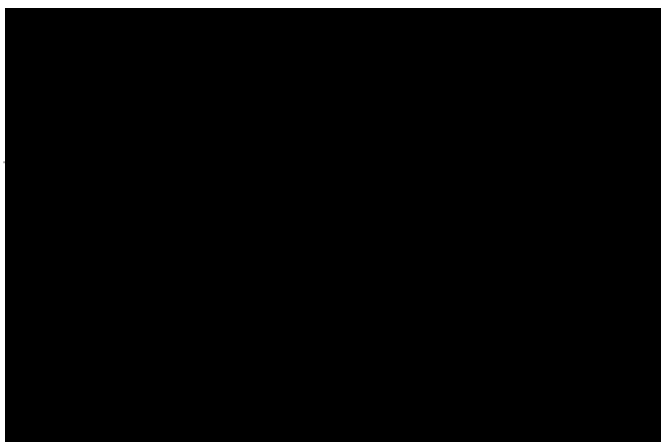
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in partial fulfillment of the requirements for the degree of Doctor in the Science of Law.

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To my wife Ping and daughter Han

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Abstract

International oil companies have carried out exploration and exploitation in many developing countries since the turn of this century. The legal and commercial relationship between petroleum producing countries and foreign oil companies was defined and governed by what were called traditional oil concession agreements before the 1950s, and since then by what are known as modern petroleum contracts.

This dissertation scrutinizes the development policies behind the evolution of various arrangements for offshore petroleum exploitation. By studying the examples of contracts in four developing countries (Thailand, Indonesia, Brazil and China), it examines in particular the issues of mutuality of interests and environmental sustainability that are reflected in both the structure and substance of the modern petroleum contracts that have emerged since the 1950s.

The major findings are that modern petroleum contracts are generally able to achieve and maintain a necessary balance of rights, interests and benefits between the contracting parties, but they have failed to produce any balance between the extraction of resources and environmental sustainability. The existing contractual systems have failed in principle to provide adequate environmental regulation and, moreover, they have not addressed the issue of sustainable development at all.

The arrangements that have focused on economic interests are inappropriate for future energy development, but through the proper use of contract terms that contain elements favouring sustainable development, economic and environmental interests can nevertheless be accommodated and served at the same time.

The future direction for petroleum agreements is that they must recognize explicitly the inherent independence and coexistence of commerciality and sustainable development.

Abbreviations

AAPG	American Association of Petroleum Geologists
ADMA	Abu Dhabi Marine Areas, Ltd.
ADPC	Abu Dhabi Petroleum Company
AHSTF	Alberta Heritage Savings Trust Fund
AJIL	American Journal of International Law
Aminoil	American Independent Oil Co.
APF	Alaska's Permanent Fund
Aramco	Arabian American Oil Company
ASEAN	Association of Southeast Asian Nations
BKKA	Foreign Contractors Co-ordination Body
BP	British Petroleum Company Ltd.
BPPKA	Foreign Contractors Co-ordinating and Management Body
Bráspetro	Petrobrás International S.A.
Caltex	California Texas Oil Company
CFP/Total	Compagnie Française des Pétroles
CICT	Consolidated Industrial and Commercial Tax
CIDA	Canadian International Development Agency
CNOOC	China National Offshore Oil Company
CNP	National Petroleum Council (of Brazil)
DMR	Department of Mineral Resources (of Thailand)
EAER	East Asia Executive Report
E & D	Exploration and Development
EEZ	Exclusive Economic Zone
EIA	Energy Information Administration
EIA	Environmental impact assessment
EIU	Economist Intelligence Unit
Elf	Société Nationale Elf Aquitaine
EMDI	Environmental Management Development in Indonesia
EOR	Enhanced oil recovery
ERAP	Enterprise d'Activités et de Recherches Pétrolières
ESCAP	Economic and Social Commission for Asia and Pacific
FAO	Food and Agriculture Organization (of U.N.)
FOB	Free on Board
FTP	First Tranche Petroleum
GNP	Gross National Product
HC(s)	Hybrid contract(s)
IBA	International Bar Association
ICJ	International Court of Justice
IIAPCO	Independent Indonesian American Petroleum Company
IISD	International Institute for Sustainable Development
I.L.M.	International Legal Materials
ILO	International Labour Office
IMO	International Maritime Organization

IPC	Iraq Petroleum Company
IRS	Internal Revenue Service
IUCN	International Union for Conservation of Nature and Natural Resources
JMC	Joint Management Committee
JNOC	Japan National Oil Corporation
JOA	Joint operation agreement
JOB	Joint Operating Board
JOC	Joint Operating Committee
JSC	Joint Supervisory Committee
KOC	Kuwait Oil Company
LNG	Liquefied natural gas
LOS	Law of the sea
MCC(s)	Modernized/modern concession contract(s)
MER	Maximum Efficiency Rate
MEPL	Marine Environmental Protection Law
MSC	Maritime Safety Committee (of IMO)
NA	Not available
NEB	National Environmental Board (of Thailand)
NEI	Netherlands East Indies
OAS	Organization of American States
ODIL	Ocean Development & International Law
O & G	Oil and gas
OGLTR	Oil & Gas Law and Taxation Review
OPEC	Organization of Petroleum Exporting Countries
OPOL	Offshore Pollution Liability Agreement
Permian	Perusahaan Negara Pertambangan Minyak Nasional (State National Oil Mining Company)
Permigan	Perusahaan Negara Pertambangan Minyak Indonesia (State Indonesia Oil Mining Company)
Pertamina	Perusahaan Pertambangan Minyak dan Gas Bumi Negara (State Oil and Natural Gas Mining Enterprise)
Petrobrás	Petróleo Brasileiro S.A. (Brazilian Petroleum Corporation)
PLA	Petroleum loan agreement
PSC(s)	Production-sharing contract(s)
PTT	Petroleum Authority of Thailand
QPC	Petroleum Development Company (Qatar)
Refican	Refining Associates, Ltd.
RFP	Resources for the Future Fund
RO	Remainder oil
ROR	Rate of return
RSC(s)	Risk service contract(s)
SERL	Section on Energy and Mineral Resources Law (of IBA)
Socal	Standard Oil Company of California
SOLAS	Safety of Life at Sea
SRB	Special Remuneratory Benefit
STPF	Severance Tax Permanent Fund
TAC	Technical assistance contract
TEA	Technical evaluation agreement

TNCs	Transnational Corporations
TW	Terawatt
UN/U.N.	United Nations
UNCED	United Nations Conference on Environment and Development
UNCITRAL	United Nations Commission on International Trade Law
UNCLOS I	United Nations Conference on the Law of the Sea, Genava, 1958
UNCLOS III	Third United Nations Conference on the Law of the Sea, 1973-1982
UNCTC	United Nations Centre on Transnational Corporations
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCED	World Commission on Environment and Development
WMO	World Maritime Organization
WWF	World Wildlife Fund
YPF	Yacinientos Petroliferos Fiscales

Units:

\$	United States dollar
Baht	The Thai currency unit
b/d	Barrel per day
cbft/d	Cubic feet per day
km²	Square kilometres
m³	Cubic metres
mm	Millimetre
m³/y	Cubic metres per year
MT(s)	Metric ton(s)
RMB ¥	Ren Min Bi (the Chinese currency unit)
Rp	Rupiah (the Indonesian currency unit)
tcf	Trillion cubic feet
yr(s)	Year(s)

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Chapter One

Introduction

I. General statement

Petroleum is perhaps the most important commodity in the modern world.¹ It is a precious substance indispensable to the economic progress and prosperity of all countries, no matter what their levels of development are. Since the emergence of the modern petroleum industry at the turn of this century, petroleum exploration and exploitation in developing countries have been controlled by international oil companies because the former lacked the capital and expertise necessary for the extraction of the resources.² Despite the development of local capacity and expertise over the 20th century, this situation has not altered substantially. It is foreseeable that it will continue as developing countries still require foreign risk capital and technology investment and foreign companies will still need the authorization of energy-producing states to carry out exploration and production operations. This means that there is a potential for a shift in the nature of the relationship between these two actors.

Petroleum resource exploitation by foreign companies in developing countries is a unique business in a complex

industry. It links governments, owners of the natural resources, and private international enterprises, which contribute the capital, technology and equipment necessary for resource development in a sector where the stakes and risks as well as the possible profit margins can be very high. Therefore, the question of how to provide for contributions to the partnership, and the allocation of the petroleum profits, have always been the fundamental issues in the arrangement between the two contracting parties.

This relationship is also inherently unstable due to a number of factors. First, the underlying objectives of the two parties are not only different but also at times conflicting. Countries that have petroleum resources are interested in making use of foreign investment to develop the resources for the benefit of national economic progress, while foreign companies are generally profit-motivated and are interested in maximizing their investments at the least risk.³ Second, petroleum contracts are long-term agreements which normally run for 30 or 40 years. During the life of the contract the bargaining positions of the two parties may change and the balance of power may shift from one party to another. Third, the relationship is vulnerable and subject to the impact of various externalities such as changes in oil prices, international politics and events. Thus, it has always been crucial for the contracting parties to maintain a stable and mutually beneficial relationship.

The institutional framework defining the legal and commercial relationship is the petroleum contract—a code of conduct negotiated between a government and a company to govern their partnership. These contracts have taken the form of the traditional oil concession agreements prior to the 1950s,⁴ and what are described as the "modern petroleum contracts" thereafter. The traditional oil concession agreements, developed in the first half of the century, often gave the developing countries little or no advantage because they provided foreign oil companies with extensive rights, privileges and exclusive appropriation of petroleum profits with relatively small royalty payments and few other obligations in return. Consequently, the system did not produce a balanced government-company relationship. This failure led to constant revisions and amendments to the relationship, and eventual phasing out of such agreements altogether by the governments of producing countries.⁵

Clearly then the central objective of oil and gas (O & G) contracts should be to seek to balance the interests, rights, obligations, and benefits between the two parties in order to produce greater mutuality of interests, commerciality and stability. The issue is whether this can be achieved, facilitated or remedied through the contract itself, or if the situation is inherently unfair and unstable due to the imbalance of powers between the contracting parties.

Developing countries have been searching for such a

paragon since the demise of the concession system. A number of innovative contractual arrangements have been developed in the past decades. During this period two interrelated issues have also emerged: concerns for environmental protection and the preservation of natural resources.

For centuries the planet has been used to supply natural resources for our livelihood and as a dump for our wastes. Until recently it was assumed that the world would always be able to cope. This perception has led inevitably to problems such as water and air pollution, massive deforestation, exhaustion of resources, climate change, to name a few. By the early 1970s, the world finally realized that it was facing problems that were largely of its own creation. The environment which sustains humanity is deteriorating and supplies of non-renewable energy and other mineral resources are running out. In the mid-1980s, these concerns moved a step further from environmental protection to sustainable use of all environmental resources, including the non-renewable energy of oil and gas.

The potentially harmful effect of uncontrolled industrialization and its effect on the environment in which future generations must live, is now of global concern. In short, in a world faced with environmental deterioration and depletion of resources, consideration for environmental protection and sustainable development must also be an explicit factor in the development of the viable O & G

contracts. This raises another question of whether modern petroleum contracts, as developed in the second half of the century, can accommodate such concepts.

The development of modern petroleum contracts has caught the attention of interested scholars. Although there has been in recent years some academic discussion of the new forms of contracts utilized by developing countries, recent legal studies seem to suffer from several common deficiencies, *inter alia*: first, many of these studies and comments have, to a large extent, been descriptive.⁶ There has been no in-depth and systematic legal analysis of the contractual systems. Second, existing literature tends to approach the subject piecemeal. Little has been written on the comprehensive and comparative study of these agreements. Third, most studies seem to focus on the economic aspects of the contracts, namely the financial and fiscal regimes. The socio-economic aspects have received less examination. Last and most important, environmental concerns have generally been neglected by nearly all writers and commentators. Hardly anyone has suggested that environmental protection and resources conservation also be part of the petroleum agreements.⁷ For instance, a recent study by the United Nations Centre on Transnational Corporations (UNCTC) on world petroleum and mining agreements listed 13 factors to be taken into account in the formulation of exploration contracts for the 1980s, but environmental management was not mentioned in the checklist.⁸

Unfortunately, this problem has not been well documented and consequently, has received very little attention from the world in general and the petroleum industry in particular.

Moreover, the concept of sustainable development has received widespread support since its inception, but the principle has not been picked up by the petroleum industry at both the national and international levels. There is a real danger that the industry will regard sustainable development as just another vague principle which has to be given only token support.⁹ As a matter of fact, environmental protection and sustainable development are needed if producing countries and exploiting companies are to have development without destruction. So an important general question that has been ignored so far is how environmental sustainability is dealt with in government-company relationships. The specific question raised here is how petroleum arrangements can be improved for the benefit of all parties, including the interests of the world community at large and those of future generations. Some of the related issues include: (a) whether environmental conditions have been made an integral part of petroleum agreements and how this may be promoted in practice; (b) what trends are observable in petroleum agreements with respect to environmental protection and sustainable development; (c) whether developing countries have the political will and technical and administrative expertise needed to implement and enforce environmental provisions; (d)

whether some basic environmental provisions may be developed for consideration by producing states and incorporated into their model contracts; (e) how the contracting parties may best participate in and contribute to sustainable development through their contractual arrangements. This study attempts to fill the gap by examining these issues.

Petroleum development operates within a legal, commercial and political context that is both international and national. However, this study makes no effort to cover or discuss all the legal issues surrounding international petroleum exploration and exploitation. Instead, discussion and emphasis will be primarily on offshore petroleum contracts. The reasons for treating offshore contracts separately are: (a) the petroleum industry has moved increasingly in recent years into offshore waters due to an increasing exhaustion of land reserves (offshore exploration and development can be found in over 90 countries around the world today.¹⁰); (b) offshore hydrocarbon resources hold a great potential for the world oil supply needs (the offshore production of crude oil in 1989 accounted for nearly 25 per cent of total world production, and gas in the same year for about 15 per cent.¹¹); (c) currently nearly all offshore petroleum exploration in developing countries is contracted to foreign companies under some form of agreements (170 international oil companies are involved in offshore exploration in developing countries.¹²); (d) offshore petroleum development poses specific problems

such as abandonment of offshore structures and there are many policy and legal issues peculiar to this area.

At the outset, it is necessary to emphasize the enormous difficulties in gaining access to petroleum contracts. A number of scholars who wrote on the subject in the 1940s, 1950s, and 1960s were obliged to issue apologies for not having seen more than a handful of concession agreements.¹³ This situation has improved somewhat recently, but significant collections of petroleum contracts are generally not yet readily available.¹⁴ Nearly all parties to modern petroleum contracts, be they governments or companies, still consider the documents private and not available for publication or even limited dissemination. Sometimes, documents can only be obtained through individuals who have served as consultants to developing countries. This study, inevitably, also suffered from the lack of availability of contracts.

II. The scope, purpose and methodology of the study

This study is concerned primarily with the recent development of contractual arrangements for offshore petroleum exploration and exploitation in developing countries. More specifically, it examines, from the point of view of mutuality

of interests and environmental sustainability, the principal categories of modern petroleum contracts that have emerged over the years and the relationships that have evolved between governments and companies.

To date there is no consensus as to what the major forms of modern petroleum contracts are, although several writers have attempted classification of these contractual arrangements.¹⁵ For instance, Alfred J. Boulos states that there are basically two types of petroleum agreements: tax and royalty contracts and production-sharing contracts, although a third type, the service contract, is sometimes used.¹⁶ Honoré Le Leuch argues that the possible types of petroleum contracts fall into three basic categories: (1) concession; (2) production-sharing contract; and (3) risk service contract.¹⁷ Gordon Barrows points out that there are four major types of petroleum arrangements used throughout the world to express the legal relationship between a state and an oil company: the concession, the production-sharing contract, the risk service contract and the service contract.¹⁸ Northcutt Ely suggests that there are five kinds of agreements between a company contracting with a government: the concession, the joint venture, the participation arrangement, the work contract, and the production-sharing contract.¹⁹ In a recent study of alternative arrangements for petroleum development, the UNCTC concluded that arrangements with foreign companies had followed a number of different

structures: modernized concessions, joint venture contracts, production-sharing contract, service contracts, and direct state operations.²⁰ Although these classifications all attempt to categorize modern petroleum agreements, they are not totally satisfactory in the sense that they are unable to cover all the petroleum contracts currently in use in the market.²¹

Modern petroleum contracts employed in developing countries can be grouped, in accordance with the relationships they define and their varying functions, into five principal categories:²² (a) the modern concession contract, (b) the production-sharing contract, (c) the service contract (both non-risk and risk), (d) the joint venture contract, and (e) the above four prototypes of contracts coexisting in various combinations, which are referred to as hybrid/compound contracts in this study. However, it is to be noted that precise categorization of modern petroleum contracts is not always possible.²³ As some writers have observed, "There is no standard format for any of these categories and each may contain some of the characteristics of the others."²⁴

This study focuses on only four types of these arrangements, *i.e.*, the modern concession contract, the production-sharing contract, the service contract, and the hybrid contract. The joint venture contract is not included in the major discussion. This exclusion is justified by the fact that the joint venture contract is not an exclusive form of

petroleum arrangement because it has also been widely used in many other business sectors,²⁵ and, furthermore, it has been described extensively elsewhere.²⁶ Nevertheless, the main features of the joint venture contract are touched upon briefly in one of the national case studies.

For the convenience of discussion, four developing countries have been selected to represent as case studies the four types of contracts: Thailand—the modernized concession contract; Indonesia—the production-sharing contract; Brazil—the risk service contract; and China—the hybrid contract. Thailand is selected because it employs exclusively the basic concession agreement format in both its offshore and onshore petroleum development. Indonesia is the innovator of the production-sharing arrangement. Brazil represents the service contract, which is the only mechanism permitted by its legislation to allow foreign participation in its petroleum exploration. China is used as an example to discuss the hybrid combination contracts since it has a deliberately designed—and best known—compound contract for its offshore petroleum industry.²⁷ Another rationale for selecting these countries is that all are or have been active in developing their offshore hydrocarbon resources in co-operation with multinational oil companies.

This study considers whether modern petroleum agreements could produce greater commerciality, while still meeting the interests of the various parties, including the concern about

environmental sustainability. Specific questions addressed include: (a) whether it is possible to achieve better contracts in terms of mutuality of interests and commerciality; (b) whether modern petroleum contractual arrangements are compatible with the notion of environmental protection and sustainable development; and (c) if not, whether commercial energy interests and such concepts can be reconciled and how the arrangements may be improved in the future.

It is expected that the study will be useful to contracting parties: to developing countries by providing them with an insight in not only the oil and gas contracts themselves, but also the experiences and lessons of the four representative producing countries in developing their petroleum arrangements; to international oil companies by advising them of the producing countries' perceptions, perspectives and priorities. It is also hoped that this study can help to move the industry in the direction of sustainable development.

The methodology used to carry out this study is essentially a combination of national case studies and comparative and theoretical analysis.

The study is carried out in a descriptive, analytical and prescriptive manner which is developed in three major steps.

First, Chapter 1 begins with a brief introduction to the factual context of the study and Chapter 2 reviews briefly the

historical evolution of international petroleum agreements.

Second, Chapters 3, 4, 5 and 6 conduct a vertical study of the four representative contract systems used in the selected developing countries. The main terms and conditions of these contracts are examined and analysed, with special attention being paid to their environmental provisions.

Third, Chapters 7 and 8 deal with the main thrust of the study with regard to environmental protection and sustainable development in petroleum arrangements. Chapter 7 first presents a horizontal comparison of the main structures and substances of the principal types of modern petroleum agreements, followed in turn by a survey of the main trends and features of the recent contractual developments, an identification of the legal nature of the world petroleum agreements, and a comprehensive review of the environmental aspects of these agreements. Chapter 8 examines the relationship between modern petroleum contracts and the principle of sustainable development. The major issues of sustainable development in modern petroleum contracts raised in this study are also addressed in these two chapters, with some corrective resolutions suggested and the new direction in petroleum contracts identified.

Chapter 9 concludes the study with a summary of the major findings and policy suggestions.

Notes:

1. "Petroleum" is, in a strict sense, a synonym for "oil" only. However, "petroleum" is often used as a synonym for both "oil" and "gas"; "petroleum industry" is also frequently referred to as the "oil and gas industry" or simply the "oil industry". They are so used in this study mainly because offshore petroleum contracts deal with, in most cases, oil and gas together.

2. "Developing countries" are also referred to in this study as "energy producing countries", "producing states", "petroleum resources countries", or simple "governments"; and "international oil companies" as "foreign or private oil companies", "investors" "contractors", "multinational/transnational cooperations", or simply "companies".

3. For the differing objectives of producing countries and foreign companies, see Table 23 and its accompanying text in *infra* ch.7. For more discussion, see the United Nations Centre on Transnational Corporations (UNCTC), Alternative Arrangements for Petroleum Development: A Guide for Government Policy-Makers and Negotiators, UN Doc. ST/CTC/43, 1982; Kinna, J.C., "Recent Trends in Petroleum Regimes", in International Bar Association (IBA) and LawAsia Research Institute, ed., Energy Law in Asia and Pacific (New York: Matthew Bender, 1982), pp.491-94; Khan, K.I.F., "Petroleum Taxation and Contracts in the Third World—A Law and Policy Perspective", 22 J. World Trade L. 68-9 (1988).

4. The term "traditional" is also referred to as "old", "original" or "classic" in this study.

5. For more information, see *infra* Ch.2.

6. Wälde, T., "Lifting the Veil from Transnational Mineral Contracts: A Review of Recent Literature", 1 Nat. Res. F. 278 (1976). Dobinovic, T.E.J.P., "Petroleum Service Contract in Argentina, Brazil and Columbia: Issues Arising from their Legal Nature", 5 J.E. & Nat. Res. L. 15 (1987). Fabrikant, R., "Pertamina: A Legal and Financial Analysis of A National Oil Company in A Developing Country", 10 Tex. Int'l L.J. 535 (1975).

7. To this author's knowledge, Alfred J. Boulos is the only writer who has suggested that environmental conditions be also one of the objectives of the petroleum contract. See Boulos, A.J., "Mutuality of Interests between Company and Government—Myth and Fact?" in International Bar Association (IBA) Section on Energy and Natural Resources Law (SERL), ed.,

Energy Law '90: Changing Energy Markets—the Legal Consequences (Proceedings of 9th Advanced Seminar on Petroleum, Mineral and Energy Resources Law, April 22-27, 1990, the Netherlands) (London: Graham & Trotman, 1990), pp.12-13.

8. UNCTC, Main Features and Trends in Petroleum and Mining Agreements, UN Doc. ST/CTC/29, 1983, pp.44-45.

9. See *infra* chs. 7 and 8 for more discussion and analysis of the concept of sustainable development.

10. Exxon Co., "The Offshore Search for Oil and Gas", reprinted in Barrows Company, Offshore Petroleum Industry, Vol. 36 (New York: The Barrows Company Inc., 1979), p.1.

11. Borgese, E.M., Ginsburg, N. and Morgan, J.R., ed., Ocean Yearbook 9 (Chicago: The University of Chicago Press, 1991), p.504, 507.

12. U.N. Dept. of International, Economic & Social Affairs, "The Future of Offshore Petroleum, 1981", reprinted in Barrows Company, Offshore Petroleum Industry, *supra* note 10, Vol. 52, 1983, p.1.

13. Smith, D.N. and Wells. jr., L.T., "Mineral Agreements in Developing Countries: Structure and Substance", 69 AJIL 561 (1975).

14. For a good source of world petroleum law and agreements, the reader is referred to Barrows Company, ed., Middle East; North Africa; South and Central Africa; Europe; Asia and Australasia; Central America and Caribbeans; and South America: Basic Oil Laws & Concession Contracts, Vols. 1-2 and various Supps. (New York: The Petroleum Legislation Co., 1959-present). This comprehensive collection contains texts of the oil laws, concession contracts in most countries and is kept up to date by regular supplements. Unfortunately, this publication is not available in many of the public libraries.

15. Wälde, T., "Investment Policies in the International Petroleum Industry—Responses to the Current Crisis", in Beredjick, N. and Wälde, T., ed., Petroleum Investment Policies in Developing Countries (London: Graham & Trotman, 1988), p.13.

16. Boulos, *supra* note 7, p.18.

17. Le Leuch, H., "Contractual Flexibility in New Petroleum Investment Contracts", in Beredjick and Wälde, Petroleum Investment Policies, *supra* note 15, p.86.

18. Barrows, G., "A Survey of Incentives in Recent Petroleum Contracts", in *ibid.*, p.226.
19. Ely, N., "Changing Concept of the World's Mineral Development Law", in IBA, World Energy Law (Proceedings of Seminar on World Energy Law held in Stravanger, Norway, May 1975), p.40.
20. UNCTC, Alternative Arrangements, *supra* note 3, pp.46-57.
21. For discussion on the contractual classification, see Taverne, B.G., "Methods of Participation of Host Countries in Crude Oil Exploration and Production Ventures in the Middle East and North Africa", in IBA, World Energy Law, *supra* note 19, pp. 133-50; U.N. Economic & Social Commission for Asia and Pacific (ESCAP), Mineral Exploration & Development: Some Basic Considerations, Trends in Government Management of Mineral Exploration & Development, UN Doc. E/ESCAP/NR. 3/6, July 21, 1976; Barrows Company, World Petroleum Arrangements (New York: The Barrows Company Inc., 1985), pp.510-11; Wälde, *supra* note 15; Meurs, A.P. H.V., "Economic Analysis of Selected Offshore Petroleum Arrangements", 10 Nat. Res. F. 108 (1986); Broadman, G., "The Drilling Gap in Non-OPEC Developing Countries: the Role of Contractual and Fiscal Arrangements", 25 Nat. Res. J. 415, 420-21 (1985).
22. Cf. Mikesell, R.F., Petroleum Company Operations and Agreements in the Developing Countries (Washington, D.C.: Resources for the Future, Inc., 1984), pp.26-9, 108.
23. Some argue that it is inaccurate and difficult to categorise contracts by their names, the distinction between some of these contracts is narrow or indistinct, and sometimes artificial. E.g., ESCAP, Mineral Exploration & Development, *supra* note 21, p.16; Kinna, *supra* note 3, p.495; Khan, *supra* note 3, p.82.
24. Mikesell, Petroleum Agreements, *supra* note 22, p.26.
25. Barrows, *supra* note 18, p.227.
26. E.g., UNCTC, Joint Venture as a Form of Economic Cooperation, UN Doc. ST/CTC/93, 1988; Geringer, J.M., Joint Venture Partner Selection: Strategies for Developing Countries (New York: Quorum Books, 1988); Maclaren, T.F. and Marple, W.G., Licensing in Foreign and Domestic Operations: Joint Ventures (New York: Clark Boardman Company, Ltd., 1986); Morris, J.M., Joint Ventures: An Accounting, Tax, and Administrative Guide (New York: Wiley, 1987).

27. Frihagen, A., "The Chinese and Some Developing Nations' License Regimes—What can We Learn from Them?", a paper presented at 7th Solstrand Oil and Gas Law Conference, University of Bergen, Norway, 1984.

Chapter Two
Historical Review of Petroleum Arrangements
In Developing Countries

I. Introduction

Before examining the representative contractual systems in the selected developing countries, it will be useful to make a brief excursion into the history of petroleum arrangements in order to understand adequately the evolutionary context, the major improvements achieved in the past four decades, and the significance of modern petroleum contracts.

II. Evolution of oil concessions prior to the 1950s

The exploitation of petroleum by foreign oil companies in developing countries dates from the operations of the Royal Dutch Company (later Royal Dutch Shell) in the Dutch East Indies (Indonesia) in the latter part of the 19th century.

It is generally agreed that the modern history of petroleum arrangements began with the international oil companies' entry into the Middle East, starting with the

famous D'Arcy concession granted on May 28, 1901 by the Persian (known as Iran since 1935) government to an Englishman William Knox D'Arcy.¹ Under the terms of this concession, D'Arcy was given the exclusive privilege to carry out all petroleum exploration and other related activities throughout the whole of the Persian Empire, except the five northern provinces, for a period of 60 years. The agreement also exempted D'Arcy from all Persian taxes and import duties throughout the life of the concession. D'Arcy agreed in turn to pay the government a small bonus and 16 per cent of the company's annual profits.² After a number of years of difficult operations, plagued by financial problems, oil was eventually discovered in 1908. D'Arcy's concession was the first to result in the discovery and production of oil by foreign company in a developing country.³

The D'Arcy arrangement opened the era of concessions. It was soon followed by a number of other concession agreements.⁴ Of these early concessions worth mentioning is the concession granted to Iraq Petroleum Company (IPC) in 1925, whose principal terms and conditions are summarized as follows:

(a) It granted the concessionaire "the exclusive right... to explore, prospect, drill, extract and render suitable for trade petroleum... and the right to carry away and sell the same and the derivatives thereof" in the concession area.⁵

(b) The term of the concession was 75 years for virtually all of Iraq (approximately 172,000 square miles).⁶

(c) The concessionaire was exempted from all Iraqi taxes and all import and export customs duties.⁷

(d) All land within the concession was made available to the concessionaire, who could also carry on other construction works free of charge or occupy land at very low rents within Iraq.⁸

(e) In return to these rights and privileges, the concessionaire agreed to: pay a royalty of 4 shillings gold on each ton of oil produced, with a minimum annual royalty of 400,000 shillings gold; construct a pipeline system with a capacity of not less than three million tons of oil per year; and transfer without charge all immovable properties to the government upon the expiry of the concession.⁹

(f) Any dispute arising from the interpretation or execution of the concession would be settled by arbitration.¹⁰

The 1925 IPC's concession was of particular importance in the history of oil concession "because it served as a model for other concession agreements in the Middle East and elsewhere."¹¹ In the wake of this concession, there was a rapid proliferation of concession agreements between producing states and foreign companies all over the world. British oil companies, backed by Britain's hegemony in the Middle East and Asia, gained control of petroleum operations in those areas. American firms, by virtue of the political influence of the United States, began acquiring petroleum rights in Mexico and Latin America in the early 1900s, and secured a monopoly on

petroleum activities in that region. Royal Dutch Shell dominated petroleum production in the Far East for many years.¹²

By the late 1920s, most of the oil exploration and production in the Middle East, North Africa, Far East and Latin America was, therefore, controlled by a handful of American, British and Dutch-British companies, the so-called "Seven Sisters" or "the majors".¹³

Up until the 1950s, the concession contract was almost the exclusive form of petroleum arrangements between developing countries with petroleum resources and international oil companies operating in such countries and this type of agreements could be found, at one time, in 122 countries across the world.¹⁴

III. The early grant of oil concessions in offshore areas

Although offshore petroleum development commenced at about the same time as oil concession agreements at the beginning of this century, there was no grant of offshore concessions in early times. All the main early concessions such as D'Arcy's and the IPC's made no reference to offshore waters.¹⁵

The earliest concessions to include territorial waters were the Arabian American Oil Company (Aramco) concession from

Saudi Arabia (1933), and the Kuwait Oil Company (KOC) concession from Kuwait (1934).¹⁶ The 1933 Aramco concession provided that the concession covered all of eastern Saudi Arabia, "including islands and territorial waters."¹⁷ The 1934 KOC concession granted the concessionaire the exclusive right "within the State of Kuwait including all islands and territorial water appertaining to Kuwait..."¹⁸ Nevertheless, as exploration of oil in submarine areas was at that time almost unknown, the offshore technology was under-developed, and vast land areas were available; the submarine areas, included in these early concessions, were apparently not of specific interest to the oil companies.

Subsequent agreements began to make specific references to marine areas when the intention of the parties was to include them within the concession areas. For instance, Abu Dhabi's first concession with Abu Dhabi Petroleum Company (ADPC), which before 1962 was the Trucial Coast Petroleum Development Company, signed in January 1939 stipulated that "the area included in this agreement is the whole territory subject to the rule of the Ruler of Abu Dhabi and its dependencies, and all its islands and territorial waters."¹⁹ This concession covered the entire onshore and offshore areas of Abu Dhabi, as the concessionaire was interested in both of them. Following preliminary exploration after the Second World War, the company gave up the offshore area and kept all the onshore ones. Production of oil started under this concession

in 1963.²⁰

The significant advancement in offshore technology after the Second World War made the possibility of exploration and exploitation of offshore oil into a reality.²¹ Realizing the importance of the petroleum resources lying under offshore waters and inspired by the Truman Proclamation in 1958, coastal states launched a universal extension of national jurisdiction over submarine areas.²² The rights of coastal states over offshore hydrocarbon resources formally received global recognition by the 1958 Geneva Convention on the Continental Shelf.²³

The advancement of offshore technology and the legal development of the continental shelf regime paved the way for the grant of offshore concessions. In 1948, Saudi Arabia and Aramco reached a concession agreement on the offshore area in the Arabian Gulf. The concession defined the offshore area as the area beginning from mean low water on the shore of the mainland and extending into the Gulf, including all islands, submerged lands, seabed and subsoil thereof.²⁴ In addition to the rights and obligations of a traditional concession, the Aramco concession incorporated a programme of relinquishment of onshore areas, according to which the concessionaire was required to surrender portions of the area that it did not wish to explore.²⁵ The concession finally stipulated that the original 1933 concession agreement and the 1939 supplemental agreement "continue in full force and effect and with full

application to said offshore area".²⁶ This agreement was supplemental in nature since it provided for an extension of the former concession area into the offshore waters of Saudi Arabia in the Arabian Gulf.

Aramco offshore concession of 1948 is probably the first one of its kind. It is also worth noting as the first introduction of a mandatory relinquishment programme into oil concessions in history.²⁷ By 1962, Aramco had surrendered its preferential rights covering an area of 135,000 square miles and had relinquished 143,521 square miles of its exclusive area.²⁸

Following the 1948 Aramco offshore concession, a number of offshore concessions were granted in the Arabian Gulf, e.g., the offshore concession granted to American Independent Oil Co. (Aminoil) by Kuwait in 1948; by Saudi Arabia to the Japanese Petroleum Trading Company in 1957 and to the Shell Group by Kuwait in 1961.²⁹ By the end of 1965, 20 offshore concessions, all located outside territorial waters, had already been granted in only the Arabian Gulf.³⁰ Since then the grant of offshore oil contracts has mushroomed all over the world.³¹

A close examination of some of the early offshore concessions reveals little difference from the onshore ones. They followed closely, as a rule, the pattern of land concessions in both form and content. Indeed, the onshore concession agreements were, in many cases, simply extended

with "full application" to offshore areas.³²

IV. Traditional oil concession agreements

It is clear from the foregoing discussion that the first half of this century was characterized by the granting of concessions to the major American and European oil companies. These companies monopolized petroleum exploration and production in the Middle East and elsewhere as a result of the concession system. This system is examined briefly here.

1. Definition

The English word "concession" has its root in the Latin *concessio*, which means to permit or to allow. The word in its legal sense is used mostly with reference to the phenomenon of foreign participation, which concern permits or licences, especially exclusive ones, from an authority. The term concession may cover a variety of different concepts. It is used to refer to both the privileges or right conceded by a state or an administrative authority to carry out an activity and the act under which the right is conceded. In addition, it is also applied to the formal deed (contract, convention, agreement) which records the attribution of a right or privilege to the concessionaire.

It is universally acknowledged that it is difficult to define the term "concession". Legal writing and jurisprudence have adopted divergent definitions, and tended to shift their emphasis in time.³³ One writer regarded the concession as "a privilege granted by a government to an individual or group, of developing certain resources or of constructing certain public works."³⁴ Another writer put forward the following definition:

juridically, the term 'concession' might signify... in municipal law, a grant of exclusive or non-exclusive rights, privileges or franchise, affecting public interest, to an individual, or public or private corporation, a state or other government body... In some more important concessions the principal grant may be supplemented by auxiliary rights, such as right over land, right of eminent domain, exemption from taxation and customs dues for a stipulated period, or for the duration of the concession, right to explore mines together with the operation of railways, stations and other appurtenances.³⁵

In a more recent study on the legal aspects of oil concessions, the author maintained that: "a concession is the grant of a privilege, usually exclusively but not necessarily so, to conduct an economic enterprise for a defined period and usually within a defined area".³⁶ According to Black's Law Dictionary, a concession generally refers to a grant of specific privileges by a government.³⁷

In the light of the above survey, it may be stated that there is so far no agreed definition of the term "concession" in international law.³⁸ A careful comparison of these definitions, however, discloses little substantive difference

between them. Their divergences appear to be mainly literal.

As for the traditional oil concession in the first half of the century, it may be defined as an agreement from a country to permit a foreign company to develop its oil reserves on an exclusive basis in a defined area during the duration of the agreement. The terms of the concession ordinarily include a variety of auxiliary rights to the oil company and provision for royalty payment to the governments of producing states.³⁹

2. Principal terms and features

There was no standard form for traditional oil concessions. The early concession agreements seemed to differ from country to country. Nevertheless, they all followed the same general pattern and embodied similar conditions. The major provisions that normally occurred in the early oil concessions were as follows.⁴⁰

(a) Large concession area with no relinquishment provision

The areas granted under the traditional concessions were exceptionally large. If not covering the entire country, they comprised the richest and largest part of it.⁴¹ The areas of some of the early concessions which measured from 100,000 to 500,000 km² were 500 to 1,000 times as large as the average block surface area of 200 to 500 km² in the North Sea,⁴² and

50 to 250 times the normal contracting area of 2,000 km² in China and Indonesia today.⁴³

(b) Long duration with no revision possibility

The duration of the concessions was extremely long. The average life span of the four main concessions in Iran, Iraq, Kuwait and Saudi Arabia was 82 years.⁴⁴ In one particular case, the concession extended as much as 100 years.⁴⁵ No provision for possible revision ever appeared in the early concessions.

The areas and durations of some early important concessions are listed in Table 1.

Table 1. Areas and Durations of Some Early Concessions

Name of concession	Effective date	Areas (Km ²)	Duration (years)	Date of expiry
D'Arcy	1901	500,000	60	1961
IPC	1925	445,000	75	2000
Aramco (Supp.)	1933 1939	371,000 496,000	60 60	1993 1999
KOC	1934	6,000	75	2009
ADPC	1939	whole country	75	2014
ADMA	1953	all offshore	65	2018

Note: The names of the companies are listed in this chapter.

Source: Compiled by the author.

(c) Exclusive rights to foreign companies to all facets of petroleum operations

The principal grant was, as a rule, "the exclusive right" to explore, prospect, drill for, extract, refine, carry away, export and sell petroleum and related substances found in the concession area. In addition to these rights, a number of other auxiliary privileges were also generally included, such as the right over land or to acquire land, and the rights to operate, for the purpose of petroleum operation, their own systems of transportation and communication, including pipelines, railways, stations, vessels, planes, radios, and telephones.

The early oil concessions granted foreign companies "almost unrestricted rights" and "exorbitant privileges" for the purpose of petroleum operation in the petroleum resources countries.⁴⁶

(d) Property right to foreign companies in the petroleum resource

The ownership of petroleum resources is probably the most important issue in the concessionary relationship. What was granted to the foreign investors under the old concession regime was a property right. Therefore, the concessionaire became the owner of the natural resources in the concession area.⁴⁷ In many concession agreements, foreign oil companies stuck to the provision that "the oil is owned in its

geological state by the Government, but as soon as man has done something to it, he is the owner of the oil".⁴⁸ Thus, the rule was that the title to natural resources passed to foreign companies at the point of extraction.

Under the old concession regime the governments are excluded from participation in ownership of the undertakings, management of petroleum operations, as well as the petroleum profits, aside from a set royalty paid on production volume.

(e) Exemption from all taxes and customs duties

Foreign oil companies were entitled to import into the producing country free of customs duties all building materials, equipment, machinery and other appurtenances necessary for the petroleum operations or other related activities. The export of petroleum was also made exempt from export and other taxes. There were, as a general rule, no taxes, impositions, duties, fees or charges, whether government, municipal, or port, imposed upon companies, their properties and their employees. Some concessions were even totally silent on the issue of taxation.

(f) Modest royalty paid on oil production volume

Another striking feature of the concession regime was its financial arrangement. The principal form of compensation to governments was the so-called royalty, which was calculated on the basis of a fixed rate applied to the volume of output. The royalty was usually fixed at four shillings gold or three rupees per ton of crude oil produced. It has been estimated

that the value of four shillings gold at US\$35^{*} the ounce amounted to US\$1.65, and three rupees per ton equalled approximately eight cents per barrel.⁴⁹ The government's revenue under the oil concessions was minimal. It is obvious that "such nominal payment of royalties based on output volume benefited only the alien concessionaires."⁵⁰

(g) Transfer of property to governments upon expiry of concessions

Most of concessions provided that, at the expiry of the concession, all movables and immovables of every sort used for the petroleum operations shall become the property of the government free of charge.

(h) *Force majeure* and *ad hoc* arbitration

There was always a *force majeure* provision in the early concessions to protect the concessionaire against responsibility for failure in its obligation against its will. It usually embodied a simple arbitration clause to the effect that disputes between the parties that were not settled by negotiation or mutual agreement should be resolved by arbitration.⁵¹

* References to dollars (\$) in this study are United States dollars unless specified otherwise.

In addition to the above main provisions, the traditional concession agreements were further characterized by their great similarity and simplicity. The rights and obligations of the contracting parties were defined mostly in general terms.⁵²

3. Brief appraisal

It is clear from the foregoing brief summary that the traditional concession regime contained a number of terms and features which reflected the imbalance of bargaining powers of the contracting parties.⁵³

Since the early 1950s, the traditional concession regime has been under growing criticism, which is mainly focused on the major anomalous provisions in favour of foreign oil companies. These critiques will not be repeated here since they have been well documented in recent literature on the subject.⁵⁴

Nonetheless, it is felt necessary to make some more comments to complement the existing analysis. First, it is important to note that a consensus appears to have been reached in scholarly writings on the inappropriateness of the traditional concession agreements.⁵⁵ Seldom in modern history have scholars from both developed and developing countries reached unanimity of views on a legal issue such as the

impropriety of the old concession regime. Second, while it is certainly true that the old concession agreements are not acceptable by any present-day standards, the terms of these agreements probably have to be reviewed in their historical context. Oil exploration in the early days involved considerable risks and the developing countries could simply not have done it. Despite its major defects, the traditional concession regime did play a role in the provision of incentive and capital for undertaking the particularly risky and expensive business of petroleum exploration in what were, at that time, remote areas of the world. In this sense, it is not an overstatement that, without foreign participation, petroleum development in developing countries today would have not been the same! Third, the concessionary arrangements established in the early 20th century are simply no longer appropriate for resource development in the post-Second World War period, because of the change of circumstances. These fundamental changes in state relationships will be touched upon below.

V. The demise of the traditional concession regime

1. Early improvements in concessionary arrangements

Energy producing countries gradually became discontented

with the traditional concession terms that were forced upon them. Sporadic changes began to take place as early as the 1940s. These early developments may be summarized as follows.

(1) Major financial improvements

A. Equal profit sharing

The demands from developing states for a great share of oil revenues first appeared in the 1940s. Venezuela took the lead in imposing taxes in addition to royalty on foreign companies in 1943.⁵⁶ In 1948 the country passed a new income tax law which taxed the profits of foreign companies at the rate of 50 per cent.⁵⁷ The concept of equal profit sharing pioneered by Venezuela was quickly followed by other developing countries. In 1950 Saudi Arabia and Aramco concluded a new agreement to revise the financial arrangement existing between them and implemented a 50/50 profit-sharing scheme.⁵⁸ Within two years, the equal profit-sharing principle had been grafted on to almost all the world's oil concession agreements.⁵⁹

Although the equal profit-sharing concept lasted only for a short period,⁶⁰ it was, nevertheless, important in the evolution of petroleum arrangements. Its significance lies in the fact that it replaced the royalty as the principal, if not single, financial feature of oil concessions and equally divided the contractual advantages between the producing

states and foreign companies. The equal profit-sharing arrangement represented the first major breakthrough in the traditional concession system in favour of developing countries.

B. New royalty payment

During this period, a new method of royalty payment was also introduced into the concessionary relationship. In 1952, Iraq and IPC revised their concession agreement to reflect the equal sharing principle. The new agreement provided that the government would have the options of taking either 12.5 per cent of the net oil production, or its cash equivalent on posted prices.⁶¹ This new method of royalty payment in "cash or kind" soon became the standard throughout most of the world.⁶²

C. New payment of bonuses

The practice of bonus payments also became more popular during this period. Bonus payment on signature was not an innovation. But in the past it had been made only at a very modest level. Bonuses have become more substantial in amount and more sophisticated in form since the early 1950s. There is no general rule regarding the amount and variety of bonuses because they were essentially a matter of agreement between the parties. But bonuses were paid typically in the following three ways:

- (a) signature bonus—payable on signature of the concession;
- (b) discovery bonus—payable on discovery of oil; and
- (c) production bonus—payable on reaching certain levels of production.⁶³

D. Removal of tax holiday

The tax holiday provided for by the old concession system began to collapse at about the same time. The first action was taken by Saudi Arabia, which passed legislation in 1950 to impose an income tax on the companies at the rate of 20 per cent.⁶⁴ This precedent gave rise to a quick chain reaction and many developing countries promulgated legislation or included a tax provision in their new agreements to tax foreign oil companies.⁶⁵ After years of trying, the member states of the Organization of Petroleum Exporting Countries (OPEC) succeeded in 1971 in making the companies operating in the Middle East and North Africa accept a 55 per cent tax rate.⁶⁶ The efforts of developing countries to improve the financial terms in the early oil concessions and to impose taxes on foreign oil companies continued and culminated in 1974 with an income tax of 85 per cent and a royalty of 20 per cent, which has since known as the "OPEC formula".⁶⁷

E. Price control

Pricing under the original concession agreements was

totally at the discretion of foreign companies, which determined the price of the crude oil sold to their affiliates. Since the early royalties were based on the volumes exported and the income tax did not exist until the 1950s, oil producing countries had no direct interest in prices, and exercised virtually no control in determining the price of their oil exports.⁶⁸ This anomaly began to change when income taxes were imposed in addition to royalties and posted prices were introduced for the purpose of calculating income taxes and royalties based on the value of output in the early 1950s. Price then became a serious concern for developing countries since it was the basis upon which their revenues were determined.⁶⁹ The issue of pricing caused enormous disputes between developing countries and foreign companies, and was the major reason for the formation of OPEC in 1960. The OPEC countries succeeded in their negotiations over control of pricing in the early 1970s, in which the international oil companies, for the first time, recognized a role for developing countries in the process of setting oil price.⁷⁰ Since 1974, many developing countries have assumed authority to determine prices for the purpose of calculating royalty and income taxes.⁷¹

(2) Other obligations and achievements

In addition to the aforementioned financial improvements in the traditional concession regime, other achievements were

also made by developing producer countries, including the relinquishment and working obligations.

A. Relinquishment

Although the concept of relinquishment first appeared in the 1925 IPC concession and the 1933 original concession to Aramco from Saudi Arabia, it was only successfully implemented in the 1948 Offshore Agreement between Saudi Arabia and Aramco.⁷² Under this agreement, the concessionaires were required to surrender large portions of the concession areas in accordance with the prescribed time intervals. Since then the principle of compulsory and progressive relinquishment by the concessionaires of unexploited portions of the concession areas has been incorporated into all new concession contracts as a matter of course.⁷³ The primary purpose of relinquishment is to accelerate the execution of the exploration programme and to make the returned areas available for future use.

B. Working obligations

The concept of exploration obligations was unknown in traditional oil concessions. The imposition on the concessionaire of an obligation to commit a minimum and guaranteed expenditure on drilling or exploration during a certain period of time was a new practice introduced in the early 1950s.⁷⁴ The Libyan Petroleum Law of 1955 stipulated

working obligations for the first time, which obliged the concession holder to spend a specified minimum amount of money per square kilometre each year.⁷⁵ This practice was soon followed worldwide, and has become a common condition of new petroleum arrangements.

These were the major developments in the traditional concession relationship since the 1950s. Besides the financial changes and working obligations, the overall structure of concession remained unchanged until the introduction of the participation concept in the late 1960s.

(3) State participation

After having made the changes in the financial area, developing countries moved on to secure state participation in the concession agreements, i.e., participation in ownership, management and control of petroleum operations.⁷⁶ Participation was declared by OPEC as one of its main objectives in 1968.⁷⁷ The organization passed another resolution in 1971 to call upon its members to "take immediate steps towards the effective implementation of the principle of participation in the existing oil concessions."⁷⁸ By the end of the 1970s, many developing countries had increased their participation in state ownership of their oil concessions from 25 per cent to 100 per cent.⁷⁹ State participation represented a partial recognition of the producing countries' sovereignty over their petroleum resources, while preserving

some of the functional virtues of the concession system. It terminated the monopoly of transnational oil companies over the oil industry in developing countries, and to some extent "restructured the traditional concession relations."⁸⁰

In short, the traditional concession agreements had continuously been revised to give the governments not only an increasing percentage of profits in the form of income tax and other revenue-sharing arrangements, but also greater management and control over production and even marketing in the years to come.

2. Some major factors leading to change

A number of factors played a facilitative role in the process of change in the concession system. Among these the contribution of the United Nations is of importance. In the 1950s and 1960s, the United Nations passed, by overwhelming majorities in the General Assembly, a number of historical resolutions in the field of sovereignty over natural resources.⁸¹ The Resolutions on Permanent Sovereignty over Natural Resources of 1962 and 1966 declared that every state enjoys full permanent sovereignty over its natural resources and all economic activities, and

...the right of the people and nations to permanent sovereignty over their natural wealth and resources must be exercised in the interest of their national development and of the wellbeing of the people of the State concerned.⁸²

The principle of permanent sovereignty enunciated by the General Assembly has been reaffirmed in its subsequent resolutions, the most notable ones being the Declaration of Economic Rights and Duties of States and the Charter of Economic Rights and Duties.⁸³ Although the legal binding force of the U.N. resolutions still remains a controversial issue, it is, however, an undeniable fact that these resolutions constituted the political and legal basis, on which developing countries effectively improved the terms and conditions of their concession agreements.⁸⁴

Another important factor in the demise of the traditional concession system was the formation of OPEC. In response to the action by international oil companies to lower posted prices, the oil exporting countries convened a conference on September 5, 1960, which gave birth to OPEC.⁸⁵ The aim of the organization, as set forth in its Statute, is

the coordination and unification of the petroleum policies of member countries and the determination of best means for safeguarding their interests, individually and collectively.⁸⁶

The member states of the organization have moved ever since from individual action to collective bargaining. OPEC also demonstrated that some oil-producing countries had more bargaining power than had been previously thought. It played an important role in refashioning the legal relationships between producing countries and exploiting companies.

The entry into the petroleum industry of the so-called "independent" oil companies that emerged in the 1957-1966

period and of the state oil companies established in developing countries was another factor in introducing the changes. The new independent companies and some aggressive European state oil companies had no vested interests in the traditional concession regime.⁸⁷ These "independents" were willing to make more favourable offers to governments than the terms in the old concession agreements, which the "majors" would not consider because they feared their concession agreements would be adversely affected. The competition brought by the "independents" for sources of oil in developing states would certainly reduce the bargaining power of the major oil companies.

Many developing countries also established state oil companies. The first of its kind was Yacimientos Petroliferos Fiscales (YPF) founded by Argentina in 1922. By the early 1970s, nearly all developing countries engaged in oil production had established their national oil companies, many of which were given a monopoly over the entire range of petroleum operations.⁸⁸ State oil companies played an increasingly active role as a vehicle for carrying out state oil policies.

Some other factors also contributed to the changes.⁸⁹ The substantial increases in petroleum prices on the world oil market motivated developing countries to bargain for more control over, and a greater share of the profits from, petroleum development. The worldwide opening of offshore areas

provided developing countries with more acreage for new foreign participation.

The changes and developments examined above eventually resulted in the demise of the traditional concession regime. Concession agreements were either abolished outright or restructured substantially. It was predicted that production under traditional oil concessions was to decline to about zero by 1985.⁹⁰ As was stated, "Gone are the days when a developing state can be expected to sign on the dotted line of a standard agreement drafted by a foreign company for exploitation of natural resources."⁹¹

3. Emergence of new contractual arrangements

As already indicated, the traditional concession regime has undergone drastic changes after the Second World War. During the period of change, the relationship between developing countries and oil companies evolved from concession to participation, the role of host states from passive rent collector to active partner, and the financial benefits to governments from simple royalty to equal profit sharing, income tax and other revenue-sharing arrangements.⁹² These improvements were viewed only as a half-way house towards their goal, as the developing world would not cease its search for new contractual arrangements with foreign companies.

In an effort to regain control over their natural

resources, developing producer countries basically took two different directions.⁹³ Some countries, such as Mexico and Iran, resorted to the single drastic act of expropriation. Most OPEC countries in the Middle East had also fully nationalized their petroleum industries by the end of 1970s. In many cases, the former concession owners remained in the developing countries to provide technical services for a fee and arranged to purchase some crude oil from the state oil companies.⁹⁴ A detailed study on the nationalization of oil concessions would transcend the scope of this study. But nationalization is probably not the best choice in dealing with oil concessions because, in addition to the upheaval it may cause, arbitrary government actions may adversely affect the international credit of the states concerned and reliability in the eyes of other potential investors and deter them from venturing into such countries.⁹⁵

Aside from the cases of outright nationalization, other developing countries turned to a less dramatic means and attempted to restructure their relationships with foreign oil companies by altering or replacing the original concession agreements with entirely new and significantly different legal arrangements, including the modernized concession, the production-sharing contract, the service contract, and a number of hybrid contracts. By the late 1970s, these new contractual arrangements had displaced almost all the traditional concession agreements.⁹⁶

VI. Traditional oil concessions and environmental protection/sustainable development

During the first half of this century, the world community was first beset with global wars, and then faced with such urgent tasks as decolonization, reconstruction, and development. Environmental protection and resources conservation had not caught world attention. The petroleum industry and concessionary arrangements were no exception to this general lack of environmental awareness.

As for the environmental aspects of traditional concession agreements, a careful examination of the concession system confirms that many of the traditional oil concessions are silent. The 1901 D'Arcy concession, the 1933 Aramco concession and its 1939 supplemental agreement, and the 1953 Abu Dhabi Marine Areas (ADMA), as revised in 1966, represent just a few examples of this majority group.⁹⁷ Environmental protection in some other concessions, if any, was only a barely relevant reference such as: all petroleum operations must be conducted "in workmanlike manner with reasonable precautions".⁹⁸ But this phrase was used to require that petroleum exploration and production be carried out in a proper and un wasteful manner. It has provided little on environmental protection.

As an exception to this general trend, a few concessions

in the early days did mention oil pollution. For instance, the 1925 IPC concession included a clause under the title of "Access of Water, etc.", which reads:

The Company shall take all practical measures to prevent the injurious access of water to the oil-bearing formations, and of noxious waste products into the waters of Iraq...

The Company undertakes to take every reasonable precaution against the pollution of the elements in the vicinity of its installations. But the Government recognises that in certain circumstances a pollution of the elements is inevitable by reason of the nature of the operations of the oil industry, and will not for the purpose of preventing this inconvenience ask the Company to undertake any measures which it could not be reasonably asked to undertake."

Besides other legal defects, this provision contains a major deliberate loophole which speaks for itself. It recognizes that oil pollution in certain circumstances is "inevitable"; so the company will not be asked to undertake any preventive measures. This is tantamount to "authorizing" the concessionaire to go on to pollute under "certain circumstances" which are not defined at all.

In fact, under the old concession system, the oil industry had been operated by foreign companies as an economic enclave almost completely isolated from the other sectors of the national economy. Foreign companies were interested in profit making without regard for social progress and economic welfare of the local people. The employment and training of nationals were ill provided for and the development of infrastructures received insufficient attention, let alone

environmental conservation.

From the above review, it may be concluded that traditional concession agreements concluded in the first half of this century made, as a whole, no reference to environmental protection and resource conservation. This is hardly surprising, because at the time these agreements were developed, the environmental consciousness and thinking was elementary. In fact, environmental problems did not become a worldwide concern until the late 1960s and early 1970s and sustainable development not until the 1980s and early 1990s. So the omission and lack of environmental provisions in early concessions is partly understandable.

In view of this historical context, it is perhaps too ambitious to expect the contracting parties in those early days to include at that time any environmental and sustainable development provisions in their concessionary arrangements. As a matter of fact, concerns for environmental protection and sustainable development have travelled very slowly into modern petroleum contracts, as will be demonstrated in the subsequent chapters of this study.

VII. Summary

For the first half of the century, traditional concession agreements had endured as the exclusive institutional

framework defining the relationship between energy-producing countries and international oil companies. The early concession regime was based on power politics and "big oil" strategy rather than partnership and cooperation. As such, the concession regime accorded the major oil companies nearly complete freedom to conduct petroleum operations in the conceding states. Governments had little control over either their resources or the companies operating within their territories. The notion of mutuality of interests was not preserved under the concession regime, and petroleum profits were not equally shared between the contracting parties. As a result, the concession system has undergone a variety of phases of renegotiation, revision, nationalization, and eventual termination. The following comment perhaps provides the best perspective on the concession system:

...the early concession system [was the product of the prevailing general circumstances]. It must be recalled that in those days, concessions were granted by sovereigns with sometimes little authority, often under foreign political dominance. Also, the countries concerned were backward, sometimes nomadic, and in no case possessed a legal framework liable to govern such things as petroleum operations. Therefore, in order to fill the void, concessions were not only tilted in favour of [multinational corporations] but also written in such a way that they constituted self-sufficient charters for those areas of the world where existed no infrastructure of any kind, nor any government control or capabilities of any sort. Hence, it is hardly surprising that the word "concession" became associated with "underdevelopment" and "political dominance"; this explains from a psychological standpoint, the hostility shown toward this type of agreements.¹⁰⁰

It may be concluded from this overview that the first generation of petroleum arrangements—traditional concession agreements—has generally failed to develop a balanced, mutually beneficial and broadly stable relationship between the contracting parties. Concerns for natural resources conservation and sustainable development were not expressed at all during this development period.

The third quarter of the century not only witnessed the decline of the old concession system but also saw a steady emergence of new contractual arrangements. This transition from traditional concession agreements to modern petroleum contracts has been reviewed by developing countries as a "revolutionary process",¹⁰¹ which would totally reshape the legal relationships between governments and companies in the years to come.

Notes:

1. For the Agreement between the Government of His Imperial Majesty the Shah of Persia and William Knox D'Arcy, see Appendix to Annex 1419c, in the League of Nations, Official Journal, XIII, 1932, pp.2305-07.

For some general description of the history of oil concessions, see Stocking, G.W., Middle East Oil: A Study of Political and Economic Controversy (Kingspart, Tenn.: Vanderbilt University Press, 1970); Cattan, H., The Evolution of Oil Concessions in the Middle East and North Africa (New York: Oceana Publications, Inc., 1967); Cattan, H., The Law of Oil Concession in the Middle East and North Africa (New York.: Oceana Publications, Inc., 1967); Toriguian, S., Legal Aspects of Oil Concessions in the Middle East (Lebanon: Hamaskaine Press, 1972); Shwadran, B., The Middle East Oil and the Great Powers, 3rd ed. (New York: Wiley, 1974,); Mikdashi, Z.M., A Financial Analysis of Middle Eastern Oil Concessions (New York: F.A. Praeger, 1966).

2. Arts. 1-10 of the D'Arcy concession, in League of Nations, Official Journal, *supra* note 1.

For a discussion of this concession, see Stocking, Middle East Oil, *supra* note 1, pp.3-14.

3. This concession was taken over by the Anglo-Persian Oil Company, subsequently called Anglo-Iranian Oil Company, and was replaced by a new concession in 1933.

4. E.g., the concession to the Turkish Petroleum Company from Iraq in 1925; the concession to the Standard Oil Company from Saudi Arabia in 1933; the concession to the Kuwait Oil Company from Kuwait in 1934; and the concession to Anglo-Persian Oil Company from Qatar in 1935. All of these concessions can be found in Barrows Company, ed., Middle East: Basic Oil Laws and Concession Contracts, Vols. 1-2 and various Supps. (New York: The Petroleum Legislation Co., 1959-present) (hereinafter, Middle East Contracts).

5. Art. 1 of the Convention of 14th March 1925, as revised by Principal Agreement of 24th March 1931, in Barrows Company, Middle East Contracts, *ibid.*, Vol. 2, 1959, pp. Iraq A 1-37.

6. *Ibid.*, arts. 2 & 3.

7. *Ibid.*, arts. 27 & 28.

8. *Ibid.*, arts. 20 & 21.

9. *Ibid.*, arts. 10, 5 & 2.

10. *Ibid.*, art. 40.

11. Ely, N., "Changing Concepts of the World's Mineral Development Law", in International Bar Association (IBA), ed., World Energy Law (Proceedings of the IBA Seminar on World Energy Laws held in Stavanger, Norway, 1975), p.25.

12. For a brief history of activities of multinational oil companies over the world, see Jacoby, N.H., Multinational Oil (New York: Macmilan, 1974).

13. The big seven international oil cartels are:

- (a) Exxon (formerly Standard Oil Company of New Jersey);
- (b) Mobil (formerly Socony-Vacuum Oil Company);
- (c) Gulf Oil Corporation;
- (d) Texaco;
- (e) Standard Oil Company of California (Socal);
- (f) British Petroleum Company Ltd. (BP), Royal-Dutch Petroleum Company; and
- (g) Shell Transport and Trading (Shell).

An eighth important company with early interest in the Middle East and subsequent widespread international operations is Compagnie Francaise des Pétroles (CFP/Total).

14. Barrows, G., "A Survey of Incentives in Recent Petroleum Contracts", in Beredjick, N. and Wälde, T., ed., Petroleum Investment Policies (London: Graham & Trotman, 1988), p. 226.

15. Cf. Cattan, Evolution of Oil Concessions, *supra* note 1, p.15.

16. *Ibid.*

17. Art. 2 of the Original Concession Agreement of May 29, 1933 (This concession was first concluded with Standard Oil Company of California and subsequently assigned to Aramco), in Barrows Company, Middle East Contracts, *supra* note 4, Vol. 1, 1959, p. Saudi Arabia A 4.

18. Art. 1 of Kuwait Oil Company, Ltd. Concession of December 23, 1934, *ibid.*, p. Kuwait A 2.

19. Art.2 (a) of Abu Dhabi Petroleum Company Limited Concession Agreement, *ibid.*, Supp. 8, 1965, p. Abu Dhabi A O-3.

20. Suleiman, D.A., "The Oil Experience of the United Arab Emirates and its Legal Framework", 6 J.E. & Nat. Res. L. 3 (1988).

21. For an overview of the development of offshore energy technology, see Gold, E., "Pollution from the Offshore Activities: An Overview of the Operational, Legal and Environmental Aspects", a paper prepared for the Seminar on Liability for Pollution Damage organized by the Comité Maritime Internationale, Genoa, Italy, September 21-25, 1992, pp.4-25.
22. For the Truman Proclamation, see Presidential Proclamation No. 2667 on the "Policy of the United States with Respect to the Natural Resources of the Subsoil and Seabed of the Continental Shelf, September 28, 1945", in Lay, S.H., Churchill, R. and Nordquist, M., ed., New Directions in the Law of the Sea, Vol. 1 (Dobbs Ferry, N.Y.: Oceana Publications, Inc., 1973), pp.106-09. See generally, Mesaristis, P., An Historical Examination of Development of Legal Claims to Continental Shelf, LL.M. thesis, University of Alberta, 1979.
23. Convention on the Continental Shelf of 1958, in Lay, S. H., Churchill, R., and Nordquist, M., ed., New Directions in the Law of the Sea, *ibid.*, pp.101-05.
24. Art. 4 of the Offshore Agreement between the Government of Saudi Arabia and Arabia American Oil Company, in Barrows Company, Middle East Contracts, *supra* note 4, Vol. 1, 1959, pp. Saudi Arabia A 53-56.
25. *Ibid.*, art. 6.
26. *Ibid.*, art. 7.
27. The idea of relinquishment had been attempted twice before, but never succeeded. Cattani, Evolution of Oil Concession, *supra* note 1, pp.11-14.
28. Stocking, Middle East Oil, *supra* note 1, pp.324-26.
29. These concession agreements are available in Barrows Company, Middle East Contracts, *supra* note 4, Vol. 1, 1959.
30. Petroleum Press Service, December 12, 1965, p.461.
31. For general information, see "Offshore Exploration—Chronological Table of World Events", in Whitehead, H., ed., An A-Z of Offshore Oil and Gas: An Illustrated International Glossary and Reference Guide to the Offshore Oil and Gas Industries and their Technology (Huston, Tex.: Gulf Publishing Company, 1983), pp.319-21.

32. The concession agreements used in making this observation are as follows:

- (1) Offshore Agreement between Saudi Arabia and Aramco, dated October 10, 1948;
- (2) Arminoil Concession over Kuwait Half of the Neutral Zone, dated June 28, 1948;
- (3) Pacific Western Oil Corp. Agreement with Saudi Arabia, dated February 20, 1949;
- (4) Offshore Concession Agreement between Saudi Arabia and Commercial Japanese Petroleum Co., dated December 10, 1957;
- (5) Offshore Concession Agreement between Kuwait and Arabian Oil Co., dated July 1958.

All of these agreements are available in Barrows Company, Middle East Contracts, *supra* note 4, Vols. 1-2, 1959.

33. Barraz, P., "The Legal Status of Oil Concession", 5 J. World Trade L. 611 (1971).

34. Buell, R.L., International Relations (New York: H. Holt and Company, 1929), pp.397-98.

35. Huang, T.T.F., "Some International and Legal Aspects of the Sues Canal Question", 51 AJIL 277 (1957).

36. Toriguian, Legal Aspects of Oil Concessions, *supra* note 1, p. 38.

37. Black's Law Dictionary, 5th ed. (St. Paul, Minn.: West Publishing Co., 1979), p. 262.

38. Toriguian, Legal Aspects of Oil Concessions, *supra* note 1, p.35. For more definitions of concession, see *ibid*, pp. 34-41.

39. William, H.R. and Meyers, C.J., Manual of Oil and Gas Terms, 8th ed. (New York: Matthew Bender, 1991), p.219; In most cases, the oil agreements were described as concessions, but they were also referred to as "conventions", "contracts" or "leases".

40. Concession agreements used in compiling this summary include, but not limited to, those listed in Table 1 in this chapter.

41. Zakariya, H.S., "New Direction in Search for and Development of Petroleum Resources in Developing Countries", 9 Van. J.I.L. 547 (1976). For a summary of this paper, see "Legal and Institutional Aspects of Petroleum Exploration", in Petroleum Cooperation among Developing Countries (United Nations Meeting on Cooperation among Developing Countries in Petroleum, November 10 -20, 1975, Geneva), UN Doc. ST/ESA/ 57, 1977, p.44.

42. UNCTC, Main Features and Trends, UN Doc. ST/CTC/29, 1983, p.21.
43. Cameron, P.D., "The Structure of Petroleum Agreements", in Beredjick and Wälde, Petroleum Investment Policies, *supra* note 14, p.30.
44. Suleiman, *supra* note 20, p.2.
45. Asante, S.K.B., "Restructuring Transnational Mineral Agreements", 73 AJIL 338 (1979).
46. Smith, D.N. and Well, jr., L.T., "Mineral Agreements in Developing Countries", 69 AJIL 566 (1975); cf. also Farer, T.J., "Economic Development Agreements: A Functional Analysis", 10 Colum. J. Trans. L. 208 (1971).
47. UNCTC, Main Features and Trends, *supra* note 42, p.74; Ely, *supra* note 11, p.34, 41.
48. Fabrikant, R., Oil Discovery and Technical Change in South East Asia: the Indonesian Petroleum Industry, Miscellaneous Source Material, Field Report Series No.4 (Singapore, Institute of Southeast Asian Studies, March, 1973), p.465.
49. Cattan, Evolution of Oil Concessions, *supra* note 1, p.4; and Suleiman, *supra* note 20, p.2.
50. Adede, A.O., "A Profile of Trends in the State Contracts for Natural Resources Development between African Countries and Foreign Companies", 12 N.Y.U.J. Int'l L. & P. 489 (1979).
51. For details of the early oil concessions, please refer to Cattan, Evolution of Oil Concession, *supra* note 1, pp. 2-120; Cattan, Law of Oil Concessions, *ibid.*, pp.139-85; Toriguian, Legal Aspects of Oil Concessions, *ibid.*, pp.45-62.
52. Cattan, Evolution of Oil Concessions, *supra* note 1, p.2; Ely, *supra* note 11, p.26.
53. Smith, E.E., "Typical World Petroleum Arrangements", a paper delivered at Rocky Mt. Min. Law Fdn., International Resources Law: A Blueprint for Mineral Development, February 18-19, 1991.
54. See generally UNCTC, Main Features and Trends, *supra* note 42, p.1, 74; Cattan, Evolution of Oil Concessions, *supra* note 1, p.4; Smith, D.N. and Well, jr., L.T., Negotiating Third-World Mineral Agreement (Cambridge, Mass.: Ballinger Publishing Company, 1975), p.140; Adede, *supra* note 50, p.489; Ely, *supra* note 11, p.34, 41; Asante, *supra* note 45, pp.338-39.

55. Asante, S.K.B., "Stability of Contractual Relations in the Transnational Investment Process", 28 Int'l & Comp. L. Q. 408 (1979); see also *supra* note 54.

56. Arts. 38-51 of Venezuela Law of Hydrocarbons and its regulations of 1934, in Barrows Company, ed., South America: Basic Oil Laws and Concession Contracts, vol. 2 (New York: The Petroleum Legislation Inc., 1967), pp. Venezuela A 22-32. Cf. Lax, H.L., States and Companies: Political Risks in International Oil Industry (New York: Praeger, 1988), p.164.

57. Ely, *supra* note 11, p.29.

58. For the agreement, see Barrows Company, Middle East Contracts, *supra* note 4, Vol. 1, 1959, pp. Saudi Arabia A 61-4.

59. The principle of equal profit sharing worked essentially as follows. The company's profit was determined by subtracting the operation cost from the gross income. The gross income was in most cases calculated on "posted price" (Prices published by the company for F.O.B. sales in single cargo lots). The equal sharing was carried out either in the form of a 50% income taxes on forfeits against which the royalty was creditable, so that the income tax was the difference between 50% of this profit and the royalty, or by a straight division between the two parties. Blinn, K.W., et al., International Petroleum Agreements (London: Euromoney Publications, 1986), pp.47-48.

60. The equal profit sharing formula was eroded when developing countries succeeded in their efforts to have royalties treated for tax purpose as an expense rather than a credit in the period of 1964-1965. The expensing royalty resulted in a shift in the profit-sharing form 50/50 to 58/42 in the government's favour. This principle was later on effectively broken away from when the concept of participation was introduced in the early 1970s.

61. Art. 3 of Agreement of February 3, 1952 between Iraq and Iraq Petroleum Co., Mosul Petroleum Co. and Basrah Petroleum Co., in Barrows Company, Middle East Contracts, *supra* note 4, Vol. 2, 1959, pp. Iraq D 1-15.

62. Ely, *supra* note 11, p.30.

63. Cattan, Evolution of Oil Concession, *supra* note 1, pp.27-29.

64. Royal Decree No. 17/ 2/ 28/3321 of November 4, 1950 Imposing Income Tax on Individuals and Companies, in Barrows Company, Middle East Contracts, *supra* note 4, Vol. 1, 1959,

pp. Saudi Arabia A 66-73.

65. For examples of national tax legislations, see Cattan, Evolution of Oil Concession, *supra* note 1, pp.43-50.

66. Ely, *supra* note 11, p.32-3.

67. Suleiman, *supra* note 20, p.3; see also William and Meyers, Manual of Oil and Gas Terms, *supra* note 39, p.833.

68. Zorne, S.A., "Unilateral Action by Oil-Producing Countries: Possible Contractual Remedies of Foreign Petroleum Companies" 9 Fordham Int's L.J. 67-69 (1985-85); Mikesell, R.F., Petroleum Agreements in Developing Countries (Washington, D.C.: Resources for the Future, Inc., 1984), pp. 22-23.

69. Mikesell, *ibid.*

70. For information on price negotiations, see Tanzer, M., The Energy Crisis: World Struggle for Power and Wealth (New York: Monthly Review Press, 1975), p.125.

71. Mikesell, Petroleum Arrangements, *supra* note 68, pp.22-238.

72. Cattan, Evolution of Oil Concessions, *supra* note 1, p.11.

73. *Ibid.*, pp.11-14.

74. *Ibid.*, pp.29-31, 89-90.

75. The Libya Petroleum Law No. 25 of April 21, 1955, in Barrows Company, North Africa: Basic Oil Laws and Concession Contracts, Vol. 1 (New York: The Petroleum Legislations Inc., 1959), p. Libya A 8.

76. Comment, "From Concession to Participation: Restructuring the Middle East Oil Industry", 48 N.Y. Univ. L. Rev. 775-816 (1973). See also Zakariya, H.S., "Sovereignty, State Participation and the Need to Restructure the Existing Petroleum Concession Regime", 10 Albert L. Rev. 218-31 (1972).

77. In 1968 OPEC declared that:

Where provision for governmental participation in the ownership of the concession-holding company under any of the present petroleum contracts has not been made, the Government may acquire a reasonable participation, on the grounds of the principle of changing circumstances.

OPEC Res. XVI 90, June 1968, in Barrows Company, Middle East Contracts, *supra* note 4, Supp. XXXI, 1971, pp. OPEC C 1-2.

78. OPEC Res. XXIV. 135, July 1971, *ibid.*, pp. OPEC K 1.

79. "Table 2. Changes in Relationship Primarily in the Petroleum Sector", in Asante, *supra* note 45, pp. 342-43.

80. "From Concession to Participation", *supra* note 76, p.816.

81. *E.g.*, UN G.A. Res. 523 (VI) Integrated Economic Development and Commercial Agreement, January 12, 1952, and UN G.A. Res. 626 (VII) Right to Exploit Freely Natural Wealth and Resources, December 21, 1952, in Djonorich, D.J., ed., United Nations Resolutions, Series I, Vol. III, 1950-1952 (Dobbs Ferry, N.Y.: Oceana Publications, 1973), pp.186-87; and *ibid.*, Vol. VI, 1952-53, p.106.

82. UN G.A. Res. 1803 (XVII) Permanent Sovereignty over Natural Resources, December 14, 1962, and UN G.A. Res. 2158 (XXI) Permanent Sovereignty over Natural Resources, November 25, 1966, *ibid.*, Vol. IX, 1962-63, p.107-08, and Vol. XI, 1966-68, p.145-46.

83. UN G.A. Res. 3201 (S-VI) Declaration on the Establishment of a New International Economic Order, May 1, 1974, and UN G.A. Res. 3281 (XXIX) the Charter of Economic Rights and Duties of States, December 12, 1974, *ibid.*, Vol. XIV, 1972-74, p. 527-29, and Vol. XV, 1972-1974, pp.300-05. The former resolution called upon the international community to "work urgently for the ESTABLISHMENT OF A NEW INTERNATIONAL ECONOMIC ORDER based on equity, sovereign equality, interdependence, common interests and cooperation of all states." (original capitals)

84. For an account of the U.N. Resolutions, see United Nations, Permanent Sovereignty over Natural Resources: Report of the Secretary-General, UN Doc. E/C.7/66, 1977; Gess, K.N., "Permanent Sovereignty over Natural Resources", 13 Int'l & Comp. L.Q. 398-449 (1964); O'Keefe, P.J., "The United Nations and Permanent Sovereignty over Natural Resources", 8 J. World Trade L. 239 (1974).

85. Danielsen, A.L., The Evolution of OPEC (New York: Harcourt Brace Jovanovich, 1982).

86. Art. 2 of the Statute of the Organization of the Petroleum Exporting Countries, in Barrows Company, Middle East Contracts, *supra* note 4, Supp. XII, 1966, P. OPEC A 1.

87. E.g., Amoco, Amerada, Conoco, Getty, Continental, Marathon, Union, Standard of Indiana, Tenneco and Phillips, and ERAP of France, and ENI of Italy.

88. See generally, U.N. Centre for Natural Resources, Energy and Transport, State Petroleum Enterprises in Developing Countries (New York: Pergaman Press, 1980); Khan, K., "Some Legal Considerations on the Role and Structure of State Oil Company: A Comparative View", 34 Int'l & Comp. L.Q. 584 (1985).

89. Smith, E.E. and Dzienkowski, J.S., "A Fifty-Year Perspective on World Petroleum Agreements", 24 Tex. Int'l L.J. 120 (1989).

90. Ely, *supra* note 11, p.238.

91. Adede, *supra* note 50, p.568.

92. Attwell, J.E., "Changing Relationships between Host Countries and International Petroleum Companies", 17 Huston L.R. 1015 (1980).

93. Smith, *supra* note 53, pp.1-2.

94. For a discussion on nationalization of oil concessions in the Middles East, See Toriguian, Legal Aspects of Oil Concessions, *supra* note 1, pp.167-247.

95. See generally, Gainer, G., "Nationalization: the Dichotomy between Western and Third World Perspective in International Law" 26 Havard L.J. 1547 (1983); Jodice, D.A., "Sources of Change in Third World Regimes for Foreign Direct Investment", 34 Int'l Org. 177 (1980).

96. UNCTC, Main Features an Trends, *supra* note 42, p.124.

97. For the text of the D'Arcy concession, see *supra* note 1; for the texts of the 1933 Aramco and its 1939 supplemental concessions, and the 1953 ADMA as revised in 1966, see Barrows Company, Middle East Contracts, *supra* note 4, Vol. 1, 1959, pp. Saudi Arabia A 1-17, A 21-29, and Supp. 28, 1970, pp. Abu Dhabi A 1-24.

98. Art. 2 of the KOC concession, *supra* note 4, Barrows Company, Middle East Contracts, Vol. 2, 1959, p. Kuwait A 1-11.

99. Art. 9 of IPC concession, *ibid.*, pp. Iraq A 1-37.

100. Blinn, International Petroleum Agreements, *supra* note 59, pp.60-61.

101. Fabrikant, R., "Pertamina: A Legal and Financial Analysis of a National Oil Company in a Developing Country", 10 Texas Int'l L.J. 535 (1975).

Chapter Three

Thailand's Modern Concession Contract

I. Introduction

The traditional concession agreement is no longer employed, but its basic format is still widely utilized in some developing countries. Many improvements, of course, have been made to the standard prototype to adapt itself to new circumstances. The improved concession agreement is termed "modernized/modern concession contract" (MCC) in this study as it is the commonly used description.

In Southeast Asia, Thailand is one of the last remaining countries to have retained a modernized concession system for both its onshore and offshore O & G development. Historically, Thailand was not a producing country. Under the pressure of excessive dependence on imported oil, Thailand dropped its anti-private enterprise policy in petroleum development and by formally introducing a concession system in 1971, committed itself to petroleum development through private investment from both local and foreign sources. The Thai concession system, patterned on the traditional concession format with a model contract of standard terms and conditions, clearly represents an example of MCC. Its recent improvement, which

incorporates the fashionable devices such as the sliding scale royalty, windfall profit tax, etc., makes it even more up to date.

II. History of Thailand's petroleum concession

Thailand had no traditional concession relationship with western oil companies because it was not a producing country until very recently.¹ Petroleum development in Thailand dates from 1921 when an American geologist was engaged by the Thai government to carry out a nationwide exploration survey to find oil.² Since then the evolution of petroleum concession in Thailand can be characterized as falling into three periods: reservation, transition and concession.³

1. Reservation period (prior to 1960)

Historically, all mineral and energy resources in Thailand belong to the state. The government reserved the exclusive right to develop certain natural resources, including petroleum, for itself. During the early 1900s, geophysical surveys and exploratory drillings were carried out by the Thai government in a limited number of onshore areas and a small amount of heavy crude oil was discovered in Northern Thailand. Production of oil began in the 1950s and

the output was less than 500 barrels per day (b/d).⁴ The effort was more a gesture of national self-reliance in the face of the dominant role played by foreign oil companies than a serious attempt to become an oil producer. As a result, the early exploration by the government was plagued by lack of funds, expertise and technology, and was eventually given up.

In 1954 the state began to make exceptions to the reservation policy by granting concessions to private oil companies of Thai nationality. Two national companies applied for and were granted prospecting licences. Their explorations were not successful, due to the same problems that previous explorations encountered.⁵ Foreign participation in petroleum development was strictly prohibited.

The time before 1960 was a reservation period that was characterized by the exclusive reservation of the right to explore for and produce petroleum in Thailand to the state agencies and Thai citizens.⁶

2. Transition period (1960-1970)

After four decades of bitter experience in national self-reliance on petroleum exploration, Thailand came to realize that foreign participation was necessary in developing a national petroleum industry. From 1960, the Thai government gave a high priority to petroleum development and undertook to draft special terms and conditions to regulate petroleum

exploration and development. The breakthrough was not made until the government rescinded the long standing restrictive mineral policy which still hampered petroleum development through foreign participation in the early 1960s. The first foreign oil company, the Union Oil Company of Thailand (now Unocal Thailand, Ltd.), which was formed as an affiliate of Union Oil Company of California in 1962, was awarded the first concession to explore for petroleum in onshore northern Thailand.⁷ Sadly, no exploration activity was carried out under this concession because incentives were insufficient and because of the vague terms of the mining laws then in force.

In 1961, Thailand passed a preliminary petroleum act to encourage private investment in petroleum exploration and production from both local and foreign sources. At the same time, the Gulf of Thailand was divided into 19 exploration blocks covering an area of approximately 200,000 km² and offered for the first time for concessions.⁸ A large number of international oil companies expressed interest and applied for contracts. On September 19, 1967, Thailand awarded rights to six major foreign oil companies for petroleum exploration in 17 offshore blocks (blocks No. 1-17).⁹ Preliminary agreements in an abbreviated form were signed in 1968, under which the government agreed to issue concessions when the petroleum legislation, then in draft form, came into force. A considerable number of geophysical surveys were carried out, but no wells were drilled because of the absence of statutory

assurance of ownership rights.

The second period—the transition period—was of special importance for Thailand because the country set new directions in petroleum development by formally repealing the reservation policy and opening its offshore for foreign participation.

3. Concession period (1971 - present)

Thailand had no specific governing laws on petroleum activities until the passage of its first petroleum legislation in 1971. In the same year, Thailand opened six more concession blocks, covering a total area of 44,800 km² in the Andaman Sea, to international bidding. Four of the new blocks were conceded to three oil companies. In late 1973, three more deep water concession blocks with an area of approximately 70,000 km² were delineated in the Andaman Sea and contracted out.¹⁰ Following these early awards, large scale drilling activities commenced in both the Gulf of Thailand and the Andaman Sea in the early 1970s.

Table 2: Petroleum Concession Awards in Thailand

No.	Date of announcement	Concession areas	Applications	concessions awarded
1	1971/09/13	Onshore & Gulf of Thailand	20	9
2	1972/03/31	Andaman Sea	3	2
3	1972/06/12	Andaman Sea	2	0
4	1973/09/14	Andaman Sea	5	0
5	1974/02/11	Onshore & Andaman Sea	12	3
6	1978/11/24	Onshore	3	2
7	1979/01/26	Gulf of Thailand	2	1
8	1980/06/24	Whole country	6	4
9	1982/02/05	Onshore	6	2
10	1983/06/03	Andaman Sea	2	1
11	1984/08/10	Whole country	12	3
12	1985/03/22	Onshore & Gulf Thailand	9	5
13	1990/07/26	Whole country	62	33*
Total			144	65

* Tentative award.

Source: Based on information from Department of Mineral Resources, "Development of Offshore Mining & Petroleum in Thailand" (unpublished document), May 1989, Bangkok, Thailand and other sources.

Since the beginning of the concession period, 13 rounds

of concession bidding have been offered by the Thai government (see Table 2)¹¹. By the end of 1990, about 100 companies had filed applications for 161 exploration blocks, which resulted in the granting of concessions to 49 companies.¹² As of December 1988, 81 exploratory, 120 appraised and 281 development wells had been drilled in offshore Thailand.¹³

In its thirteenth round in 1990, the first in five years since 1985, Thailand offered its largest round of petroleum concessions, consisting of 104 blocks, 83 onshore and 21 offshore and covering a total area of 443,000 km², for bidding. Altogether, 22 groups of foreign oil companies submitted 62 applications for petroleum rights,¹⁴ and 33 concessions were tentatively awarded to 17 companies.¹⁵

All the offshore waters under Thai jurisdiction have been or are still under concession. As of December 1992, there are 80 concessions in effect in Thailand.¹⁶

Foreign exploration efforts have resulted in the discovery of four natural gas and condensate fields in the Gulf of Thailand.¹⁷ Offshore production began in 1981, which made Thailand a producer of petroleum, albeit on a small scale. As of December 1988, 30.5 million barrels of oil, 30.3 million barrels of condensate, and 799,833 million cubic feet (cbft) of gas had been produced from offshore Thailand. At present, the total discovered reserves are estimated at about 230 million barrels of oil and condensate (26 million from offshore) and 15.5 trillion cbft of gas (13.7 trillion from

offshore).¹⁸ At present, four gas fields are producing at a rate of approximately 134,000 b/d of oil equivalent, or meeting 33 per cent of the country's demand for petroleum.¹⁹

It may be predicted that the next phase would be characterized as a conservation period since Thailand is also facing the dual problem of sharply increasing domestic demands for energy and depletion of natural resources.

III. Maritime jurisdiction and petroleum legislation

During the evolution of its petroleum concession system Thailand gave prominence to maritime jurisdiction and petroleum legislation in order to foster and promote offshore exploration.

1. Maritime jurisdiction

Thailand has a long standing involvement and interest in matters related to maritime jurisdiction.²⁰ It is the only Southeast Asian state to participate in the United Nations Conferences on the Law of the Sea (UNCLOS) from the very beginning.²¹ Prince Wan Waithayakon of Thailand was elected to the presidency of the UNCLOS I held at Geneva in 1958. He is also credited with introducing at the conference the concept of the resources of the sea as "common heritage"; he

urged that the law of the sea should ensure preservation of that heritage for the benefit of all.²²

Fisheries and maritime trade were the traditional uses of oceans in Thailand.²³ This emphasis has, however, shifted since the early 1960s to offshore hydrocarbon development. The anticipation that most oil and gas could be found in the offshore areas provided an incentive to the Thai government to legislate on this matter.

In 1966, Thailand claimed a 12-nautical-mile territorial sea with a view to encouraging petroleum exploration. In the following year, it announced concession blocks in the Gulf of Thailand, though the outer limit of the continental shelf thereof was not formally claimed until 1973.²⁴ In 1968, Thailand ratified the 1958 Convention on the Continental Shelf, together with the three other Geneva conventions on the Law of the Sea.²⁵ Three straight baselines that enclosed three particular areas as internal waters of Thailand, two in the Gulf and one in the Andaman Sea, were proclaimed in 1970.²⁶ This was followed 10 years later by the Proclamation Establishing the Exclusive Economic Zone (EEZ) of the Kingdom on February 23, 1981.²⁷ Thailand has thus claimed all the possible maritime zones under national jurisdiction provided for by the 1982 United Nations Convention on the Law of the Sea (LOS Convention), though it has not yet passed any domestic legislation regarding EEZ and continental shelf to complement the full range of rights to which it is entitled

under international law.

The situation of Thailand with respect to maritime boundary delimitation is not balanced on its two continental shelves. In the Andaman Sea, most boundaries between Thailand and its neighbouring countries which have opposite or adjacent coasts (India, Indonesia, Malaysia and Myanmar, formally Burma) were settled during the past two decades.²⁸ The situation in the Gulf of Thailand, where foreign exploration activities have been concentrated, is rather different. Thailand and Malaysia were not able to agree on a continental shelf boundary, but in 1979 achieved a memorandum of understanding establishing a joint authority for the exploitation of non-living resources in the overlapping area.²⁹ It is reported that the two countries have reached in April 1990 a draft agreement on the basis of their memorandum.³⁰ Thailand has also recently offered a joint development proposal to Vietnam to resolve the long-standing disputes between them in the Gulf of Thailand.³¹

In short, most of Thailand's maritime jurisdiction claims in the Gulf of Thailand are still unresolved. As a result, some concessions granted by Thailand have been left uncertain, and await a boundary resolution. The maritime boundary problems will remain an obstacle to the exercise of Thailand's rights regarding the hydrocarbon resources on the continental shelf.³²

2. Petroleum legislation

The regulatory framework for petroleum development in Thailand consists of two general components: first, legislation governing petroleum activities; second, legislation defining government agencies' responsibilities for policy and implementation issues relating to petroleum development.

(1) Previous legislation

As indicated, there was no specific petroleum legislation before 1960. The first piece of legislation on petroleum exploration was the "Government Notice on Petroleum Exploration Applications" of August 28, 1961 and the "Government Announcement on Conditions for Grant of Exploration and Exploitation Rights" of September 1961.³³ These two early documents set down some broad guidelines for petroleum grants,³⁴ but were soon replaced by a draft "Consideration Basis in Awarding the Right to Explore for and Produce Petroleum" prepared by the Thai Government in 1964.³⁵

The 63-section "Consideration Basis" in the form of a government document was patterned largely on the "OPEC formula", i.e., 12.5 per cent expensed royalty and 50 per cent income tax. In addition, it also suggested that the applicants

could offer special benefits, such as cash bonus, participation, or any other offerings that would be taken into account in awarding rights.³⁶ The "Consideration Basis" embodied the basic government petroleum policy and indicated the directions that the Thai petroleum legislation would probably take. In fact, it was used as a preliminary "petroleum act" pending the formulation of a comprehensive petroleum law to deal with petroleum grants and petroleum operations.

(2) Present governing legislation

It took Thailand four years to draft and finalize its first petroleum legislation. The Petroleum Act B.E. 2514 and the Petroleum Income Tax Act B.E. 2514 were eventually promulgated on March 26, 1971.³⁷ These two acts as amended by subsequent relevant regulations (collectively "Old Terms") are still the principal laws governing petroleum activities in Thailand.³⁸

Aimed at encouraging and attracting foreign investment, the legislation was drafted along the lines of the concession system popularized in the first half of the century, and provides for almost the same incentives that had already been set forth in the "Consideration Basis".³⁹

The Petroleum Act and Petroleum Income Tax Act replaced all previous legislation and apply to any conduct of petroleum operations, both onshore and offshore, within the country,⁴⁰

but not to those concession agreements concluded prior to June 23, 1971. Concessionaires under the previous legislation were given six months to convert their agreements to conform with the 1971 acts.⁴¹

During the period from 1981 to 1987 the government made a deliberate effort to review its petroleum legislation in light of the changed economic circumstances since the 1970s and the experience of other host developing countries. It engaged a wide range of experts, consultants, oil company representatives and even international organizations for comments. Of this outside assistance, the heavy involvement of Canadian aid in Thailand through Petro-Canada International Assistance Corp., played a significant role in the way the new terms were formulated.⁴² Various proposals were recommended for changes in the concession terms.⁴³ Amendments were finally introduced on December 8, 1989 when the government issued the Petroleum Act No.4 B.E. 2532 on August 4, 1989, and another four Ministerial Regulations on December 8 of the same year (collectively "New Terms").⁴⁴ Many of the existing terms and conditions for concession rights were substantially revised and new provisions were introduced by the "New Terms". The changes in the new regulations as compared to the "Old Terms" concern the obligations in the exploration phase, royalty and income tax, and the obligations and duties of the concessionaire.

The amendments appear to respond to the country's

geological setting, *i.e.*, high cost per unit production. The amendments are twofold. Some appear to impose stiffer restrictions, while others clearly relax the financial terms, and give government managers additional authority to agree to more flexible terms as exploration proceeds or as they deem appropriate. Perhaps two comments can be made on the new regulations: first, the revision of certain terms fixed in the 1960s was long overdue. Second, the new regulations have introduced more flexibility into the "Old Terms".

The "New Terms", however, do not apply to concessions granted prior to the effective date of the new amendments. There are provisions for old concessionaires to apply for the "New Terms" to be applied to an exploration block from which no petroleum has been produced and sold or disposed of prior to the effective date of the amendments, except only those provisions concerning exploration period, size of exploration block and area relinquishment requirement.⁴⁵ The application for such conversion can only be made within one year from the insurance of the "New Terms".⁴⁶

Aside from the above petroleum legislation which specifies the substance, *i.e.*, terms and conditions of the Thai concession system, the 1971 Ministerial Regulation No. 4 B.E. 2514 as amended by the 1989 Ministerial Regulation No. 17 B.E. 2532 also provides for a model concession contract for each individual agreement to follow.⁴⁷ The model contract is a short and simple document, consisting of only 18 clauses

with many areas left blank for negotiation. The original model contract has been used as a standard form for both onshore and offshore concessions for nearly 20 years. Recent amendments deal more with the form rather than the substance of the agreement.

(3) Institutional framework

A united organization for petroleum development was not set up until the discovery of commercial-scale offshore petroleum deposit in the Gulf of Thailand.⁴⁸ The Petroleum Authority of Thailand (PTT) was established by the Petroleum Authority of Thailand Act B.E. 2521 promulgated on December 20, 1978.⁴⁹ Its principal objectives are to engage and promote the petroleum business and to conduct petroleum related activities in such a way as to bring maximum benefit to the economy and security of the country.⁵⁰ PTT has since served as the state oil company of Thailand.

Contrary to the usual practice in other developing countries to authorize the state oil companies to deal with foreign oil companies, Thailand charges the Department of Mineral Resources (DMR) within the Ministry of Industry (formerly National Development) with the task of implementing concession agreements. It is responsible for administering the petroleum legislation and for supervising the day-to-day exploration and production activities carried out by concessionaires under their concession agreements.

The Petroleum Committee,⁵¹ an inter-ministerial committee established by the Petroleum Act is empowered with a wide range of mandates, including advising the Ministry of Industry on such important matters as awards of concessions, revocations, renewals, payment of royalties, transfer of concessions.⁵² Many important decisions with regard to petroleum policy and development are also made by this committee.

In short, the petroleum legislation provides for a concession system which is aimed at attracting and maintaining petroleum exploration and exploitation by foreign companies by offering generous terms.

IV. The modern concession contract

1. Definition

Since approximately the 1950s, a MCC has been developed in response to worldwide political and economic changes in state relationships.

Modern concession contracts/agreements are sometimes referred to as "modernized" or "updated" concessions. This instrument also has a number of synonyms, such as permit, licence or lease.⁵³ To prevent misunderstanding, the term modern or modernized concession contract will be used in this

study as opposed to the term "traditional, classical/ original concession".

As discussed previously, the term "concession" has not been well defined in international law.⁵⁴ It is therefore not surprising that there has been no serious attempt to define the term of MCC despite its wide usage in the past.

The MCC is an agreement which retains the basic legal format of the traditional concession but which has significant modifications to many of the features of its prototype which worked to the disadvantage of the producing country. Likewise, it authorizes a foreign oil company to explore for and exploit the country's petroleum reserves and transfers considerable discretion over most facets of the development to the company.

The term "modern" not only suggests a new era in which the contracts are concluded, but also refers to the incorporation of the new trends which seek a rational development of the country's natural resources. The term also denotes the fact that foreign companies assume an obligation under such agreements to take into account relevant political, social and economic interests of developing countries that were overlooked under traditional concessions.

2. Principal terms and conditions

Broadly speaking, two generations of MCC have evolved in

Thailand under the "Old and New Terms".⁵⁵ The first modern generation concessions (1971-1988) were characterized by larger concession area, longer duration and a fixed royalty. The second modern generation concessions (1989-onwards) were concluded in accordance with the "New Terms", featuring reduced concession area and term, sliding scale royalty and flexible policy framework.

Below is a summary and examination of the principal terms and conditions of the two generations of Thailand's MCC under which foreign companies can obtain petroleum rights in Thailand.⁵⁶

A. Application

Although not expressly stated in law, Thailand's practice is to grant petroleum concessions only following the publication of an international invitation, usually not less than 45 days' notice. When foreign oil companies are invited to submit applications for petroleum concessions, it is government policy that a concession is awarded through sealed competitive bidding. The biddable items include exploration programme, work expenditure, special advantages, etc.⁵⁷ An applicant for a concession must be a company with assets, equipment and expertise, and evidence of its capability to produce petroleum. The evidence shall be attested in writing by a reliable institute.⁵⁸ Applicants are rarely called in for negotiation of the contract terms. The application for a

concession is evaluated in accordance with a point system by the Petroleum Committee, which forwards its recommendations to the Cabinet for approval. The contract negotiation and conclusion may take a time varying from one year to six years depending on many factors.⁵⁹ The application fee for each concession is now Baht 10,000 (\$380),⁶⁰ as compared to Baht 100 (\$3.8) prior to 1989.⁶¹

B. Title to petroleum

"Petroleum resources belong to the State of Thailand; and no person shall explore for or produce petroleum in any area, no matter that such area is owned by him or not, except by virtue of concession."⁶² The vesting of title to petroleum in the state is true only so far as it is in its geological state. It is generally recognized that the title to petroleum under a concession contract passes to the concessionaire at the wellhead, though the concession system does not mention when the transfer of petroleum title takes place.

C. Parties to the contract

Unlike traditional concessions under which a ruler or head of government dealt directly with the company obtaining the grant, the Thai MCC empowers the Minister of Industry to sign and award, with the approval of the Council of Ministers, petroleum concessions and renewals.⁶³ But it is the DMR within the Ministry of Industry which is authorized to

negotiate for and execute the petroleum concessions between Thailand and foreign companies. It is important to bear in mind that only the Ministry of the Industry becomes a party to the contract. The Thai government is not a party to, nor is bound by, the contract, because the government is a non entity as far as the local law is concerned.⁶⁴

D. Concession area

The area of concession blocks in Thailand may range from 5,000 km² to 13,000 km², but were commonly around 10,000 km².⁶⁵ Under the "Old Terms" each applicant could apply for no more than four exploration blocks;⁶⁶ but if the minister considered it appropriate, one more block could be added, provided, however, that the aggregate area of the blocks did not exceed 50,000 km².⁶⁷ Onshore exploration blocks are not permitted to exceed 10,000 km².⁶⁸ This restriction, however, did not apply to offshore areas where the water was more than 200 meters deep. The special provisions for deep-water exploration contained no ceiling on deep water concession areas.⁶⁹ The "New Terms" reduce the maximum area of onshore exploration blocks from 10,000 km² to 4,000 km², and some special concessions are not permitted to exceed 200 km². The maximum total area of all exploration blocks held by one concessionaire is reduced from 50,000 km² to 20,000 km².⁷⁰ This restriction is not applicable to offshore concession areas designated by DMR as deep-water blocks. In such a case,

the minister is given the power to award concessions in the number of exploration blocks and the total area thereof as he or she may deem appropriate.⁷¹ The net effect of this provision is that there is no limitation in Thailand on the number and total area of concession blocks as far as the deep-water area is concerned.

E. Duration of the contract

The term of the concession under the "Old Terms" was uniformly 38 years, comprising eight years for exploration and 30 years for exploitation.⁷² One renewal, of not more than four years for exploration period and not more than 10 years for production, was permissible under conditions and obligation agreed upon by both parties.⁷³ Thus, the total duration of a concession contract can run as long as 52 years if a renewal is granted. Under the "New Terms", the duration of the initial concession is reduced from 38 to 26 years, which is also divided into two periods: six years for exploration and 20 years for production.⁷⁴ The total possible duration has been reduced from 52 years to 39 years, due to reductions of two years in the exploration period, one year in the renewal's exploration period, and 10 years in the initial production period.

F. Grant of rights

The rights conceded to a concessionaire include the right

to explore for, produce, store, transport, sell and dispose of the petroleum produced by him.⁷⁵ The right to refine crude oil from concession areas is reserved exclusively for the state though the petroleum laws and concession contracts remain silent on the issue.⁷⁶ In addition to the principal grant, the concessionaire may be permitted "to own land to such extent as is necessary for the petroleum operation" both within and beyond his exploration blocks and production area.⁷⁷ Where such land is in the public domain and is not being used by the public, "the concessionaire shall be entitled to enter upon or pass through it and to erect upon it any structure without applying for permission and without payment of compensation."⁷⁸ The concessionaire may also construct, with the government approval, a pipeline system outside the "effective Concession Area".⁷⁹ Such an exclusive and extensive grant is not dissimilar to that under a traditional concession agreement.

Transfer of concession rights is permitted and is divided into two broad categories. Transfer between affiliates requires only that the parties give written notice to the government; all other transfers require prior permission from the government.⁸⁰

The effective date of a transfer was previously designated by the concessionaire in his written notification, but the "New Terms" provide that the transfer is effective only upon the date the concessionaire received the

government's approval in writing.⁸¹

G. Petroleum exploration period

Under Thailand's MCCs, petroleum operations are divided into two phases: exploration and production, rather than being governed by two separate licences.⁸² Under the "Old Terms", the petroleum exploration period was eight years from the issuing date of the concession, with one renewal of not more than four years, making a total of 12 years for exploration, the 12-year period was divided into three sub-periods as follows:⁸³

(a) the first obligation period was the first three years from the date of concession;

(b) the second obligation period was five years following the termination of the first period; and

(c) the third obligation period, in the event of a renewal, would be the extended period.

The maximum petroleum exploration period is now reduced from eight years to six years, and the renewal is limited to three instead of four, giving a total of nine years for exploration.⁸⁴

H. Petroleum production period

Upon discovering a "Commercial Well", the concessionaire can initially define its production area and is in most cases automatically entitled to a production right covering the area

as defined up to 12.5 per cent of the original exploration block or blocks involved.⁸⁵ Under the "Old Terms", the production period was 30 years from the end of petroleum exploration period and could be extended for 10 more years upon application.⁸⁶

Now the production period is reduced from 30 years to 20 years and the one possible renewal of 10 years has remained intact.⁸⁷ The reserved production areas can be held by the concessionaire for only five years instead of the entire production period as under the "Old Terms".⁸⁸

As far as production is concerned, two additional major alterations merit attention. The first is the obligation-to-produce clause, which provides that "the concessionaire shall commence petroleum production... within four years" as from the date on which the concurrence is granted.⁸⁹ The production period will be deemed to have expired if petroleum production fails to commence within the said period. The concessionaire is, however, entitled to apply for extensions to the period; two extensions of two years each are permitted.⁹⁰

The second introduction is the "sole risk" clause under which the government has the right to require the concessionaire to expedite the production in its reserved area should the country have a need for petroleum to foster its economic development. If the concessionaire fails to come to terms with the government within 12 months following such a

request, "the Government shall then be entitled to serve a written notice to the concessionaire to the effect that the Government will exercise its right to undertake petroleum operations in that area at its *sole risk*." (emphasis added)⁹¹ In such a case, the concessionaire's rights in the said area are terminated and the government may appoint an agency or individual to carry out operations in the area concerned. In return, the concessionaire will be reimbursed for the costs incurred if the government's operation yields any profit. Furthermore, the concessionaire is entitled to seek co-venture with the government within the first three years of the sole risk option. If the government fails to commence production within two years from its takeover, the concessionaire is further entitled to ask for the return of the concession area. In the event of a return, the original concession period will be extended accordingly and the government is entitled to receive a refund equal to the amount it has invested.⁹²

The government has also shown some interest recently in the management of the concessionaire's operation. This is evidenced by the work-plan-submission provision introduced by the "New Terms". The provision requires the concessionaire "to submit a detailed production plan" before production and to review the plan and report in writing the results of the review annually to the government.⁹³ Prior approval is required should the concessionaire wish to alter his production plan.⁹⁴

It is evident from the above two provisions that, under the second generation concessions, the conceding government has played an increasing role in the management of the concessionaire's operations.

I. Obligations in petroleum exploration

The concessionaire is required to perform its obligations in petroleum exploration both in the forms of minimum expenditure and physical work. The amount of expenditure and the amount of work are proposed by the concessionaire in its bid for petroleum rights and agreed upon in each individual contract. The physical work obligation commonly comprises seismic surveys of agreed kilometres, study of the available geological and geophysical data and drilling of exploratory wells.⁹⁵ For instance, under the Triton Oil and Gas Corp. Concession of 1972 (Triton concession), the concessionaire had the following obligations in the two offshore blocks:

(a) during the first obligation period, conduct at least 875 miles of marine seismic surveys representing a minimum expenditure of \$285,000, drill at least one exploration well to a depth of 8,000 feet with a minimum expenditure of \$1.5 million;

(b) during the second period, spend not less than \$ 3 million on exploration; and

(c) the exploration obligation for the third period would be negotiated and agreed upon should the concessionaire submit

an application for a renewal.⁹⁶

The total expenditure commitment of the Triton concession was \$4,785,000. It is to be noted that the exploration obligation in Thailand has kept increasing through the years. The Britail concession and the Preier concession, each covering 13,556 km² and 9,604 km² in offshore areas respectively, required a minimum five-year exploration programme of \$27.5 million and \$17.8 million respectively.⁹⁷

The Thai MCC has a "ring fence" provision surrounding each exploration block. Under this provision the exploration obligations for one block are not transferable to and aggregated with the obligation of another block.⁹⁸ Under unusual circumstances, a transfer of obligation from one block to another is possible with the approval of the Council of Ministers, but a transfer between a deep-water block and one which is not a deep-water block cannot be made under any circumstances.⁹⁹ However, the peaks and valleys of the expenditure within the same block may be smoothed out through a "carry forward" technique. The concessionaire is entitled to deduct the amount in excess of its obligation during any given year from its anticipated expenditure in the subsequent obligation period.¹⁰⁰ But the unspent residue has to be paid to the government rather than being carried forward and added to the following period.¹⁰¹

Now under the "New Terms", the financial and work obligations are fixed for each of the first three years,

instead of for each obligation period as under the "Old Terms".¹⁰² This new requirement puts a stricter restriction on the concessionaire in terms of exploration commitments. As for the second obligation period, the concessionaire must propose a work plan for each of the second three years, which should specify for each exploration block the amount of expenditure and work commitment.¹⁰³

On the other hand, the "New Terms" introduced some flexibility in the concession system. Government managers are now given the authority to approve any necessary changes that may be proposed by the concessionaire in its working obligation.¹⁰⁴

The concessionaire is strictly obliged to spend the minimum expenditure and conduct the specified physical work for each exploration period in each exploration block. Failure to fulfil the exploration work commitments will be regarded as a serious breach of the contract, which may result in legal actions by DMR if negotiation for a settlement between the two parties fails.¹⁰⁵

The concessionaire is obliged to submit its petroleum operation progress reports to the government. Such submissions were treated as confidential for two years from the expiry or revocation of the contract, as the case may be.¹⁰⁶ Under the "New Terms", the submission requirement has been expanded to include the results report of the petroleum operation; the period of confidentiality for such submissions has been

reduced from the original two years from the end of the concession to one year from the date of receipt.¹⁰⁷

J. Relinquishment

The MCC also provides for a relinquishment obligation. Under the "Old Terms", the concessionaire was obliged to surrender progressively its exploration block area in accordance with the following schedules:¹⁰⁸

(a) 50 per cent at the end of the fifth year;

(b) the remainder of the area at the end of the exploration period if it had not been extended; or

(c) an additional 25 per cent if the original exploration period was extended; and

(d) all the remaining area at the end of the renewed period.

Mandatory relinquishment for deep waters was 35 per cent vice 50 per cent at the end of the fifth years and 40 per cent vice 25 percent at the extension of the initial exploration period.¹⁰⁹ According to the optional relinquishment provision, the concessionaire may relinquish at any time the whole or part of any exploration block.¹¹⁰ Complete voluntary relinquishment prior to the end of second or third obligation period would release the concessionaire from all liabilities for work obligation.¹¹¹ But such relinquishment during the first obligation period did not entitle the concessionaire to any reduction in its exploration obligation for that period.¹¹²

In accordance with the "New Terms", the first mandatory relinquishment, 50 per cent of each onshore exploration block and 35 per cent of each deep-water block, must be made at the end of the fourth year, instead of the fifth year.¹¹³ According to the optional surrender programme, in addition to an entitlement to an exemption from all outstanding obligations in the case of a full relinquishment during the second or third obligation period, a concessionaire is further entitled to a reduction in the remaining obligations in the event that it once or severally exercises its right in surrendering a part or parts of the exploration block during the second exploration period.¹¹⁴

K. Special advantages to the government

Under the special advantage clause, the concessionaire is required to furnish to the government a number of "special advantages", usually in the form of scholarships, grants to government agencies and educational institutions, and social and welfare benefits. "Special advantages" seem to be an issue of negotiation because neither the petroleum acts nor the model contracts have any specific provisions on the types and amounts of these advantages. In the early years, the special advantages required by the government were limited in variety and amount. Under the 1972 Triton concession, the concessionaire was required to furnish only two special advantages: a lump-sum contribution in the amount of \$40,000

to be used for group study tours and an annual payment of \$50,000 for the purposes of scholarships, study tours, on-the-job training, etc. when production reached 25,000 b/d.¹¹⁵

Recent contracts, however, have seen a steady increase in special advantages. During the ninth round of invitations for applications for petroleum concessions beginning on February 5, 1982, Thailand announced that applicants must offer three additional special benefits, including an annual benefit and annual bonus.¹¹⁶ These new requirements constituted a large disincentive. At least two international companies withdrew their applications after failure to reach agreements on the new conditions.¹¹⁷ These conditions were omitted for the tenth bidding round in 1983.¹¹⁸ In its eleventh invitation for petroleum concessions throughout the country on August 10, 1984, the Thai announcement not only included the three requirements which had been the subject of earlier disagreement, but also introduced two new conditions: a government right to purchase crude oil on a first priority basis and preference to local goods and services.¹¹⁹ In the 1985 Gopher concession, 12 special advantages were required and the amount of monetary contribution were also enormously increased.¹²⁰

Of the Thai "special advantages", the following are typical:

(a) Signature bonus

All concessionaires are obliged, as a rule, to pay an agreed amount of money to the government upon signing the contracts. The concessionaire under the Gopher concession agreed to pay a signature bonus of \$40,000.¹²¹

(b) Annual bonus

Since 1982, an annual bonus has been required and is triggered and escalates when production reaches a certain level. It is computed from the amount of crude oil sold or disposed of during the year at the following rates:¹²²

Table 3: Schedule of Annual Bonus in Thailand's Modern Concession Contracts

Production level (b/d)	Bonus* (%)
Up to 10,000	0.0
10,000 to 20,000	27.5
20,000 to 30,000	37.5
Over 30,000	43.5

* Percentage in value.

Source: Based on Condition 2 (2) of the Ministerial Announcement, in Barrows Company, Asia and Australasia: Basic Oil Laws and Concession Contracts, Supp. 89 (New York: The Petroleum Legislation Co., 1986), pp.84-85.

Such a payment based on production levels is more in the nature of a royalty in cash rather than a bonus. In fact, it is treated by some writer as a "graduated royalty".¹²³

(c) Annual benefit

Like the annual bonus, the annual benefit was not introduced until recently. The annual benefit places an obligation on the concessionaire not to claim expenses exceeding 19 per cent of the value of petroleum sold or disposed of, excluding royalties and agreed bonus, during any given year. In the event of expenses being higher than 19 per cent, payment of an amount equivalent to the excess is required as an annual benefit.¹²⁴ However, should the deductible expenses claimed by the concessionaire in a given year be less than or exactly equal to 19 per cent of the value of petroleum sold or disposed, then no annual benefit is payable to the government.¹²⁵ This annual benefit is a device seldom employed in petroleum industry. It serves as a mechanism to penalize the concessionaire should it claim expenses higher than the stated percentage of the value of petroleum sold or disposed of in any given year.

It is of importance to note that the annual bonus and annual benefit have been abrogated under the "New Terms". Those concessionaires holding onshore exploration blocks awarded between 1982 and 1989 will be released from their obligations for annual benefit and annual bonus should they apply for conversion to the "New Terms".¹²⁶

(d) Domestic supply

Domestic sales are also a mandatory obligation, under which the concessionaire is obliged to give first the right to the government to purchase petroleum produced at a prescribed price varying according to the location of production.¹²⁷ The guidelines for domestic sales of crude oil only fix ceilings, e.g., in the absence of regular exports, a price not exceeding that of imported oil.¹²⁸ Such a pricing policy does not appear to give comfort to international oil companies.¹²⁹

(e) Preference for domestic services

Domestic preference was not required during the early years of the Thai MCC, but has become a mandatory condition since 1985. This condition requires oil companies to give preferences, in conducting their petroleum operations, to services relating to transport vehicles, road construction and others, or to materials and tools available in Thailand.¹³⁰

The local preference clause certainly has significant political implications, but in a country like Thailand which has only a very limited capability to produce petroleum equipment, the real value of such requirements remains in doubt.

(f) Employment and training

Under many Thai concessions, the concessionaires must undertake to employ and train Thai personnel for labour and staff positions, and employ them in their petroleum operations. Cost and expenses for training are allowed to be

included in the operating cost.¹³¹

The employment and training provisions do not appear to become a major problem for foreign companies perhaps for two reasons: first, the provisions are so general that there has been little demand for foreign companies—the concessionaires—to carry out specific obligations; second, the relevant Thai legislation already contains restrictions on alien petroleum service companies, and the Petroleum Committee has already reviewed imported goods and the issue of work permits and visas to foreign personnel.¹³²

(g) Thai participation

Equity participation has become another mandatory condition in recent concession contracts though the petroleum legislation and model contract contain no reference to such participation. Under this arrangement, the concessionaire "agrees" to set aside up to a maximum of 20 per cent working interest for participation of the Thai government and/or Thai nationals (collectively "Thai participants") after a commercial discovery; Upon election to participate, all past, present and future exploration, development, operating and production costs will be borne 20 per cent by the "Thai participants".¹³³

Government participation is arranged on a "carried interest" basis, i.e., financial risk and obligation of Thailand begin only after a commercial discovery has been made. The "Thai participants" are "carried" by the

concessionaire throughout the exploration phase. Participation is normally considered by foreign companies as an unwelcome "baggage". It is to be noted that the mandatory participation is reportedly no longer required since the introduction of the "New Terms".¹³⁴

Two comments may be made regarding these special advantages. First, the number and the amount of the special advantages are not stipulated by either the petroleum laws or the model contract. They seem to be purely an issue of negotiation and agreement between the government and the applicants for concession. Consequently, they vary from one contract to another. Second, the number of advantages has kept increasing, from a low of two in the early 1970s to a high of 12 in the mid-1980s, and so have the amounts of the advantages.

L. Storage and transport of petroleum

The concessionaire is allowed under a MCC to hire anyone to store or transport the petroleum under justifiable circumstances and upon receiving written permission from the minister. If the concessionaire wishes to construct a pipeline system outside the concession area, it must submit the plans to DMR for approval.¹³⁵ The pipeline becomes the property of the state upon completion. For the use of the pipeline to carry their petroleum, concessionaires who financed the construction are required to pay a nominal fee just sufficient

to cover the cost of operation and maintenance of the pipeline throughout the term of their concessions.¹³⁶

M. Pricing

Under the MCC, the price of crude oil was the FOB price based on the most up-to-date method of quality evaluation, having due regard to the posted price of comparable crude oil in the Persian Gulf, geological locations of the points of export and purchase, including market outlets and transportation costs.¹³⁷ The price was thus set and announced unilaterally by the concessionaire without the government's intervention. However, under the "New Terms" the government is authorized to prescribe a new posted price if the concessionaire's price is not considered appropriate.¹³⁸

N. Exemption from tax and duty

In the conduct of petroleum operations, the concessionaire was exempted from payment of all kinds of taxes, duties, and levies set by central, local and municipal administrations except (a) petroleum income tax; (b) timber royalty and forest improvement fees; (c) petroleum royalty; and (d) fees for services rendered.¹³⁹

This exemption clause has remained basically intact except for two amendments: first, the concessionaire is obligated to pay the remuneratory benefit; and second, it is charged with some additional obligations concerning transfer

of the duty-free goods imported into Thailand, e.g., obligations to apply for permission to transfer, to record the particulars and quantities of the transfer, etc.¹⁴⁰

O. Surface reservation fee, royalty, income tax, and Special Remuneratory Benefit

The fiscal regime of Thailand's MCC comprises a surface reservation fee, royalty, income tax, and the Special Remuneratory Benefit (SRB).

(a) Surface reservation fee

The surface reservation fee was payable at the rate of Baht 4,000 (\$150) per square kilometre per year prior to 1989,¹⁴¹ and is increased to Baht 100,000 (\$3,800) thereafter.¹⁴² The new fee does not, however, apply to the concessions granted prior to 1989 and the old concessionaires are still subject to the lower rate prescribed in their concessions.¹⁴³

(b) Royalty

Royalty may be paid in cash or kind, as the government prefers. Under the "Old Terms", in case of payment in cash, royalty was fixed at the rate of 12.5 per cent of the value of petroleum sold or disposed of; in the case of payment in kind, royalty should be in a volume of petroleum equivalent in value to one-seventh of the volume of petroleum sold or disposed of.¹⁴⁴ For exploration in deep-water areas requiring sophisticated technology and large capital investment with

higher risks, the rate of royalty was 8.75 per cent versus 12.5 per cent.¹⁴⁵ Under any circumstances, the concessionaire was exempted from payment of royalty on petroleum delivered as payment of royalty in kind.¹⁴⁶ Royalty was payable quarterly.¹⁴⁷

It needs to be pointed out that, under the Thai concession system, there was a difference between the rates for royalty payment in cash, which was one-eighth, and in kind, which was one-seventh. The lower rate for cash royalty simply indicates that the government preferred cash to kind in the early years. But the provision was not quite in line with international practice, which usually established royalty at the same rate for all petroleum rents.

The above royalty, used over the last two decades, has been significantly revised by the new regulations. Instead of a fixed 12.5 per cent royalty, the "New Terms" introduce a sliding scale of rates based on five specified productions levels and the royalty for deep-water blocks is 70 per cent of the new rates.¹⁴⁸ The new royalties for both onshore and offshore are shown in Table 4.

Table 4. Onshore and Offshore Sliding Scale Royalties in Thailand

No.	Production levels (b/m)	Sliding scale royalty (%)	
		Onshore	Offshore
1.	Up to 60,000	5.00	3.500
2.	60,000 -150,000	6.25	4.375
3.	150,000-300,000	10.00	7.000
4.	300,000-600,000	12.50	8.750
5.	Over 600,000	15.00	10.500

Source: Based on "Schedule of Royalty" of Petroleum Act No. 4 B.E. 2532 of 1989, Gov't Gazette, Vol. 106, Special Issue, December 25, 1989.

The previous difference between royalties in cash and kind has been erased. In the case of payment in kind, the payment will be a volume of petroleum equivalent in value to the royalty payable in cash.¹⁴⁹ The payment of royalty is accelerated from quarterly to monthly.¹⁵⁰ Credits for royalty on petroleum that is delivered as payment of royalty in kind has been deleted.¹⁵¹

The value of petroleum for royalty purposes has been generally the posted price for the exported crude oil and the market price for crude oil delivered to the government.¹⁵² The petroleum is always valued at the point of sale, but exported crude oil is valued at the point of export.

Apart from the restriction imposed on the royalty system, an important change with respect to royalty payment is the possibility of royalty reduction. In order to foster and

expedite the exploration and/or development of petroleum resources in certain areas, a royalty reduction may be granted in the following two instances:

First, for those areas where geological conditions are poor and which are not under the concessionaire's exploration or production plans, the government manager "shall have the power to *grant a royalty reduction...*" (emphasis added) so as to encourage the exploration and/or development of such areas, provided that such reduction shall not exceed 30 per cent of the amount of royalty payable by the concessionaire under normal circumstances and the period for such reduction shall not exceed four years.¹⁵³ Second, for those areas where geological conditions indicate that production therefrom would require a very high expenditure, the government manager may award the concession for that area with a provision on royalty reduction, providing the size of such concession area will not exceed 200 km², and the reduction of royalty will not exceed 30 per cent of the normal royalty and the period for such royalty reduction will not exceed three years.¹⁵⁴

(c) Income tax

The concessionaire is subject to payment of petroleum income tax which has always remained at a rate of 50 per cent of net profits derived from petroleum business, or 35 per cent of profit plus 23.08 per cent remittance tax.¹⁵⁵ The petroleum tax is payable semi-annually. It is worth mentioning that the Thai petroleum tax is the highest among the Asian

countries.¹⁵⁶

(d) Special Remuneratory Benefit

In addition to the petroleum income tax, another tax in the form of SRB has been introduced as a major part of the 1989 packages of legislative changes. No SRB is payable except in accounting years in which the petroleum operation in any block has yielded "annual petroleum profit " for the year,¹⁵⁷ i.e., balance still exists after recovery of petroleum costs for the current and/or past years. The costs subtracted from the petroleum revenue include only such investments and expenditures as are directly related to exploration activities. Therefore, interest, penalties, income tax, SRB, etc. may not be subtracted from petroleum revenue. The SRB is calculated by subtracting the petroleum capital expenditure, normal and necessary petroleum costs (operating costs) and the special reduction (or uplift), which is an amount of money prescribed by the government from time to time in awarding concessions with a view to providing a further incentive to induce investment for petroleum operation in Thailand,¹⁵⁸ from the gross petroleum revenue. If the concessionaire has "annual petroleum profit", it is then subject to payment of the SRB computed at a sliding scale rate as shown in Table 5.

**Table 5: Schedule of Special Remuneratory Benefit
(windfall tax) in Thailand**

Annual revenue per one metre depth of well ¹⁵⁹ (Baht)	Increment (Baht)	SRB payment (%)
Up to 4,800		0
4,800 to 14,400	240	1
14,400 to 33,600	960	1
Over 33,600	3,840	1

Note: Fraction of each increment will be treated as an increment.

Source: Based on Division 7 of Petroleum Act No. 4 B.E. 2532 of 1989, Gov't Gazette, Vol. 106, Part 227, Special Issue, December 25, 1989.

The SRB is calculated annually and on a block-by-block basis, subject to a ceiling of 75 per cent of petroleum profit for the year.¹⁶⁰

Thailand's SRB is a unique—if not the first of its kind in world petroleum agreements in terms of its computation—"windfall profit" tax. As explained by the officials of DMR, the purpose of SRB is: to pass to the Thai government a share of the additional profits arising, say, from substantial increases in prices of petroleum, bonanza discoveries and/or very low-cost discoveries.¹⁶¹

Royalty, petroleum tax and SRB constitute the three main pillars in the fiscal regime of the Thai MCC. Under the Thai tax regime, royalty and the SRB are treated as tax deductible

expenses.¹⁶²

All things considered, the Thai concession system provides a moderate rate of cost recovery under which foreign oil companies can amortise their capital costs over five to 10 years.¹⁶³ The average government take from both onshore and offshore petroleum development is also very moderate, ranging from between 17 per cent and 40 per cent for small fields and from between 35 per cent and 65 per cent for large fields, as compared with those of other Asian countries.¹⁶⁴ Since the last amendment to the petroleum legislation, Thai fiscal terms have become more attractive and appropriate.

P. Obligations and duties of the concessionaire

Under a MCC, the concessionaire is required to perform a number of obligations and duties, *inter alia*:¹⁶⁵

(a) to conduct petroleum operation with due diligence, exert its utmost efforts to develop petroleum to the maximum extent consistent with good petroleum industry practice, and observe sound technical and engineering principles in conserving petroleum deposits;

(b) to use utmost efforts not to employ any method which is contrary to the public interest or which detrimentally affects the economy or the well-being of the people;

(c) to employ Thai nationals in its petroleum operations and exercise its best efforts to train Thai nationals in order to improve their skills for positions at all levels within a

reasonable period of time;

(d) to observe the specified order of priority in making use of natural gas;

(e) to submit progress reports and summary statements of expenditures incurred in its petroleum operations.¹⁶⁶

Under the "New Terms", the obligations and duties have been expanded:

(f) to prevent and mitigate damage caused by petroleum operations and to secure insurance coverage for such risks on terms agreed by the government;¹⁶⁷

(g) to give preference to the sale of natural gas to the government;¹⁶⁸

(h) to pay 15 per cent interest on amounts in default;¹⁶⁹ and

(i) to give preference to Thai flag vessels.¹⁷⁰

Q. Environmental protection

The issue of environmental protection in the Thai concession contracts deserves special attention. We will return to this issue with more emphasis in due course.

R. Sanctity of fundamental provisions

The Thai MCC embodies a "stabilization clause" to guarantee the sanctity of the contract terms. This provision assures the concessionaire that "the State shall not nationalize the concessionaire's properties and his right to

conduct petroleum operations" during the term of the concession.¹⁷¹ All benefits, rights and duties of the concessionaire as provided in his concession will not be changed unilaterally, either.¹⁷² The "New Terms" have not altered this stabilization clause.

In the author's view, the sanctity of fundamental provisions of the concession is imperative, but a guarantee against nationalization is probably superfluous because such a commitment is somewhat contrary to contemporary international law regarding the permanent sovereignty of nations over natural resources. It is felt more appropriate to replace the guarantee against nationalization with an assurance of prompt and adequate compensation in the event of nationalization.

S. Title to equipment and property

At the end of the petroleum production period, or at the earlier relinquishment of any whole production area, or at the revocation of the concession prior to its termination, the concessionaire is required to deliver up to the government, free of charge, all lands, buildings, equipments and properties used for the conduct of exploration, production, storage and transport of petroleum.¹⁷³ As mentioned earlier, the pipeline system that has been constructed for transporting petroleum becomes the property of the state upon completion.¹⁷⁴

T. Settlement of dispute

Any dispute shall first be attempted to be solved through a mutual settlement, failure of which will result in an *ad hoc* arbitration.¹⁷⁵ In such cases, each party has the right to appoint one arbitrator and such arbitrators will jointly appoint a referee. The President of the International Bank for Reconstruction and Development (the World Bank) is elected to fill upon request any vacancy that may occur on the arbitration committee. If the appointment of an arbitrator or referee is not made or a vacancy is not filled, either party may request the President of the Federal Tribunal of Switzerland to make the relevant appointment. The place of the arbitration used to be a matter of agreement between the parties, or in the absence of an agreement, was Zurich, Switzerland, prior to 1989, but now is Bangkok Metropolis unless the parties agree otherwise.¹⁷⁶ The procedure of the arbitration will be governed *mutatis mutandis* by the relevant provisions of the rules of the International Court of Justice (ICJ) of May 6, 1946. The applicable laws in rendering an award are those of the Kingdom of Thailand and also such principles of international law as may be applicable.¹⁷⁷ The arbitration award is final and binding on both parties.

Traditionally, three types of disputes are prohibited from being referred to arbitration: (a) criminal offences; (b) disputes that have been taken by the concessionaire to the Thai courts and; (c) disputes on rulings or orders which are

treated as final under relevant laws.¹⁷⁸ The exception list has now been expanded to include disputes on royalty, which are to be exclusively referred to the Thai court for resolution.¹⁷⁹

U. Revocation

The government has the power to revoke the concession when the concessionaire fails to: (a) perform its obligation in petroleum exploration; (b) comply with good petroleum industry practice; (c) pay royalty or SRB; (d) pay income tax; (e) furnish the special advantages as agreed upon; (f) commence its exploration operation within six months from the date of the concession; (g) conduct petroleum operations with due diligence; or if the concessionaire (h) violates the provisions of the Petroleum Act on transfers of petroleum rights and participation of other companies; and (i) becomes bankrupt. Revocation does not nullify any liability under the concession.¹⁸⁰

V. Termination of the contract

The contract shall be terminated in any of the following events: (a) the petroleum production period expires; (b) the effective concession area ceases to exist by virtue of compulsory or voluntary relinquishment; (c) the concession is revoked by the government; and (d) the status of the concessionaire as a juristic person ceases to exist.¹⁸¹

Termination of the concession does not relieve the concessionaire from those financial and special advantage obligations which have not been discharged before.¹⁸²

V. The modern concession contract and environmental protection/sustainable development

This section examines the relationship between the MCC and environmental protection/sustainable development in Thailand. Before coming to our point, a general review of the environmental legislation and administration in Thailand will be helpful for a better understanding of the issue in question. But this will be touched upon only to the extent that such a review will provide a general context for our discussion.

1. Environmental development in Thailand

Until very recently few people in Thailand were concerned about environmental problems and only the most dedicated environmentalists were working to fight the country's mounting pollution problems.¹⁸³ It was believed in the country that "the environment was a concern only for rich nations".¹⁸⁴ For a developing country like Thailand, the urgent tasks were to

get rid of poverty and to work to increase incomes and the standard of living. "Unfortunately, in the course of these developments, their consequent impacts on the environment are usually ignored because of unawareness and lack of financial resources and technological knowledge",¹⁸⁵ said in the national report prepared by Thailand for the 1972 United Nations Conference on the Human Environment held in Stockholm (Stockholm Conference).

Convinced by the experiences of its better-off neighbours such as Singapore, Indonesia and Malaysia in the region, Thailand saw industrialization as a short cut to faster economic growth and has been rushing forward unthinkingly to its goals. Over the last 10 years, exports and investments have led an economic expansion that has transformed Thailand's primarily agricultural economy into one that is semi-industrialized. The country now has one of the fastest growing economies in the world.¹⁸⁶

With the rapid industrial growth came severe environmental degradation in the form of pollution, soil erosion, deforestation, natural resources depletion, etc.¹⁸⁷ Over the last 40 years Thailand has suffered huge losses in biodiversity.¹⁸⁸ The forest cover shrank from 66 per cent in 1950 to a little over 29 per cent in 1985; three per cent of the remaining forest resources are lost each year.¹⁸⁹ The excessive consumption of gasoline and other oils that have high lead and sulphur content have caused serious air

pollution in the large cities in Thailand.¹⁹⁰ But these burgeoning problems were not brought into focus until great losses in property and life were suffered recently.¹⁹¹ Industrial pollution control for mining did not enter the national plans until the late 1970s and early 1980s.¹⁹²

The Thai legal structure is a combination of both civil and common law systems. Environmental reference can be found in the 1974 Constitution.¹⁹³ But the first conscious environmental legislation was the Enhancement and Conservation of National Environmental Quality Act promulgated in 1974 and amended in 1978, which served as the foundation of environmental legislation in Thailand and created the National Environment Board (NEB) as the central environmental agency.¹⁹⁴ Since that time, a number of policies and laws with regard to environmental management have been enacted in such areas as forest, fishery, etc.¹⁹⁵ Nonetheless, environmental laws in Thailand appear to suffer from a number of major defects.¹⁹⁶ First, NEB was basically a coordinating body without overriding authority in terms of implementation and enforcement. Environmental regulation was vested in sectoral ministries. Enforcement responsibility was not clearly defined among government agencies. Second, for cultural reasons, Thai society is not one given to litigation, and courts are used only as a last resort. No judicial machinery is available by which public agencies can report any violations and no device exists for including class action

suits or citizens' environmental rights. Environmental legislation continues to be the method of administrative regulation rather than of litigation. Third, environmental agencies are hopelessly understaffed and vulnerable to bribery because of low salaries. Fourth, the small amount of money collected from fines for violation make it more economical for developers to pay the fine rather than their observing environmental regulations.

In an attempt to overcome these deficiencies, the Thai government launched a massive legislation campaign in 1992 to draft a series of laws to address the country's environmental problems. The new laws raise environmental concerns to the top level of government by absorbing NEB into the Ministry of Technology, Science and Environment. More teeth have been put into penalty by allowing jail terms and by increasing maximum fines for some environmental offences to as much as Baht 2 million (\$79,000).¹⁹⁷

For a developing country, Thailand has new environmental legislation that is quite ambitious. But a number of questions regarding jurisdictional issues and the government's ability to enforce the new measures have been raised. For instance, the new "master law"—the environmental quality act—leaves open the possibility of bureaucratic conflict, for it empowers the newly created environmental ministry to draft standards and enforcing them for all activities except factories. Responsibility for enforcing regulations for factories falls

to the Ministry of Industry as a result of an intense bureaucratic battle during the formulation process. The new laws try to get around the problems of enforcement by encouraging businesses to contract waste management out to private firms. Lastly, the politicians of the country will have a big hand in deciding the effectiveness of these new acts since the regulatory and enforcement mechanisms have not yet been in place.¹⁹⁸

On the whole, Thai environmental legislation was not enforced regularly and systematically in the past.¹⁹⁹ Implementation and enforcement continue to remain a major problem in environmental management in the country.

2. The modern concession contract and environmental protection

As observed, Thailand has little environmental background. This is reflected in its petroleum concession system. The issue of environmental protection has not received sufficient attention from the Thai MCC. The original model contract of 1971 was silent on the issue, and so were all the individual contracts negotiated and concluded in the first 12 rounds before 1989, despite a brief reference in the 1971 Petroleum Act which reads in full:

In conducting petroleum operations, the

concessionaire shall take appropriate measures in accordance with good petroleum industry practice to prevent pollution in any place by oil, mud or any other substance.

In the case where pollution of any place by oil, mud or any other substance results from the concessionaire's petroleum operations, the concessionaire shall take immediate action to combat such pollution.²⁰⁰

Failure to comply with this provision may result in a fine of up to Baht 100,000 (\$3,900).²⁰¹

A few more recent contracts contain a so-called "environmental fund" provision, under which the concessionaires were required to furnish to the government, as a special advantage, a sum of money (to be negotiated and agreed upon) in the initial three years for the purpose of environmental protection, including pollution control and sanitation.²⁰²

Moreover, Thailand introduced the abandonment obligation into its MCC in 1981, under which total removal of production structures is required and the offshore areas must be restored to its former state "as far as possible".²⁰³ The "New Terms" reiterate the obligation by stating that "the properties that are not usable shall be removed by the concessionaire in accordance with the Minister's instruction within three months from the date of the instruction".²⁰⁴ Currently, there are 43 offshore structures in the Gulf of Thailand. The first removals are likely to take place in the next few years.²⁰⁵

Questions and problems arise from the Thai contractual provisions and practice on environmental protection. To

mention a few, the concession system provides little more than the traditional requirement of "good petroleum industry practice" in terms of environmental protection. Neither precautionary and anticipatory approaches nor substantive preventive measures are required. Second, the nominal penalty charge set by the Petroleum Act suggests a rather casual attitude towards environmental responsibility. Indeed, a couple of thousand dollars is not substantial enough to compel concessionaires to take their environmental obligations seriously, and is absolutely insufficient for damage compensation caused by any kind of offshore pollution accidents. Third, with regard to the environmental fund provision, it seems that Thailand has used the provision as a hard currency generator rather than to address seriously the issue of environmental pollution. Fourth, some of the wording of environmental provisions is ambiguous and few detailed or explicit standards have been spelled out to govern the actual environmental protection process. For instance, terms such as "in a way instructed by the Minister" leave considerable scope for debate about the manner of pollution control and the abandoning of rigs.²⁰⁶ Finally, there is some theoretical confusion with respect to the abandonment obligation. The contract first provides that the government must be offered the structures upon termination of production, and it then requires the concessionaire to remove these government structures. Ultimately, the government is going to pay for

the removal because these costs are tax deductible. It may be argued that it would be much simpler for the government to remove the structures directly rather than complicating the whole process by requiring the concessionaire to do it with "reimbursement".

In addition to these inherent flaws in the contractual provisions, there are other unknowns to the concessionaire, such as whether existing environmental regulations will be applied to and enforced in the petroleum concession sector since no reference is made in either these regulations or in the petroleum legislation.²⁰⁷ More importantly,

The concession system managed by the Department of Mineral Resources has proved inadequate with regard to environmental factors because the department does not have the staff to administer these additional functions. No system is in operation at present that allows periodic review of miners' activities.²⁰⁸

In short, international oil companies in Thailand have been operating under no real and concrete obligation to environmental protection.

The issue of environmental provisions in the Thai concession system has been felt by many individuals and organizations, both within and outside Thailand. Proposals for change and recommendations to introduce more regulations to safeguard the environment have been heard frequently in recent years.²⁰⁹

The "New Terms" introduced in 1989 have by and large failed to make adequate improvement over the existing

provisions. What has been done is a simple addition to the existing structure of an insurance requirement, which reads:

As an assurance for obligation to prevent and make good such damages the concessionaire shall secure insurance coverage with an insurance company acceptable to the Government with coverage amount appropriate for its operations...²¹⁰

Beyond this, nothing more is introduced. This insurance programme is the only improvement achieved over the concession system in nearly 20 years. From this recent amendment, it is quite clear that Thailand still emphasizes reactive measures rather than proactive and anticipatory approaches as required by the recent development of international environmental law.

The above overview has provided enough evidence to suggest that Thailand's road to environmental protection in its concession system is far from complete. Some reconsideration of the basic contract structures is required if environment resources are to be adequately protected.

3. The modern concession contract and sustainable development

In a developing country such as Thailand, protection of environmental resources must contend with poverty and intense competition for access to natural endowments such as soil, forests and energy. Under relentless pressure from rapid population growth and commercial exploitation, many resources are being destroyed and depleted. For instance, there were 301

logging concessions throughout the country. All were granted in the early 1970s and carried a 30-year lease. For various reasons, the logging procedures provided in these concessions were not observed at all. The consequent rampant logging has caused serious environmental destruction.²¹¹ For another instance, tin used to be the commodity which helped build the nation and now has been exhausted and replaced in importance by zinc as an economic mineral. But the country's only zinc mine "is being depleted quickly".²¹²

This situation is also generally true for petroleum operations. The rapid development in Thailand in the past three decades has been energy intensive and the apparent absence of any significant supplies of petroleum left the country as one of the largest oil importers among developing countries at the end of 1970s. Almost 75 per cent of Thailand's total primary energy requirement is derived from imported crude oil.²¹³ Despite this critical situation in energy supply, the general level of awareness of sustainable development is very low and there is little acceptance of this principle both in and out of the government.

The preceding comprehensive survey of the terms and conditions of the Thai MCC has revealed that the system contains no requirements whatsoever for sustainable development. Rather, it contains incentives and requirements for *unsustainable* practice. For instance, all MCCs require concessionaires to "exert its *utmost efforts* to develop any

discovered petroleum field to the *maximum extent in consistence with good petroleum industry practice.*" (emphasis added)²¹⁴ Moreover, as examined, the contract basically hands over the exclusive rights to petroleum exploitation to the concessionaire. Consequently, conservation and sustainable development of the resource is ignored or discarded by these profit-minded companies.

In the recent past, Thailand has learned that industrialization can bring rapid economic growth. But industrialization based on fossil fuel energy can drive the development both ways: sustainable and unsustainable. Unfortunately, various indications demonstrate that Thailand may have headed in the wrong direction. The findings that have emerged from this case study point to the need for an explicit recognition of the principle of sustainable development in its development policies in general and in its MCCs in particular, if the country wants to have its current development sustained into the future.

VI. Assessment of modern concession contracts

After an extensive survey of Thailand's modern concession contract, a study of its major improvements as opposed to the traditional concession agreement appears feasible and necessary in order to appreciate its wide applicability and

future development.

1. Comparison of the traditional and modern concession contracts

The following table presents a brief survey of the major political, legal and fiscal aspects of the traditional and modern concession agreements.

Table 6: Comparison of Traditional and Modern Concession Contracts

	Traditional concession (1925 IPC)	Modern concession (1985 Gopher)
Duration	75 years	38 years + two renewals of 4 and 10 years each
Area	35,000 km ²	10,436 km ²
Rights granted	Exclusive rights to all facets of petroleum operation	Exclusive rights to petroleum operations except refinery
Auxiliary rights	Extensive rights to run communication systems, railways and other works and to use land both within and outside the concession area	Rights to construct pipeline and to use land both within and outside the concession area
Transfer of right	No limitation	Subject to Gov't approval

Table 6: (Continued)

	Traditional concession (1925 IPC)	Modern concession (1985 Gopher)
Management	Exclusively in the hands of concessionaire	Mostly in the hands of concessionaire
Gov't control	None	Limited control over the company and its operations
Bonus	None	Signature bonus \$40,000; Annual/production bonus: 27.5% 10,000-20,000 b/d; 37.5% 20,000-30,000 b/d; 43.5% over 30,000 b/d
MFC clause	Yes	None
Relinquishment	None	50% at the end of 5th year; 25% at the end of 8th year; final area not exceeding 12.5% of original area
Commencement of E	Within 8 months	Within 6 months
Work obligation	None	1st obligation period: 200 km of seismic survey and 2,400 km induced polarization survey, at least 2 exploration wells, minimum expenditure \$6 million; 2nd exploration period: additional geophysical survey, at least 1 well, minimum expenditure \$7 million; 3rd exploration period: obligations to be negotiated and agreed upon

Table 6: (Continued)

	Traditional concession (1925 IPC)	Modern concession (1985 Gopher)
Other obligations	Building a pipeline system with a capacity of not less than 3 million tons a year, and a refinery if required by Gov't	Annual benefit; preference for domestic services, Community Benefit Fund of Baht 500,000 throughout production; surface reservation fee; and other monetary contributions in the amount of Baht 5.75 million
Work reports	Operation report at the end of each year	Progress report and summary report of expenditure annually
Royalty	A fixed royalty of 4 shillings gold on each ton of oil produced; an annual royalty of 400,000 shillings gold	12.5% in cash or 1/7 in kind
Tax	No	50%
Title to oil	Owned by concessionaire at wellhead	Same as left
Title to equipment	Owned by concessionaire and become Gov't property free of charge upon expiration of concession	Same as left except the pipeline system which becomes gov't property upon completion
Domestic supply	At Gov't's request	Mandatory on first priority basis
Participation	None	Gov't option up to 20%

Table 6: (Continued)

	Traditional concession (1925 IPC)	Modern concession (1985 Gopher)
Employment & training	None	Mandatory
Customs duties	Exempted	Exempted but transfer of duty free goods subject to Gov't approval
Pricing	Set exclusively by concessionaire	Set by concessionaire with Gov't supervision
Stabilization clause	None	Yes
Dispute settlement	<u>Ad hoc</u> arbitration	<u>Ad hoc</u> arbitration
Choice of law	Not provided	Laws of Thailand and international law
Revocation	None	Revocation possible

Source: Compiled by the author.

2. Features of the modern concession contract

The above comparison of the basic terms and conditions of the traditional and modern concessions discloses both the retention of the classic structure and the enormous changes in the modernized format.²¹⁵ At the most basic level, the

fundamental concept of concession has remained intact and the legal status of the contracting parties has stayed unchanged.²¹⁶

On the other hand, the modern contract also differs from the traditional agreement in several important aspects. It provides for a uniform procedure under which concessionaires acquire similar rights. The key terms, particularly the fiscal package, have become more complex and, correspondingly, its original advantage of simplicity has been disappearing.

As to its substance, the modern concession has steadily incorporated new mechanisms to correct the imbalance between producing countries and exploiting companies. A typical modern concession might include the following provisions:

- (a) Limitations on area and duration of the concession;
- (b) Mandatory and progressive relinquishment programme;
- (c) Increased management control over petroleum operations;
- (d) Government participation;
- (e) Increase in and diversification of government's take.

Financial provisions of MCCs have been diversified and made more elaborate. A conspicuous development in this respect is the various "windfall profits" taxes, such as the SRB introduced recently in Thailand. This new device provides for supplementary taxation in cases where profits accruing to foreign investors exceed certain limits. The purpose of tax diversification is to increase the producing countries' take in relation to the profitability of petroleum operations; and

(f) Concessionaire's obligations to benefit the national economic development.

The foreign investor under a MCC is without exception required to comply with certain obligations to benefit the local society and economy. These obligations may arise in the pre-production period, such as in the training and employment of local personnel, giving preference to domestic goods and services available on a competitive basis, or in the production period, such as supplying a certain amount of oil to the domestic market. These are not only devices for capturing some additional economic rent, but also more important measures "for achieving broader policy objectives."²¹⁷

These are the principal features of a MCC, which constitute a real departure from a traditional agreement. The essential distinction between them can be summarized in two ways: equity participation and management control, though both are peripheral.

The merits of a MCC appear now apparent. The most positive aspect of the concession system is that the state's financial involvement is largely risk free and the administration is simple and comparatively low in cost. Revenue accruing to the state under the concession system can compare favourably with other arrangements when petroleum rent collecting is diversified.²¹⁸ It ought to be pointed out that the inherited advantages of simplicity and easy administration

in concession system has been diminishing along with the introduction of many new management and tax provisions.

However, there remain some negative aspects to the modernized concessions. While it is possible for the state to control operations through its regulatory powers, it does not usually participate in the management of oil companies' operations. After all, its role is still passive in essence.

3. Brief observation

The modernized concession format in Thailand has provided foreign companies with adequate exploration incentives and attracted much risk capital for petroleum development in the country. The stable contract terms, which have endured for almost 20 years with little change, have produced a positive cooperation relationship between the Government and foreign companies.

The different treatment of onshore and offshore development within a single contractual system represents another notable feature. Differences are found in such provisions as concession area, exploration period, relinquishment, royalty, etc. Of these special arrangements for offshore development, the abolition of all limits on the size of offshore concession area having a water depth of over 200 meters is extraordinary in modern petroleum contracts. In short, the Thai concession system offers more investment

incentives to offshore development which involves high risks and pioneer technology.

It is perhaps premature to assess the effect of the 1989 "New Terms" since they have been operative only for a short time. Nonetheless, two remarks may still be relevant. First, they do not constitute any departure from the modern concessions as a whole. Second, the introduction of smaller areas, shorter duration, flexibility in some terms and conditions, and progressivity in royalty, and an elastic policy framework within which changes can be announced, all reflect what may be said to be a prevailing trend in petroleum arrangements in developing countries. In short, Thailand's MCC terms are considered by some foreign oil companies as being "excellent".²¹⁹

Finally, it must be pointed out that the MCC in Thailand has incorporated few provisions on environmental protection and no provisions for sustainable development. Therefore, its improvement over the prototype in the respect of environmental sustainability is minimal.

VII. Summary

The concession system has gone through two distinct periods: its original form prior to 1950s and the modernized version thereafter. It is the oldest and still the most widely

used petroleum arrangement throughout the world. It is estimated that this form of contract is in effect in developed and developing countries which account for about 50 per cent of total worldwide production.²²⁰ This system "has the advantage of being a tried-and-true system that has proved it works."²²¹

The modern concession is a system that is flexible enough to accommodate different perspectives and interests of the contracting parties. Producing countries favour certain features of this agreement, such as its simplicity and easy administration, a high royalty which assures revenues from the first year of production, and a guaranteed stream of revenue that is not dependent upon the concessionaire's profitability. Foreign companies prefer such attributes as generous grants, less interference from the conceding state and the majority, if not entire, appropriation of production.²²²

From a developing country's point of view, "the new concessions satisfy most of the major demands of the host country including its authority to exercise some review of, and control over, concessionaire's decision..."²²³

Notes:

1. For a brief history of petroleum concessions in Thailand, see Chandler, A.T., "Evolution of the Thai Petroleum Concession", 10 OGLTR 287-97 (1987/88).
2. International Labour Office (ILO), India and Thailand: Social and Economic Effects of Petroleum Development by Jata Energy Research Institute with Jagannathan, C.R., and Tingsabadh, C. (Geneva: ILO, 1987), p.85 (hereinafter Thailand: Petroleum Development).
3. Ruangsuwan, C., "Evolution of the Petroleum Legislation of Thailand: A Case History", 6 Energy 1299-1302 (1981).
4. ILO, Thailand: Petroleum Development, *supra* note 2.
5. Ruangsuwan, *supra* note 3, pp.1299-1300.
6. Ruangsuwan, C., " The Development of Offshore Mineral Resources in Thailand", in Johnston, D.M., Gold, E. and Tangsubkul, P., ed., International Symposium on the New Law of the Sea in Southeast Asia: Developmental Effects and Regional Approaches (Halifax, N.S.: Dalhousie University, 1983), p.84.
7. Department of Mineral Resources (DMR), Development of Offshore Mining and Petroleum in Thailand, unpublished document, May 1989, Bangkok, Thailand, p.19 (hereinafter Offshore Development in Thailand).
8. For a description of these offshore blocks, see Suggestion by Government on Preparation of Application for Petroleum Concession, Doc. No. DMR/71/P1, September 16, 1971, in Barrows Company, ed., Asia and Australasia: Basic Oil Laws and Concession Contracts, Supp. 31 (New York: The Petroleum Legislation Co., 1973), pp. Thailand B 1-10 (hereinafter Asia Contracts); for a map of these blocks, see *ibid.*, Supp. 38, 1973, pp. Thailand B 1-10.
9. Energy Information Administration (EIA), The Petroleum Resources of Indonesia, Malaysia, Brunei and Thailand (Washington, D.C.: Depart. of Energy, 1984), p.79.
10. Ruangsuwan, *supra* note 3.
11. For information on the annual concession activities in Thailand since 1971, please consult the annual report series: Petroleum Development in the Far East, AAPG Bull., Vol. 55, No. 10, 1971 and the same number of every subsequent volume.

12. Based on information from DMR, Offshore Development in Thailand, *supra* note 7, p.19 and other sources. For information of the concessionaires and their exploration blocks and areas holding prior to 1990, see Figure 1 and Table 2, DMR, Offshore Development in Thailand, *ibid.*, pp.23-26.
13. *Ibid.*, p.15.
14. O & G J., November 26, 1990, p.30.
15. "Exploration Pace Slated to Pick up on 13th Round Acreage in Thailand", O & G J., September 23, 1991, p.12.
16. Data collected by the author.
17. See generally, Achalabhuti, C., "Offshore Hydrocarbon Production and Petroleum of Thailand", 6 Energy 1247 (1981); Polahan, P., "Petroleum Exploration in Thailand", 10 Energy 475 (1985).
18. Muller and Klann, *infra* note 42, p.43. DMR, Offshore Development in Thailand, *supra* note 7, p.20.
19. DMR, *ibid.*, p.18.
20. McDorman, T., "Thailand and the Law of the Sea", 9 Marine Policy 292 (1985). Ake-uru, C., "Thailand and the Law of the Sea", a paper presented at the International Conference on East Asia and the Law of the Sea, 3-6 July 1984, Seoul, Korea, pp.1-10.
21. U.N. Economic and Social Commission for Asia and Pacific (ESCAP), Study on the Implications of the Law of the Sea: Vol. 1, Thailand and the Law of Sea (New York: United Nations, 1990), p.3.
22. U.N. Department of Publication Information, A Quiet Revolution: the United Nations Convention on the Law of the Sea (New York: United Nations, 1984), p.41.
23. Thailand used to be ranked seventh among the world top fishing countries in 1972 and was considered then as a distant-water finishing nation.
24. Proclamation on Demarcation of the Continental Shelf of Thailand in the Gulf of Thailand dated 18 May B.E. 2516 (1973), in Barrows Company, Asia Contracts, *supra* note 8, Supp. 48, 1976, pp.54-56.
25. ESCAP, Implications of the Law of the Sea, *supra* note 21, p.10.

26. Announcement of the Office of the Prime Minister Concerning Baselines and International Waters of Thailand dated 11 June B.E. 2513 (1970), in Gov't Gazette, Vol. 87, June 12, 1970, p.52; also reprinted in Ake-uru, *supra* note 20, Annex 3.

27. For a discussion of Thailand's EEZ, see ESCAP, Implication of the Law of the Sea, *supra* note 21, pp.3-4.

28. For the maritime boundary delimitation agreements, see List of Annexes(1-13), Ake-uru, *supra* note 20, pp. unnumbered.

29. Polahan, P., " Thailand-Malaysia Memorandum of Understanding: A Chronology", 6 Energy 1355 (1981); and Ariffin, D.H., "The Malaysia Philosophy of Joint Development" 10 Energy 533 (1985). For the text of the Memorandum of Understanding, see Appendix, Polahan, *ibid.*, pp.1356-57.

30. Gao, Z., "South China Sea Dispute and the Prospects for Joint Development", a paper presented at the 1991 Maritime Strategy Series Conference: Maritime Interests, Conflict, and the Law of the Sea, Halifax, Canada, June 20-23, 1991, p.18.

31. O & G J., February 11, 1991, p.31.

32. For more information on Thailand's maritime boundary problems, see Kriangsak, k., The Law of the Sea and Maritime Boundary Delimitation in South-east Asia (New York: Oxford University Press, 1987).

33. Thailand: Government Notice of 28 August 1961 Re Petroleum Exploration Applications and Government Announcement of September 1961 on Condition for Petroleum Exploration, in Barrows Company, Asia Contracts, *supra* note 8, Supp. 11, 1966, pp. Thailand, B 0-1 and A 0-1.

34. *Ibid.*, the guidelines include:

(a) each applicant can only apply for not more than three concession areas and each of which shall not exceed 25,000 km² in area;

(b) standard exploration time shall not be longer than five years from the date of concession grant;

(c) the Government reserves the right to collect royalties;

(d) total redemption to the Kingdom during production period shall not exceed fifty parts per hundred of the net profit.

35. Barrows Company, ed., Petroleum Legislation, Supp. 4 (New York: the Barrows Company Inc., 1972), p.25; Please note that the "Consideration Basis" was not officially issued until 1967 under the title of "Consideration Basis in Applying for

Petroleum Exploration and/or Production".

36. *Ibid.*

37. Petroleum Act B.E. 2514 of 1971, and Petroleum Income Tax Act B.E. 2514 of 1971, Gov't Gazette, Special Issue, Vol. 88, April 23, 1971, p.43; also reprinted in Barrows Company, Asia Contracts, *supra* note 8, Supp. 30, 1971, pp. Thailand A 0-29, and B 0-19.

38. *I.e.:*

1. Petroleum Act No. 2 B.E. 2516 of December 4, 1973;
2. Petroleum Act No. 3 B.E. 2522 of December 28, 1979;
3. Petroleum Income Tax Act No. 2 B.E. 2516 of December 4, 1973;
4. Petroleum Income Tax Act No. 3, B.E. 2522 of 1979;
5. Royal Decree Prescribing Petroleum Income Tax Rates B.E. 2514 of September 3, 1971;
6. Royal Decree Prescribing Petroleum Income Tax Rates, No. 2 B.E. 2522 of 1979;
7. Royal Decree Prescribing Capital Allowance under Petroleum Income Tax Act B.E. 2516 of December 4, 1973; and
8. Ministerial Regulations No. 12 B.E. 2524 of 1981.

Original documents obtained by the author from Depart. of Mineral Resources, Ministry of Industry, Thailand; Some of these documents can also be found in Barrows Company, Asian Contracts, *supra* note 8, various Supps.

For a complete listing of current legislation governing petroleum exploration and development, see Attachment 2, Chandler, *supra* not 1, pp.295-96.

39. For a summary of the petroleum act, see Barrows Company, Petroleum Legislation, *supra* note 35, Supp. 60, 1986, pp.48-51.

40. Sec. 3 of Petroleum Act and sec. 3 of Petroleum Income Tax Act, *supra* note 37.

41. *Ibid.*, secs. 5 and 112 of Petroleum Act.

42. Muller, K, and Klann, S., "Thailand", 9 O & G Investor 40 (1989). The United Nations Centre on Transnational Corporations (UNCTC) was hired by the Thai Government to review its concession system. The centre presented to the government in 1983 a report evaluating its legislation and recommended certain amendments. The said report is considered by both sides as confidential and this author was regrettably declined for a copy.

43. For a review of the Thai efforts to revise its petroleum legislation and a survey of proposals for change by consultants to the Government, see Chandler, *supra* note 1,

pp.290-92.

44. (1) Petroleum Act No. 4 B.E. 2532 of August 4, 1989 (amendments to previous Petroleum Acts);
 (2) Ministerial Regulations No. 14 B.E. 2532 of December 8, 1989 (fees applicable to concession areas under new terms);
 (3) Ministerial Regulations No. 15 B.E. 2532 of December 8, 1989 (special reduction/allowance under the new SRB);
 (4) Ministerial Regulations No. 16 B.E. 2532 of December 8, 1989 (revised application for petroleum concessions); and
 (5) Ministerial Regulations No. 17 B.E. 2532 of December 8, 1989 (revised model concession agreement).

Original documents obtained by the author from the DMR, Ministry of Industry, Thailand, in Gov't Gazette, Vol. 106, Part 227, Special Issue, December 25, 1989.

For a summary of these regulations, see Chandler, A. T., "Thailand: Petroleum-Concession-New Form Introduced" 8 J.E. & Nat. Res. L. 22-25 (1990); ———, "Current Development in the Thai Petroleum Concession", 7 OGLTR 206 (1987/88).

45. Sec. 36 of Petroleum Act No. 4, *supra* note 44.

46. *Ibid.*

47. Ministerial Regulation No. 4 B.E. 2514 of 1971 (model concession contract), Barrows Company, Asia Contracts, *supra* note 8, Supp. 35, 1973, pp. Thailand A 0-17; and Ministerial Regulation No. 17 B.E. 2532 of 1989 (revised model concession contract), *supra* note 44.

48. For information on petroleum organizational framework, see ILO, Thailand: Petroleum Development, *supra* note 2, pp.100-02.

49. Petroleum Authority of Thailand Act B.E. 2521 of 1978, in Gov't Gazette, Vol. 95, December 28, 1978, p.152; also reprinted in Barrows Company, Asia Contracts, *supra* note 8, Supp.79, 1978, pp.57-74.

50. *Ibid.*

51. The Petroleum Committee consists of the following five subcommittees:

- (1) Sub-committee to consider applications for petroleum concessions;
- (2) Sub-committee to consider natural gas pricing;
- (3) Sub-committee to consider usage of natural gas;
- (4) Sub-committee to consider matters under sections 69 (immigration) and 70 (impact of goods exempt from custom duty and business tax) of the Petroleum Act; and
- (5) Sub-committee on legal matters.

52. Secs. 15-21 of Petroleum Act, *supra* note 37.

53. Barrows, "A Survey of Incentives in Recent Petroleum Contracts", in Beredjick, N. and Wälde, T., ed., Petroleum Investment Policies (London: Graham & Trotman, 1988), p. 226.

54. Cf. *supra* ch. 2, III (1).

55. For discussions of the Thailand's MCC, see Jirananda, K. and Cristal, R.J., "Thailand", Int'l Fin. L. Rev., Special Supp., April 1991, pp.71-74; Muller and Klann, *supra* note 42, pp.38-49; Chandler, A., "The Thai Petroleum Concession", 2 J.E. & Nat. Res. L. 48-54 (1984); ———, *supra* note 1, pp.287-97; ———, *supra* note 44.

56. Documents and concession contracts used in making the following observation include, *inter alia*:

(1) Petroleum Act B.E. 2514 of 1971 and Petroleum Income Tax Act B.E. 2514 of 1971, *supra* note 37;

(2) Ministerial Regulations No. 4 B.E. 2514 of 1971 (model concession contract), and Ministerial Regulations No. 17 B.E. 2532 of 1989 (revised model concession contract), *supra* note 47;

(3) Triton Oil & Gas Corp. Concession No. 8/2515/12 Covering Offshore Exploration Blocks 18 & 19 dated October 12, 1972, in Barrows, Asia Contracts, *supra* note 8, Supp. 38, 1973, pp. Thailand A 0-13; and

(4) Gopher Oil Ltd. Petroleum Concession No. 4 2528/29 dated November 21 1985, *ibid*, Supp.89, 1986, pp.77-89.

Hereinafter the above contracts will be collectively cited as "the Model and Individual MCCs".

57. Ministerial Regulations No. 3 B.E. 2514 of 1971, *ibid.*, Supp. 79, 1983, pp.52-53.

58. *Ibid.*

59. Bunnag, J., "Thailand's Mineral Resources Crisis—A Legal Practitioner's Viewpoint", 10 J.E. & Nat. Res. L. 164 (1992).

60. The Thai currency unit. The approximate exchange rate in 1993 is: \$1 = Baht 26.

61. The application fee under the 1971 Petroleum Act was Baht 100. This fee was increased to Baht 50,000 by the Petroleum Act No. 4 promulgated on August 4, 1989 and reduced to Baht 10,000 by Ministerial Regulation No. 14 of December 8, 1989.

62. Sec. 23 of Petroleum Act, *supra* note 37.

63. *Ibid.*, sec. 22.

64. For an account of the nature of the Thai government, see Bunnag, *supra* note 59, pp.165-166.

65. Data collected by the author.
66. At the time of this writing, the "Old Terms" are still in effect. References to the "Old Terms" are made in the past tense for the sake of clarity.
67. *Supra* note 62, sec. 28.
68. Department of Mineral Resources Announcement B.E. 2527, dated August 9, of 1984, in Barrows, Asia Contracts, *supra* note 8, Supp. 89, 1986, p.86.
69. Barrows Company, Petroleum Legislation, *supra* note 35, Supp. 60, 1986, p.51; see also DMR, Offshore Development in Thailand, *supra* note 7, p.18.
70. Sec. 9 of Petroleum Act No. 4, *supra* note 44.
71. *Ibid.*
72. *Supra* note 62, secs. 25 and 26.
73. *Ibid.*
74. Sec. 7 of Petroleum Act No. 4, *supra* note 44.
75. *Supra* note 62, secs. 22-62; and clauses 3, 4, 7 and 8 of the Model and Individual MCCs, *supra* note 56.
76. DMR, Offshore Development in Thailand, *supra* note 7, p.18.
77. *Supra* note 62, sec. 65.
78. *Ibid.*, sec. 66.
79. Clause 7 of the Model and Individual MCCs, *supra* note 56.
80. Sec. 48 of Petroleum Act, *supra* note 37.
81. Sec. 15 of Petroleum Act No. 4, *supra* note 44.
82. Many other countries using a concession system adopt two separate licences to govern petroleum operations: exploration licence and production licence. The exploration licensee receives no right to produce and, in some cases, no assurance of any priority in obtaining a production license over the area explored by it. see Rønne, A. and Budtz, M., "The Legal Framework for Exploration for and Production of Oil and Natural Gas in Denmark", 3 J.E. & Nat. Res. L. 153-68 (1985).
83. Secs. 25 and 31 of Petroleum Act, *supra* note 37; clauses 3 and 4 of the Model and Individual MCCs, *supra* note 56.

84. Sec. 7 of Petroleum Act No. 4, *supra* note 44.
85. Secs. 42 and 45 of Petroleum Act, *supra* note 37; cf. "Country Revision: Thailand", in Barrows Company, Petroleum Legislation, *supra* note 35, p.49.
86. *Ibid.*, sec. 26.
87. *Supra* note 84, sec. 8.
88. *Ibid.*, sec. 14.
89. *Ibid.*, sec. 13.
90. *Ibid.*
91. *Ibid.*, sec. 17.
92. *Ibid.*
93. *Ibid.*
94. *Ibid.*
95. Cf. clause 4 of the Triton and Gopher concessions, *supra* note 56.
96. *Ibid.*, clause 4 of Triton Concession.
97. AAPG Bull., Vol. 71, No. 10, 1987, p.244.
98. Sec 33 of Petroleum Act, *supra* note 37.
99. Sec. 4 of Petroleum Act No. 2, *supra* note 38.
100. *Ibid.*, sec. 7 of Petroleum Act No. 3.
101. *Ibid.*, sec. 6.
102. Clause 5 of Ministerial Regulation No. 17, *supra* note 44.
103. *Ibid.*
104. Sec. 10 of Petroleum Act No. 4, *supra* note 44.
105. Thailand is suing Bass Strait Oil & Gas (Holdings) NL for more than \$7.5 million for allegedly breaching terms of a concession. The Melbourne-based company was obliged to disburse \$8.65 million for exploratory work, including drilling one well in its block covering 5,560 km² during a three year period beginning in November 1985, but spent only

\$1.14 million. DMR took the legal action after failing to negotiate a settlement. It also seeks 7.5% in interest on the stipulated amount. This lawsuit is the first one of its kind in Thailand. Cf. "Thailand's Oil Prospects Brighten", O & G J., September 21, 1992, p.33.

106. Sec. 76 of the Petroleum Act, *supra* note 37.

107. Sec. 20 of Petroleum Act No. 4, *supra* note 44.

108. *Supra* note 106, sec. 36.

109. Sec. 5 of Petroleum Act No. 2, *supra* note 38.

110. *Ibid.*, sec. 37.

111. *Supra* note 106, sec. 37.

112. *Ibid.*

113. Sec. 11 of Petroleum Act No. 4, *supra* note 44.

114. *Ibid.*, sec. 12.

115. Clause 6 of Triton concession, *supra* note 56.

116. For an account of the special advantages, see Chandler *supra* note 1, pp.289-290.

117. *Ibid.*

118. *Ibid.*

119. Ministerial Announcement of March 22, 1985, in Barrows Company, Asia Contracts, *supra* note 8, Supp. 89, 1986, pp.84-85.

120. Clause 6 of the Gopher concession, *supra* note 56.

121. *Ibid.*

122. Condition 2 (2.2) of the 1985 Ministerial Announcement, *supra* note 119.

123. Chandler, A. "Thailand: Oil & Gas-Concessions-Special Conditions", 3 J.E. & Not. Res. L. 64 (1985).

124. Condition 2 (2.1) of the 1985 Ministerial Announcement, *supra* note 119.

125. For a detailed explanation and examples of annual benefit, see Explanatory Notes to the 1985 Ministerial Announcement, *supra* note 119, pp.86-88.
126. Sec. 36 of petroleum Act No. 4, *supra* note 44.
127. Condition 2 (2.3) of the 1985 Ministerial Announcement, *supra* note 119.
128. For a discussion of domestic sales price, see Chandler, *supra* note 1, pp.289-90, 297.
129. *Ibid.*
130. Condition 2 (2.4) of the 1985 Ministerial Announcement, *supra* note 119 .
131. *E.g.*, clause 6 of Gopher concession, *supra* note 56.
132. Chandler, *supra* note 1, p.290.
133. *E.g.*, clause 6 (2) of the Gopher concession, *supra* note 56.
134. *Cf.* Chandler, *supra* note 1, p.297.
135. Clause 7 of the Model and Individual MCCs, *supra* note 56.
136. *Ibid.*
137. Sec. 59 of Petroleum Act, *supra* note 37.
138. Sec. 18 of Petroleum Act No. 4, *supra* note 44.
139. Sec. 71 of Petroleum Act, *supra* note 37; and clause 9 of Ministerial Regulation No. 4, *supra* note 44.
140. Clause 9 of Ministerial Regulation No. 17, *supra* note 44.
141. Ministerial Regulation No. 2 B.E. 2514 of September 13, 1971, in Barrows Company, Asia Contracts, *supra* note 8, p. Thailand C 3.
142. Art. 2 of Ministerial Regulation No. 14, *supra* note 44.
143. *Ibid.*, art. 3.
144. Sects 83 and 84 of Petroleum Act, *supra* note 37.
145. Barrows Company, Petroleum legislation, *supra* note 35.
146. Sec. 82 of Petroleum Act, *supra* note 37.

147. *Ibid.*, sec. 87.
148. Sec. 22 and Schedule of Royalty of Petroleum Act No. 4, *supra* note 44.
149. *Ibid.*, secs. 24 and 25.
150. *Ibid.*, sec. 27.
151. *Ibid.*, sec. 21.
152. Sec. 85 of Petroleum Act, *supra* note 37.
153. Sec. 27 of Petroleum Act No. 4, *supra* note 44.
154. *Ibid.*
155. Royal Decree Prescribing Petroleum Income Tax Rates B.E. 2541 of September 3, 1971, in Barrows Company, Asia Contracts, *supra* note 8, Supp. 35, 1973, p. Thailand B 1. When the tax rate is 35%, the post-tax percentage of the remittance tax is therefore $(65 \times 0.2308)\%$ or 15%, making a total tax rate of $(35 + 15)\%$ or 50%.
156. As compared to Malaysia: 45%; Indonesia: 48%; Brunei 30%; and Philippines: 35%.
157. Division 7 of Petroleum Act No. 4, *supra* note 44.
158. *Ibid.*, see also Ministerial Regulations No. 15 B.E. 2532 of 1989 (special reduction/allowance under the new SRB), *supra* note 44
159. *Supra* note 157. The "annual revenue per one meter depth of well" is determined in accordance with the following procedures:
- (1) calculate the annual petroleum income for the year, and adjust for inflation and exchange rates;
 - (2) calculate the accumulated total metres of all wells (exploration wells, appraisal wells, production wells, etc.) drilled during the period of the concession; and
 - (3)

Annual revenue		Adjusted Annual Petroleum Income
per one metre	=	<hr style="width: 100%; border: 0.5px solid black;"/>
depth of well		Total depth of all wells + GSF
- "GSF" means "Geological Stability Factor", which shall be fixed for each geological region of Thailand, and shall not be less than 150,000 metres. The number will increase in areas in which drilling is more difficult. See Chandler, "New Form Introduced", *supra* note 44, p.225.

160. *Ibid.*

161. Cited in Chandler, *supra* note 44.

162. Jirananda and Cristal, *supra* note 55, p.72.

163. *Ibid.*

164. Average Government Take in the Asian Countries(%)

Fields	Malaysia	Indonesia	Brunei	Philippines
large	89	85	76-88	30-45
Small	89	85	10	30-45

Source: Based on information from Asian Taxation Seminar, June 20-25 1988, Jakarta.

165. Cf. clauses 10 of Ministerial Regulations No. 4 and No. 17, *supra* note 44.

166. Sects 76 and 77 of the Petroleum Act, *supra* note 37.

167. Clause 11 (2) of Petroleum Act No. 4, *supra* note 44.

168. *Ibid.*, (4).

169. *Ibid.*, (5).

170. *Ibid.*, (6).

171. Sec. 64 of Petroleum Act, *supra* note 37.

172. Clause 12 of Ministerial Regulation No. 4 and the Triton and Gopher concessions, *supra* note 56.

173. *Ibid.*, clause 15 (4).

174. *Ibid.*, clause 7 (7).

175. *Ibid.*, clause 13.

176. Clause 13 (9) of Ministerial Regulation No. 17, *supra* note 44.

177. *Ibid.*, clause 13 (11).

178. Clause 13 of Ministerial Regulation No. 4 and Triton and Gopher concessions, *supra* note 56.

179. Sec. 26 of Petroleum Act No. 4, *supra* note 44.

180. Sec. 51 of Petroleum Act, *supra* note 37; sec. 16 of Petroleum Act No. 4, *supra* note 44; clause 14 of Ministerial Regulations No. 4 and No. 17. *supra* notes 47.

181. *Ibid.*, clause 15 .

182. *Ibid.*

183. For instance, of the 44 International Maritime Organization (IMO) conventions related with marine environment, Thailand has ratified only four, including Convention on Safety of Life at Sea (SOLAS), as of August 1991. See Gold, E., "National and International Shipping Policies and the Marine Environment: the Perspective of Vietnam", a paper delivered at the Vietnam Conference on Maritime Policies, Hanoi, Vietnam, February, 1991, p.28.

184. Cited in Jolly, D., *infra* note 196, p.46.

185. Thailand, Environmental Problems in Thailand (report to the United Nations Conference on the Human Environment, June 5-16, 1972, Stockholm), p.8.

186. Chittmittrapap, W., "Joint Ventures in Thailand--Business Forms, Incentives, Taxes", 12 EAER 8, 21-26 (1990).

187. Cf. Karaosmanoglu, A., "Environment, Poverty and Growth: the Challenge of Sustainable Development in Asia", 55 Vital Speeches of the Day 396-400 (1989); Whiteside, T., "Annals of the Cold War: the Yellow-Rain Complex", 66 New Yorker 44-68 (1991); Stubbs, R.C., Environmental Administration in Thailand, *infra* note 192.

188. Lohmann, L., "Who Defends Biological Diversity? Conservation Strategies and the Case of Thailand", 21 Ecologist 5-13 (1991).

189. Sricharatchanya, P., "Thai Government Finally Decides to Preserve Forests: Too Little, Too Late", 143 Far E. Econ. Rev. 40 (1989); Karaosmanoglu, *supra* note 187, p.397.

190. Sabhasri, S. and Wibulswas, P., "Thai Energy Sources and Related Environmental Issues", 20 Energy Policy 522-26 (1992).

191. For instance, the Thai Government did not announce an indefinite suspension of all logging in the southern region until villages there were washed away in flash floods or buried under mud and logs, leaving at least 350 dead in November 1988 as a result of decades of forest destruction. See Sricharatchanya, *supra* note 189.

192. Stubbs, R.C., Environmental Administration in Thailand (Honolulu: Environment and Policy Institute of East-West Centre, Research Report No. 5, 1981), p.45.
193. Arts. 77, 78 and 93 of the Constitution B.E. 2517 of 1974, cited in *ibid.*, pp.6-7.
194. For a solid discussion on the environmental legislation and Administration, see *ibid.*, pp.10-14.
195. For a discussion of these laws, see *ibid.*, pp.31-58.
196. *Ibid.*, pp.10, 14, 52, 73-74; Jolly, D., "Thailand: Trade and Investment—Cleaning up Their Act", 155 Far E. Econ. Rev. 46 (1992).
197. For a brief summary of Thailand's new environmental laws, see Jolly, *ibid.*, pp.46-48.
198. *Ibid.*, p.46.
199. Stubbs, Environmental Administration in Thailand, *supra* note 192, p.46.
200. Sec. 75 of Petroleum Act, *supra* note 37.
201. *Ibid.*, sec.108.
202. *E.g.*, Esso Exploration Inc. Petroleum Concession No. 2 /2522/17 dated March 16, 1979, in Barrows Company, Asia Contracts, *supra* note 8, Supp. 67, 1980, p. 72.
203. Clause 40 of the 1981 Ministerial Regulation No. 12, *supra* note 38.
204. Clause 15 (4) of Ministerial Regulation No. 17, *supra* note 44.
205. Removal cost estimates are not available from the Thai authority, but are possible to be in the range of \$2-\$12 million per installation depending on the water depth of the specific structure. *Cf.* Cameron, P., "Offshore Rigs: Removal Costs", 11 EAER 18 (1989).
206. *Ibid.*, p.18.
207. Bunnag, *supra* note 59, p.169.
208. Stubbs, Environmental Administration in Thailand, *supra* note 192, pp.52-53.
209. Chandler, *supra* note 1, pp.290-92.

210. Clause 11 (2) of Ministerial Regulation No. 17, *supra* note 44.
211. Sricharatchanya, *supra* note 189, p.40.
212. Bunnag, *supra* note 59, p.164.
213. Economist Intelligence Unit (EIU), Country Profile: Thailand and Burma 1990-91 (London: Business International Ltd., 1991), p.18. It was estimated that in the 1980s, the imported oil bill reached \$2.5 billion or almost 50% of the country's total export revenues.
214. Clause 11 of the Model and Individual MCCs, *supra* note 56.
215. UNCTC, Main Features and Trends, UN Doc. ST/CTC/29, 1983, pp.6-7.
216. Smith, E.E., "Typical World Petroleum Arrangements", a paper delivered at Rocky Mtn. Min. Law Fdn., International Resources Law: a Blueprint for Mineral Development, February 18-19, 1991, pp. 22-23.
217. Cf. Smith, E.E. and Well, jr., L.J., "Mineral Agreements in Developing Countries", 69 AJIL 572-81 (1975).
218. UNCTC, Alternative Arrangements, UN Doc. ST/CTC/43, 1982, p.48.
219. Muller and Klann, *supra* note 42, p.45.
220. Boulos, A.J., "Mutuality of Interests between Company and Government", in Energy Law '90 (London: Graham & Trotman, 1990), p.18.
221. Blinn, K.W. et al., International Petroleum Agreements (London: Euromoney Publications, 1986), p.68.
222. Cf. Boulos, *supra* note 220, p.18.
223. Suleiman, D.A., "The Oil Experience of the United Arab Emirates and its Legal Framework", 6 J.E. & Nat. Res. L. 7-8 (1988).

Chapter Four

Indonesia's Production-Sharing Contract

I. Introduction

Despite the availability of the modernized concession contract and its ability to satisfy "most of the demands" of developing countries, many energy-producing countries embarked vigorously on negotiations of new contracts that can more faithfully meet their political as well as economic aspirations. Indonesia is perhaps the best representative of these countries because of its many unique arrangements to deal with foreign companies operating in the country. The most important innovation by Indonesia is the production-sharing contract (PSC), an entirely new legal instrument for defining the government-company relationship in the petroleum sector.

II. Indonesia's petroleum industry in retrospect

Indonesia has a long history of over 100 years as an established oil producer. It was one of the first countries to use oil and to deal with western oil companies.¹ Indonesia was controlled by various foreign groups during its early history, but the islands were finally colonized by the Dutch

late in the 16th century.

The quest for oil by the Dutch colonial powers in the Netherlands East Indies (NEI), now Indonesia, began in 1871, only 12 years after the earliest North American drillings in Pennsylvania. The first commercial oil was produced in June 1885 in North Sumatra. It was soon followed by discoveries in other parts of the country in the early 1900s.

These early discoveries marked not only the first milestone of the country's petroleum industry, but also the beginning of colonial exploitation of natural resources in Indonesia. The first foreign oil company to appear on the islands was Royal/Dutch Shell, which was founded on June 16, 1890 to produce and refine oil in Indonesia.² By the early 19th century, Shell dominated the oil industry in the NEI. In spite of the Dutch domination and discrimination, American companies were eventually able to squeeze into Indonesia and put a finger in the petroleum pie.³

Oil production before the First World War was only 25,000 b/d, and had grown to 160,000 b/d by the start of the Second World War.⁴ The post-war period experienced a dramatic increase in production and exploration. Production during the 1946-1965 period reached 480,000 b/d. The total production for the 1893-1981 period was about 10.06 billion barrels.⁵

The only OPEC member in Southeast Asia, Indonesia currently ranks 14th among the world's oil producing countries and is the world's largest exporter of liquefied natural gas

(LNG).⁶ Its average production increased to 1.45 million barrels of oil and 5.4 billion cbft of gas per day in 1992.⁷ It is estimated that Indonesia's proven and probable oil reserves total 11 billion barrels, and its proven gas reserves 67.5 trillion standard cbft.⁸ Of this estimate, about two-thirds of the total reserves are believed to be located offshore.⁹ Thus, offshore development holds the future of Indonesia's petroleum industry.

The year 1966 witnessed a shift in the focus of interest from onshore oil to offshore oil in Indonesia. The geological indications show that Indonesia's extensive continental shelf holds good prospect for oil. Furthermore, drilling conditions are very favourable compared with those of the North Sea, the offshore areas being shallow and calm and the temperatures warm throughout the year. Indonesia opened its offshore to foreign oil companies in the mid- 1960s. The 1970s were regarded as the "decade of the offshore" for Indonesia as half of the 12 major fields discovered in this decade were offshore ones. Offshore oil production began in 1970 and accounted for roughly 35 per cent of Indonesia's total output in 1979.¹⁰ The annual growth of offshore production averaged about 4.5 per cent during the period of 1980-1989.¹¹

Oil has been crucial to the Indonesian economy. It remains the single most important source of foreign exchange and revenues. Crude oil and refined petroleum products still accounted for 28 per cent of total export earnings in 1989, as

compared with its peak of almost 82 per cent in 1981. Indonesia's petroleum exports were valued at \$10.7469 billion in 1990; and foreign oil companies taxes provided more than 39 per cent of domestic government revenues in the 1989-1990 fiscal year.¹²

III. Legal history of Indonesia's petroleum agreements

1. Concession system

Indonesia's history of petroleum agreements is essentially one of concession which underwent two phases. The first concession was granted by the colonial government in 1882 for exploration in North Sumatra, which resulted in the first commercial discovery in 1885.¹³ The country's first general mining legislation was not enacted until 1907 when the East Indies Mining Law of 1899, promulgated by the Netherlands Parliament, was officially received in the colony by the Governor-General.¹⁴ This law was re-enacted under the title of Mining Ordinance for NEI on October 1, 1930, to introduce supervening amendments.¹⁵

The law of 1899 established a concession system which paralleled the contractual principles then governing petroleum concessions in the Middle East and applied to all mineral resources, including petroleum and gas. As a result of this

legislation, all mineral rights were vested in the colonial government, which by statute was authorized to grant mining concessions to private parties.¹⁶ By 1924, the number of oil concessions had increased to 119, covering a total area of 6,400 km².¹⁷

Under this system, the concession term ran up to 75 years.¹⁸ The concessionaire was granted exclusive rights to explore for, produce and market petroleum with only a few obligations to the conceding state, and retained management rights over all phases of the enterprise.¹⁹ The major financial term was a four per cent royalty, in the form of a "gross production tax", based on the gross proceeds,²⁰ rather than on the volume of the output, which was then more common elsewhere.

In 1918, the colonial government revised the regulations on mining concession, making them less favourable to oil companies. Under the new terms, the concession period was reduced to 40 years. The oil company had an obligation to drill and to return those parts of the concession area that had no oil prospects. The company was further obliged to pay a profit tax amounting to as much as 20 per cent of the net profit.²¹ These concessions were historically known as "5A contracts/agreements" as they derived their legitimacy from Section 5A of the 1918 amendment to the 1899 law.²²

The 5A contracts were identical to concessions, but the rights and obligations of those entrusted with mining

authority were set out in more detail with regard to exploration and exploitation, and the colonial government's take in petroleum proceeds was marginally increased.

The 1899 East Indies Mining Law as amended in 1930 remained valid until 1960, but was not operative during the period of 1942-1945 because of the Japanese wartime occupation of the colony. Soon after the Second World War, the major oil companies returned to Indonesia to resume their operations. To facilitate their reconstruction programs, the Dutch colonial government adopted a "let alone" policy which exempted reconstruction funds from foreign exchange and customs controls. Foreign companies conducted their operations under the so-called "let alone" agreements signed with the colonial government in 1948.²³

Under the "let alone" agreements, foreign companies could retain all earnings from petroleum sales as long as they agreed to provide from their own overseas sources the necessary funds required to restore their production facilities and oil fields. But some later "let alone" agreements were able to include a tax arrangement approximating the 50-50 formula that prevailed then in other producing countries.

The "let alone" agreements were continued by Indonesia after its independence in 1945 until 1960.²⁴ These agreements simply allowed the 5A contracts to remain in effect pending the introduction of a new legislation.

After independence, anti-Dutch and nationalistic feelings continued to run high and the foreign oil companies and their concession agreements became the target of increasing criticism and hostility from both the public and government circles.²⁵ As a result, Indonesia began to postpone the granting of any concessions. This attitude was hardened in 1951 when the Parliament passed a resolution to form a commission with two purposes: to look into oil and mining problems while the country was developing a new oil policy; and to draft a mining law in harmony with present conditions. This freeze, which lasted for about 10 years, caused stagnation in petroleum development, which was not beneficial to either Indonesia or foreign investors.

After eight years of deliberation, the new legislation was passed in 1960; eventually it repealed the colonial mining laws. The mining sector was divided into two categories: hard minerals, governed by Law No. 37, and oil and gas, by Law No. 44.²⁶ The existing concessionaires were required by the new laws to terminate their concessions and act as contractors of the state enterprise, if required, for the execution of petroleum operations.

Negotiations to terminate the concession agreements between the government and oil companies started after passage of the new law and final agreements were reached in 1963 to bring to an end all existing concession agreements.²⁷ By 1963, all concessions were transferred into "work agreements".

In sum, the early history of Indonesia's petroleum agreements before 1960 is one of concession, though it was termed differently. Foreign companies operated in the country under a system not unlike the concession employed in the Middle East and elsewhere. In the words of President Soeharto of Indonesia:

The exploitation and utilization of oil served the colonialists' interests. They were the ones who totally controlled and decided everything related to oil, whereas our nation, as the owner of this essential natural resource, felt practically no benefit from it.²⁸

2. Contract of work

In Indonesia, a new type of contract replacing the concessions came into being in 1963 when the government signed with each of the three existing companies new agreements which incorporated the details of their final negotiation pact.²⁹ These arrangements became known as "contract of work" (Perjionjion Karya or Kontrak Karya).

The term "contract of work", or "work contract", is employed to describe a type of arrangement under which the foreign oil company, instead of being a concession holder, is simply a contractor to the government and is entitled to share some profit from or purchase a certain percentage of production in exchange for the service rendered.³⁰

The terms and features of the work contract may be deduced from the provisions set out in the 1963 Stanvac

contract:³¹

(a) All oil and gas are national assets under the control of the state; state enterprises were given the authority to develop these resources, whereas foreign companies could act only as contractors;³²

(b) The term of the contract was 20 years for the Old Area (formal concession area) and 30 years for New Areas;³³

(c) The contract encompassed an Old Area of 386,861 hectares and a New Area of 15,950 km²;³⁴

(d) The company was appointed as the sole contractor for Indonesia to conduct all petroleum operations; authority granted included all rights for exploration, exploitation, processing, refining, transportation, storage and marketing, and all other rights and powers which were appropriate for the conduct of all operations.³⁵

(e) The contractor was obligated to relinquish one-quarter of the contract area after a period of five years and another quarter after 10 years.³⁶

(f) The contractor was required to fulfil the various minimum expenditure obligations totalling \$10 million over the first eight years;³⁷

(g) The signature bonus was \$5 million and production bonuses \$30 million when production reached the three specified levels;³⁸

(h) A 60/40 division of profit in the form of money valued at realized prices was provided in favour of the

government, whose share included the contractor's income taxes;³⁹

(i) All equipment needed for petroleum operations could be freely imported and ownership of the facilities was retained by the contractor.⁴⁰

Under this form of arrangement, the company's role changed from that of a concessionaire to a contractor for the government. The contractor was responsible for the provision of all risk capital, technology and skill required for petroleum operations. Petroleum ceased to be owned by the company but remained vested in and controlled by the state. The contractor was no longer required to pay royalty but to share profits with the government.

The contract of work gave the contractor similar rights and obligations as under a concession agreement. Management and control of the operation remained in the hands of the contractor. So the achievement of sovereign rights over natural resources became somewhat symbolic without full management rights and control over petroleum operations carried by foreign companies. Moreover, there was little change in the status of the contracting parties beyond the designation of the foreign firm as a contractor. The state maintained a passive role as a petroleum rent collector and acted only in a supervisory capacity, while the foreign company played a dominant role in the development of the country's essential resource.

The contract further gave the contractor actual control over the petroleum produced. To conform with the illusion that the company was no more than a contractor, the company was appointed as the exclusive sales agent and authorized to take over and sell the government's share and pay back the value.

The work contract is virtually "old wine in new bottles". As some writers pointed out, the change from concession to a work contract was one of emphasis rather than substance.⁴¹

On the other hand, the work contract departed from a concession in several aspects. Under a work contract, the foreign company claimed no ownership interest in any part of the extractive process, and was hence no longer a title holder but a service contractor. The arrangement abandoned royalty payment on the basis of production and shifted to the concept of profit sharing. Furthermore, the contract did realize a greater share from the contractor's extraction.

The work contract was considered less acceptable in the context of a worldwide movement towards permanent sovereignty over natural resources. From Indonesia's point of view:

the working contract is actually no other than a disguised and clothed concession which Indonesia had accepted to find a compromise. In addition the working contract—with all its good and bad points—was the maximal result achieved at that time after taking our forces and capacity into consideration.⁴²

As to the significance of the work contract, three relevant points may be suggested: first, these contracts helped to prevent a precipitous withdrawal of the remaining

vestiges of foreign investment from Indonesia; second, they provided the current crop of Indonesia's petroleum administrators with an opportunity to educate themselves about the industry; third and most important, the work contract gave birth to the production-sharing contract.

It goes without saying that the work contract is a transitional arrangement. It is no longer employed in the petroleum industry. On November 28, 1987, two of the four remaining work contracts expired. Two more, with Caltex and Stanvac, remain in effect, both comprising small areas and production, and will expire in 1993.⁴³

IV. Offshore and petroleum legislation

1. Offshore legislation and jurisdiction

Indonesia is an archipelagic state comprising more than 13,000 islands, whose combined coast lines are longer than the equator. The sea has always played an important role in Indonesia as both a source of livelihood of the people and a foundation of the nationhood. The term "motherland" in Indonesian is "Tanah-air" which means an inseparable union of the land and water. With such a configuration and characteristics, Indonesia always attaches greater importance to the sea and its uses, and to maritime legislation and

jurisdiction.⁴⁴

Since its independence, Indonesia has been attempting to establish some sort of costal state jurisdiction over the interconnecting waters between the islands. It is claimed that the concept of archipelagic state pioneered by Indonesia dates back to 14th century.⁴⁵ But the formal action in implementing the concept was not taken until December 13, 1957 when the Proclamation on the Territorial Waters of the Republic of Indonesia, known as the Djuanda Declaration, was issued by the Indonesian government. The declaration claimed that all waters around, between, and connecting, the islands were natural appurtenances of Indonesia's land territory and subject to its absolute sovereignty.⁴⁶

Indonesia has since struggled for international recognition of the archipelagic principle. The concept was proposed by Indonesia at the UNCLOS I held in Geneva in 1958, but failed to be endorsed by the conference. Consequently, Indonesia signed and ratified, of the four Geneva conventions, only the Convention on the High Seas in 1961.⁴⁷ After UNCLOS I, Indonesia reiterated unilaterally its claim to the status of archipelagic state by issuing Law No. 4 in February 1960, which provides for an extension of the territorial sea from three to 12 nautical miles measured from a straight base line.⁴⁸ The extension added a sea area of about 3,166,163 km² to its territory which was more than doubled to a combination of land and sea areas of approximate 5,193,250 km².⁴⁹

Historically, Indonesia was predominantly interested in trade and security as far as the ocean use was concerned. The economic significance of ocean resources was not recognized until recently. The vast ocean areas placed under its jurisdiction and the great potential of hydrocarbon resources in those areas have combined to change Indonesia's traditional approach. Indonesia began to develop offshore oil and gas in the late 1960s. The offshore development compelled the Indonesian government to take some formal actions to safeguard its offshore hydrocarbon resources.

The first step in this direction was the "Government Declaration on the Indonesian Continental Shelf" issued on February 17, 1969, which was later made into Law No. 1 of 1973, claiming that the Indonesian continental shelf extended to a depth of 200 meters or beyond where the superjacent waters admit the exploration and exploitation of natural resources.⁵⁰ The country had supported the establishment of a 200-miles exclusive economic zone (EEZ) from the outset. It first claimed a 200-mile EEZ on August 21, 1980 and then enacted Law No. 5 on "Indonesian Exclusive Economic Zone" on October 18, 1983.⁵¹ The EEZ law places an estimated 1,577,000 square nautical miles of ocean space under its jurisdiction.⁵²

Indonesia's struggle towards the acceptance of its territorial sovereignty as an archipelagic state culminated in the UNCLOS III and succeeded in the outcome of the conference. The LOS Convention provides for the legal status of an

archipelagic state and entitles it to certain specific rights with some limitations.⁵³ Indonesia passed Law No. 17 on December 31, 1985 to ratify the convention with a view to expediting the international effectiveness of the archipelagic provision.⁵⁴

Indonesia's extension of maritime jurisdiction has inevitably given rise to overlapping jurisdictional claims. Like many other Asian states, Indonesia does not favour any compulsory procedure, but rather prefers consultations to arbitration or judicial settlement. Through bilateral negotiations, it has so far concluded 15 agreements, of which 12 are concerned with continental shelf boundaries and three with territorial sea delimitations.⁵⁵ Indonesia has settled all its continental shelf boundaries with adjacent and opposite coastal states, except in the case of Vietnam, concerning a large trapezoid shaped area north of the Natuna Islands. But none of its EEZ boundaries has so far been agreed upon.

Indonesia's prompt legislation and delimitation paved a smooth way for offshore petroleum development by foreign companies. By the end of 1970, the entire Indonesian continental shelf had been contracted out under PSC terms.⁵⁶

2. Petroleum legislation

Indonesia's petroleum legislation consists of a series of

laws, regulations and decrees, all of which are based on the 1945 Indonesian Constitution adopted upon its independence. Article 33 of the Constitution, which is still in force, stipulates that national resources which are important to the state and affect the life of most people shall be controlled by the state and utilized for the greatest welfare of the people.⁵⁷ The provision was interpreted in Indonesia as having annulled the colonial mining laws and the existing concession agreements.

Drafted in the heat of a national drive towards political and economic independence, the 1945 constitution vests all rights exclusively to the state insofar as mineral resources, including petroleum, are concerned. Not only does it lay down the legal ground for all subsequent petroleum legislation, but it also points out the directions that the national petroleum policy is likely to take in the future.

This policy began to take shape, after some 15 years of deliberation, in Law No. 44 of 1960 which was passed to deal specifically with the mining of mineral oil and gas. Following is a summary of the principal provisions of Law No. 44 of 1960:⁵⁸

(a) all oil and gas are national riches controlled by the state and its extraction can only be undertaken by the state;

(b) the mining of oil and gas is to be carried out exclusively by a state enterprise; and

(c) other parties might be called upon and appointed as

contractors of the state enterprise for the execution of operations that the state enterprise is unable to carry out.

This law formally did away with the concession system and reaffirmed the constitutional principle of national sovereignty over natural resources by contemplating that only the state enterprise is authorized to engage in oil mining on behalf of the state. Aware of Indonesia's need for large investment of capital, technology and expertise which it does not possess, the law accordingly provides for the participation of foreign companies as contractors of the state enterprise. From a practical point of view, this is a very realistic policy, which starts a new page for the Indonesia's petroleum industry.

Law No. 44 of 1960, however, neither touches on the nature of the government-company relationship, nor does it specify the terms and conditions governing the petroleum activities. Therefore, a large number of regulations and decrees have continued to be enacted to implement this basic legislation, which still remains the principal law in the petroleum sector and governs all petroleum operations.⁵⁹

3. Petroleum institutional regulation

Upon the passage of Law No. 44 of 1960, Indonesia began to establish and consolidate state enterprises to carry out

its petroleum policy and legislation. The decision to set up three national oil companies, Permian, Pertamina and Permigan, each with its own petroleum responsibilities, simply recognized the *status quo* of three oil companies that had been in operation for some time.⁶⁰

Permigan was dissolved after some operations and Permian and Pertamina were merged in 1968 into one national company, P.T. Pertamina, the predecessor of the present state oil company.⁶¹ It was not until 1971 that Pertamina (Perusahaan Pertambangan Minyak dan Gas Bumi Negara) was finally established under Law No. 8 of that year (Pertamina law) as the State Oil and Natural Gas Mining Enterprise.⁶²

The Pertamina law provides, among other things, that Pertamina is charged with all upstream and downstream petroleum operations, and its business may be expanded into other "related" fields with the consent of the President;⁶³ Pertamina's cooperation with other parties shall be in the form of a production-sharing contract whose terms and conditions will be governed by a government regulation.⁶⁴

Pertamina has since served as the state enterprise with monopoly over the conduct of oil and gas exploitation in the country. The PSC is designated, for the first time, as the sole legal instrument for defining the relationship with foreign oil companies.

Pertamina is directed and managed by a board of directors. The board itself is responsible internally to the

Council of Government Commissioners, who are appointed by and responsible to the President of the Republic, and externally to the Department of Mines and Energy, which controls all oil and other mining activities in Indonesia.⁶⁵ The council is charged by the Pertamina Law with matters concerning general policy, budget and work programmes of Pertamina.⁶⁶ The Department of Mines and Energy is charged with the responsibility for regulating all aspects of the petroleum industry, including the operations of foreign companies as contractors to Pertamina.

The key organ within Pertamina is the Foreign Contractors Co-ordinating and Management Body (BPPKA), formerly the Foreign Contractors Co-ordination Body (BKKA), through which Pertamina exercises its management control over the contractors and their operations. BPPKA reviews all bids for PSCs and reports recommendations to the President, and approves important matters such as budgets, work programmes, and decides commercial viability of any discovery and oversees all phases of contractors' activities. Currently, Pertamina has six subsidiaries engaged in such diverse activities as vessel service, air service, electronic communication, and real estate. It also has 22 joint ventures including insurance, pipeline construction, oil marketing and gas liquefaction.⁶⁷

V. The evolution of production-sharing contracts

1. The origin of the PSC

Indonesia was not happy with the work contract because it was not much of an improvement over the concession agreement. Out of this dissatisfaction arose a further form of agreement—the production-sharing contract (PSC).

The idea of production sharing originated from the government attitude towards foreign investment during the early nationhood of Indonesia. It was a reflection of the nationalistic policies favoured by the then government which was not prepared to accept any foreign equity investment in Indonesia's economy. As a corollary, foreign participation was to be allowed only through the provision of a foreign loan, which would be repaid out of production. The concept of production sharing emerged as an association between a foreign creditor and an Indonesian investor for the establishment of a project to be owned, managed and operated entirely by Indonesian nationals.⁶⁸

The principle of production sharing as a contractual device was first used in the primary production sectors of the Indonesian economy, such as the timber industry and agriculture production. In these areas, the foreign investors were guaranteed for some returns on their investments since

there were no pre-production risks of loss, like the exploration risks in the petroleum industry.

Though production sharing was not a new idea, it was Dr. Ibnu Sutowo, the founder and the first President-Director of Pertamina, who borrowed the concept and instituted it in the petroleum industry.⁶⁹ Dr. Sutowo was among the first Indonesians to become aware of the shortcomings of the work contract. He "tried to find a system reasonable for us [Indonesia] and yet still worthwhile for companies to gamble their money".⁷⁰ He believed the production sharing to be a new approach to working with foreign companies and grafted the idea on the relationship with foreign companies.

The earliest such contract was signed on April 7, 1960 after a full year of negotiation between Permian, which was looking for foreign capital, and Kobayashi Group, a Japanese consortium organized by a senior Japanese industrialist, Mr. A. Kobayashi, which was interested in a liquefied petroleum gas project.⁷¹ The contract was in effect a loan agreement with a production-sharing arrangement. It called for the Kobayashi Group to extend \$53 million credit in the form of equipment, materials and technical assistance to Permian over a 10 year period. Permian would in turn repay the loan in crude oil on the basis of 40 per cent of the increased production over a basic amount fixed at 35 million barrels.⁷²

The Kobayashi contract was closely followed by another similar one signed between Permian and Refining Associates,

Ltd. (Refican) of Canada on June 10, 1961. The Refican contract, which was very short, comprising only two typewritten pages, was concluded originally for the rehabilitation of oil wells in the north Sumatra area. Proceeds from the rehabilitated wells were agreed to be split 65/35 and from new discoveries 60/40 in favour of the state enterprise, after a 40 per cent allocation for recovery of capital costs. No debt was allowed and Refican could recoup its investment only from production.⁷³

A third contract incorporating the idea of production sharing was signed with Asamera Oil Corporation, Ltd., of Canada, on September 1 of the same year; this contract followed a much similar format of the Refican contract except it was intended for exploration work rather than for the rehabilitation of oil wells.⁷⁴

It is of interest to note that the early foreign companies which agreed to share production with Indonesia were all independent companies that were willing to compromise more and accept terms that would be turned down by the existing major companies in Indonesia.

When Dr. Sutowo took control of the Indonesia's oil industry in 1966, he began further efforts to gain wider acceptance of the principle of production sharing and set forth five basic principles for any future agreement with foreign companies:

- (a) The state enterprise would have management control;

(b) The contract would be based on production sharing instead of profit sharing;

(c) The contractor would bear pre-production risks and cost recovery would be limited to 40 per cent of the annual production;

(d) The remainder of the production would be split, with 65 per cent going to the government and 35 per cent to the contractor;

(e) Title to equipment purchased by the contractor would pass to the state enterprise upon entry into Indonesia.⁷⁵

During this time, an American firm called Independent Indonesia American Petroleum Company (IIAPCO) went to Indonesia and expressed its willingness to do business. After two and a half months of negotiation, a contract incorporating all the above five principles and covering an offshore area northwest Java was concluded on August 18, 1966.⁷⁶

Although the Kobayashi, Refican and Asamera contracts were the earliest petroleum agreements to try the production sharing idea, it is generally agreed that the IIAPCO contract of 1966 was the first genuine PSC in petroleum industry.⁷⁷ The IIAPCO contract is important because it can be considered as a watershed in the evolution of Indonesian as well as the world's petroleum agreements. Moreover, the IIAPCO experience opened the gate to mushrooming PSCs.

2. Recent developments of the PSC

The concept of production sharing is native Indonesian thinking based on the concept of the owners of natural resources engaging a third party as a contractor. Production sharing was derived from the hard reality that the country faced in the 1960s of aspiring to control and develop its natural resources without possessing the necessary finance and technology for that purpose. The PSC has since come to dominate the contractual operations of foreign oil companies in Indonesia and has undergone an evolutionary process, in which three distinct generations of PSCs can now be identified.⁷⁸

(1) First generation PSCs (1960-1975)

The first generation PSCs were by and large based on the above-mentioned five basic principles and patterned after the 1966 IIAPCO contract.⁷⁹ Under the first generation PSCs, annual production of oil and gas was divided into two parts: the first 40 per cent of production, known as "cost oil", went for reimbursement of the contractor's exploration and operation costs, while the remaining 60 per cent, called "profit oil", was to be shared 65/35 by Pertamina and the contractor. These contracts are referred to in this study as "standard" PSCs.

(2) Second generation PSCs (1976-1988)

The second generation PSCs came on market when the 1976 model PSC was proposed by Indonesia for all oil companies.⁸⁰ This generation's PSCs were characterized by the abolition of the cost oil, an increase in the government's share from 65 per cent to 85 per cent after cost recovery, the introduction of tax on foreign companies and a number of incentives to attract investments and encourage exploration.⁸¹

(3) Third generation PSCs (1988-onwards)

The 10-point Incentive Packages for PSCs announced by Indonesia on August 31, 1988 and subsequently revised on February 22, 1989 brought in further major alterations to the PSC system. The new terms include, *inter alia*, the First Tranche Petroleum (FTP) and progressive sharing splits and more incentives for foreign oil companies.⁸² The FTP allows the government to share with the contractor the first 20 per cent of oil and gas produced each year on the basis of applicable profit split ratio before any deduction for cost recovery. The incentives offer higher percentage of production split in "frontier areas" and "marginal fields".

Despite the above-mentioned evolution, the PSC as a system has not varied significantly from its original concept.

The PSCs have been well received by oil companies in Indonesia. The country experienced two four-year periods of 1967-1970 and 1979-1982 in which signing of contracts was most

active. By the end of 1982, 105 PSCs had been signed with foreign companies.⁸³ The tightened PSC terms after 1967 and the weakening international markets for oil in the early 1980s caused a significant slowdown in the signing of contracts. The signing slumped from an average of ten each year in the late 1970s to an annual average of only two during the period of 1983-1986. There has been a recovery since 1987. The third most active four-year period of 1987-1990 saw the signing of over 47 PSCs, with an average of nearly 12 each year.⁸⁴

By July 1991, Indonesia had signed a total of 189 various forms of PSCs, of which 89 were terminated prematurely and 100 remain in effect. Of the 100 effective contracts, 70 are straight PSCs, 20 are joint operation agreements (JOA), five are enhanced oil recovery (EOR) contracts, three are technical assistance contracts (TAC), and two are work contracts. Currently, 53 oil companies from 12 countries are working in Indonesia. Twenty-five of the 100 effective contract areas produced oil and gas in 1990. Sixty per cent of the effective contract areas are held by companies from the United States and about 70 per cent of the oil and 80 per cent of the gas produced in Indonesia comes from the fields operated by American companies.⁸⁵

VI. The production-sharing contract

1. Definition

It is unanimously agreed that the PSC was born in Indonesia, but it seems that the country has failed to give a definition to its patent thinking. Definitions of PSC have, nevertheless, been attempted in recent growing literature on the subject. For instance, Gordon Barrow simply points out that "under the production-sharing contract, production of oil and/or gas is divided between the government and the foreign operator." (original emphasis)⁸⁶ In Prof. Yinka Omorogbe's view,

the term production sharing contract refers essentially to arrangements where the foreign firm and the government share the output of the operation in predetermined proportions. This new form has been regarded as being a substantial departure from the oil concessions in that the host state is theoretically the undisputed owner of the petroleum, with the foreign corporations being engaged as contractors to perform certain specific tasks in return for a fee in kind.⁸⁷

Prof. Ernest E. Smith describes, from a North American lawyer's viewpoint, that:

The production sharing contract may be more easily conceptualized as a type of farmout. The national oil company commonly holds a concession in a given block. It grants a foreign company a contractual right to explore in a specified area in exchange for the opportunity to recover its costs and specified profit. In return, the state oil company contributes the acreage and receives a share of production.⁸⁸

In his book The Politics of Oil in Indonesia, Khong Cho Oon defines the contract as

an arrangement whereby the output of the extractive operation was shared by the foreign company and the state enterprise in predetermined proportions, the former serving in some way as a contractor to the latter.⁸⁹

Dr. Mochtar Kusuma-Atmadja, the former Indonesian Foreign Minister, summarizes the contract in this remark: the production-sharing contract is "essentially based on the concept of the owner of the resources (the state) engaging a third party (... an oil company in the case of hydrocarbons) as contractors. The proceeds of the contractor's work or activity (i.e., the production) are shared between the state and the contractor on the basis of a previously agreed formula after the subtraction of costs."⁹⁰

As such, there is not a commonly accepted definition for the PSC.⁹¹ It seems that each writer defines the term of production-sharing contract according to its own theoretical purpose though they have all touched the nerve of the arrangement. Since there is no consensus on this matter, another definition of PSC may be attempted here to contribute to the discussion. The PSC may be defined as

an agreement under which a foreign company, serving as a contractor to the resources state/its national oil company, recovers its costs each year from production and is further entitled to receive a certain share of the remaining production as payment in kind for the exploration risks assumed and the development service performed if there is a commercial discovery.

In its crudest form, this arrangement can represent a simple

division in kind between the state and the contractor.

2. Legal form and contents

Indonesia's basic petroleum legislation, i.e., Law No. 44 of 1960, does not spell out any concrete rights and obligations for foreign companies but does list some broad policy guidelines. Only in the subsequent decrees and regulations, the 1976 model PSC in particular, are laid out the specific terms and conditions under which petroleum operations can be carried out by foreign firms in Indonesia.⁴²

(1) Procedures and effectiveness

Indonesia's petroleum legislation contains no provision about the procedures by which PSCs are negotiated. In practice, the procedures to be followed in applying for PSCs are for companies to respond to Pertamina's international invitation to tender. The invitation is normally accompanied by a draft PSC with some areas left blank, together with an exposition of the supposed worth of the offered acreage as understood by Pertamina. In making submissions, a registration fee must be paid and companies are also required to provide a full record of their financial standing and operational experience.

While there are no set criteria for judging the bids, the

items filled by the applicants in the blank areas, such as signature and production bonuses, projected capital investment and share of operation for the national participation, are naturally factors to be considered and compared by Pertamina.

A PSC concluded between Pertamina and a foreign company must be approved by the Minister of Mines and Energy "on behalf of the Government of the Republic of Indonesia". It will not become effective until the President of the Republic issues a letter indicating presidential approval of the contract. Thus, presidential approval is a legal requirement for the effectiveness of a PSC.⁹³

The approval by the minister in charge and the President serves only as a review process to ensure that the terms agreed upon by its public enterprise are in conformity with the public policy and the laws of the state. The government does not become a party to the contract since the state oil company Pertamina is authorised exclusively by law to carry out mineral oil and gas development.

(2) Main terms and features

Below is a summary of the principal terms and conditions of the Indonesian type of PSC.⁹⁴

A. Title to oil and gas

As enshrined in its Constitution and elaborated in its basic petroleum law, Indonesia's basic philosophy is that

natural resources are controlled by the state and developed for the benefits of the people. This philosophy is fully mirrored in all PSCs which declare in the preamble that "all mineral oil and gas existing within... Indonesia, are national riches controlled by the State". "Pertamina has an exclusive 'authority' to mine for mineral oil and gas..."⁹⁵ Under PSCs, title to oil and gas either in its geological state or at any stage of production is vested in the state. Legally, the PSC does not grant the contractor any rights to petroleum in the contract area, except the right to receive an allocation of production for risks assumed and services rendered. This payment in the form of production is made at the point of export, i.e., "title to the Contractor's portion of Crude Oil... shall pass to the Contractor at the point of export..."⁹⁶

B. Scope of contract

The PSC states in its preamble that "Pertamina wishes to promote the development of the Contract Area and the Contractor desires to join and assist Pertamina in accelerating the exploration and development of the potential resources within the Contract Area."⁹⁷ Such a common interest to develop the petroleum resources in the contract area constitutes a foundation for their cooperation which is realized in the following ways:

- (a) Pertamina is responsible for the management of the

petroleum operations;

(b) Contractor, appointed as the exclusive company to conduct the petroleum operations, is responsible to Pertamina for the execution of such operations;

(c) Contractor agrees to provide all capital, technology, manpower and equipment necessary for the operations;

(d) Contractor carries out such operations at its sole risk and cost which will be reimbursed out of production; and

(e) Production achieved will be divided as agreed upon after cost recovery.⁹⁸

Such is the scope of the contract, which covers operations ranging from exploration, development, extraction, transportation, refining (sometimes) and marketing. The legal relationship defined under this scope is one of "contractorship", meaning that the hired company "has merely a contractual right to and no ownership of its share of the oil and gas produced."⁹⁹

The legal competence and status of the contracting parties under this relationship may be considered as unprecedented in petroleum arrangements. While Pertamina, as the holder of the "exclusive authority to mine", is the public performer of the state in carrying out petroleum operations and has full competence for the management of such operations, the foreign company, as the sole contractor of the state oil company, executes in the name and on behalf of Pertamina all operations associated with petroleum extraction. Thus, the

contractor is not a concession holder or partner but a provider of capital, skill, technology and services.

C. Contract term

The PSC has a total duration of 30 years and is divided into two phases: the exploration phase which lasts for a six to 10 year period, and the production phase which commences from the date the area is declared commercial and continues to the conclusion of the contract term. In the early PSCs, the initial exploration period was usually six years, but was allowed to be extended at the contractor's option for two addition periods of two years each.¹⁰⁰ Under the 1989 incentive package, all the existing PSCs that are still in the exploration stage may be extended for one optional period of four years; for new PSCs, the initial exploration period is similarly extendable for four years at the contractor's option.¹⁰¹ Under unusual circumstances, either the exploration phase or the total length of the contract can be extended through mutual agreement between Pertamina and the contractor. In October 1987, Indonesia announced that extensions could be negotiated dependent on the contractor's commitment to further exploration and technology transfer. By April 1991, nine contracts, including two TACs, had been renewed for an additional period of 20 years.¹⁰² More such extensions could be expected since most existing PSCs will begin to expire in 1997.

D. Contract area

Indonesia's petroleum legislation has no limitations on either the size of the contract area or the total number of blocks a contractor may apply for and hold. In practice, the contract area differs from one PSC to another, ranging significantly from some 240 km² to over 320,000 km².¹⁰³ An international oil company can apply for and operate several blocks at a time. It is, however, to be noted that the PSC areas tend to be smaller in recent years. The average contract area of the 46 PSCs concluded during the peak years of signing in 1979-1982 was about 13,667 km² whereas the figure of the 45 PSCs signed in 1987-1990 decreased to around 10,300 km².¹⁰⁴

E. Relinquishment/exclusion of area

Relinquishment is a standing requirement in PSCs which provide for two types of surrender: mandatory and optional. Under the mandatory exclusion provision, the contractor must surrender an agreed percentage of the contract area after specified periods during the initial exploration period. The PSC appears to leave the issues of relinquishment percentage and intervals to be negotiated.¹⁰⁵ Thus, the percentage of the area to be surrendered and the frequency of the relinquishments are biddable items the contractor may propose and negotiate with Pertamina. Under normal circumstances, the contractor is supposed to make three surrenders and to have relinquished 80 per cent of the original area by the end of the initial exploration period. The PSC usually provides that

the area retained after relinquishment shall not be in excess of 20 per cent of the original total contract area.¹⁰⁶ Table 7 exemplifies the frequency and percentage of relinquishments in recent PSCs.

**Table 7: Recent Relinquishment Schedules
in Indonesia's PSCs**

End of year	Relinquishment schedules (%)			
	A	Contract example B C		D
2	-	25	-	-
3	-	-	25	15
4	20	25	-	-
5	30	-	20	15
6	30	30	35	50
Total	80	80	80	80

Source: Compiled by the author.

With regard to the remaining area after the mandatory surrender, Pertamina and the contractor are expected to "maintain a reasonable exploration effort." If the contractor fails to submit an exploration programme for such areas during any two consecutive years, the PSC has two approaches to deal with such a situation: first, the parties may be required to reach agreement as to whether any portion of the remaining

area is to be relinquished or whether exploration is to be resumed at a later date;¹⁰⁷ second, the contract may provide that the area in question is considered automatically surrendered.¹⁰⁸

Under the optional surrender provisions, the contractor is given the right to surrender at the end of the second or third contract year and prior to the end of any subsequent year any portion of the contract area upon giving 30 days' written notice to Pertamina. Such relinquishment is creditable against that portion the contractor is next required to surrender.¹⁰⁹

The PSC does not usually have any specific configuration requirement as to the exclusion of an area except the broad proviso that "so far as reasonable, such portion shall each be of sufficient size and convenient shape to enable Petroleum Operations to be conducted thereon."¹¹⁰

The entire contract area must be returned if no discovery is made by the end of the exploration period unless an extension is granted or by the end of the extension, as the case may be. By July 1991, the totally relinquished contracts had amounted to 82 out of the 189 PSCs signed since 1960.¹¹¹

F. Bonuses

Bonuses under the PSC comprise the following two major types:

(a) Compensation/information bonus

PSCs provide, as a rule, for a compensation bonus to be paid after approval of the contract for information concerning the acreage held by Pertamina and made available to the contractor.¹¹² The amount of the compensation bonus varies significantly from contract to contract. Figures may run from \$1.5 million to \$71 million, but commonly range between \$1 million and \$5 million.¹¹³ Since the amount of the compensation bonus is a matter of tender and negotiation, it is usually unrelated to the quality and quantity of the information held and offered by Pertamina. The payment is therefore more in the nature of a "signature bonus" rather than a payment for information.

(b) Production bonus

Production bonus is a compulsory payment by contractor once production reaches certain specified levels over a period of time, usually 120 consecutive days. Nevertheless, there is no established pattern as to the triggering levels of production. The number and amount of the bonuses, which are a matter of bidding, vary from contract to contract, depending perhaps on the geological prospect and the acreage concerned. Examples of production bonuses are given in Table 8.

**Table 8: Recent Examples of Production Bonuses
under PSCs**

Contract examples	Production levels (b/d)	Bonus (\$m)	Total (\$m)
A	50,000	10	160
	100,000	50	
	200,000	100	
B	30,000	10	45
	50,000	15	
	100,000	20	
C	25,000	3	12
	50,000	3	
	100,000	6	
D	10,000	5	110
	30,000	10	
	50,000	15	
	100,000	40	
	150,000	40	

Source: Compiled by the author.

Generally speaking, the number of bonuses is from two to five and the triggering volume starts from a low of 0-50,000 b/d to a high of 100,000-500,000 b/d. The total commitments range commonly from \$15 million to \$50 million.¹¹⁴

Bonus payments are borne solely by the contractor and cannot be included in the operating costs which are recoverable from production, but can be charged against tax liabilities once profitable operation commences.

It is clear that the rates of bonus payments vary considerably between individual PSCs, but there is no clear-

cut reason accounting for the differences. One possible explanation is that the differences are related to the geological attractiveness of the areas concerned. The highest bonus payment can significantly increase the chances of winning the contract, though some other factors are also taken into consideration by Pertamina.

The requirement for bonus payments has been declining sharply in recent years. This is evident from the following figures: \$302 million by the 46 PSCs concluded in the first peak years of signing in 1979-1982 as compared with only \$60 million by the 45 PSCs in 1987-1990.¹¹⁵

G. Work expenditure

Work expenditure is another major obligatory provision in the PSC under which the contractor is required to commence petroleum operations not later than six months after the effective date of the contract and to spend in each of the initial 6-10 year exploration periods the minimum rates of exploration expenditure as specified in the contract.¹¹⁶

The work expenditure is a matter of choice by the contractor in his bid for the acreage. The following table shows the expenditure commitments in three PSCs concluded in each of the past three decades.

**Table 9: Examples of Exploration Commitments in PSCs
(\$m/year)**

Contract:		A	B	C
	1	0.50	18.40	3.75
Y	2	0.75	20.00	6.25
e	3	1.00	2.80	20.00
a	4	1.00	19.40	30.00
r	5	1.00	10.00	30.00
	6	1.25	10.00	30.00
Total expenditure		5.50	80.00	120.00

Source: Compiled by the author.

Total exploration expenditures may vary from \$5.5 million to \$175 million,¹¹⁷ but are commonly in the range between \$15 million and \$100 million.¹¹⁸ Any under-expenditures in a given year may with Pertamina's consent be carried forward to the succeeding year, but over-expenditures can be automatically subtracted from the subsequent year's commitment.

Throughout its regulation of foreign investment in the natural resource sector, the Indonesian government has maintained the "ring fence" theory under which each contract has its own fiscal regime and the taxation and other obligations arising from one contract area cannot be offset by expenditures and investments in another one. Consequently, in the event that several contract areas are obtained by one oil company, expenses incurred in one block are not transferable

to a different contract area.¹¹⁹ This "ring fence" restriction has been viewed by oil companies as a major disincentive. Consolidation of expenditures on multiple contract areas via elimination of this provision has been proposed from time to time by oil companies to Pertamina officials.¹²⁰

The contractor may withdraw its operations so long as it has completed the minimum expenditure commitments in the first two to four years, depending on the specific contract, or after any succeeding year.

It is to be noted that financial commitments have become relatively lower in recent years. The 46 PSCs concluded in 1979-1982 committed \$895 million in exploration over three years and \$2.3 billion over the entire contract term while the 45 in 1987-1990 committed \$622 million initially and \$2.2 billion over the whole period.¹²¹

H. Rights and obligations of the parties

All PSCs provide for a uniform set of rights and obligations for the contracting parties which include, *inter alia*, the following:¹²²

Contractor**Pertamina**

-
- | | |
|--|--|
| a. Advance all necessary funds and purchase or lease all equipments; | a. Have right to management of the operation; |
| b. Furnish all technical aid including foreign personnel; | b. Assume and discharge on behalf of the contractor taxes other than Indonesian corporate tax and dividend taxes; |
| c. Furnish funds required for payment in foreign currency; | c. Assist and expedite contractor's execution of the work programme by providing facilities, supplies and personnel; |
| d. Execute work programme in a workmanlike manner and prevent extensive pollution of the sea; | d. Ensure sufficient Rupiah* funds necessary for the execution the work programme; |
| e. Have rights to sell, transfer, convey and dispose of all or any parts of its right and interests; | e. Have title to all original data; |
| f. Have the right to ingress to and egress from the contract area; | f. Use the equipment without interference with contractor's operations. |
| g. Have the right to use all information and material held by Pertamina; | |
| h. Submit to Pertamina all original data; | |
| i. Prepare and carry out plan and programme for training and education; | |

Contractor**Pertamina**

-
- j. Have the right to freely dispose of its share of production and retain abroad the proceeds;
 - k. Fulfil domestic supply obligation;
 - l. Give preference to local goods and services; and
 - m. Pay Indonesian taxes.

* Rupiah (Rp) is the Indonesian currency unit.
The approximate exchange rate in 1993 is: \$1 = Rp 1,543.

Any failure or delay in the performance of either party's obligations or duties will be excused only to the extent attributable to *force majeure*.¹²³

I. Commerciality

An important feature of modern petroleum contracts is the commerciality requirement, which is a non-issue under concessionary contracts. Under the commerciality clause, a discovery can not be developed unless it is granted commercial status by the host government or its state oil company. Commerciality marks the end of the exploration phase and the beginning of the development phase of the contract.

Under the Indonesian type of PSC, the benchmark for obtaining commercial status for a discovery was that the

contractor had to demonstrate that the Indonesian government would ultimately receive a minimum of 49 per cent of the total revenue over the life of the oil field.¹²⁴ This government take condition was reset at 25 per cent after 1984.¹²⁵ This requirement placed a burden on the contractor to prove whether or not a discovery was economically profitable for both the government and the contractor. Many oil companies complained about the negotiations associated with determining commerciality. And the issue can easily become an area of dispute between the contracting parties.¹²⁶

By 1989, the commerciality feature of the Indonesian PSC was being simplified or eliminated. The minimum 25 per cent government take condition was abolished, to the delight of most foreign oil companies.¹²⁷

J. Management clauses

The PSC was the outgrowth of the Indonesian national aspiration to regain control over its natural resources. The demand for management was successfully incorporated into all PSCs and became a basic feature of the contract.

Management and control is not dealt with by a separate article but rather scattered in a number of relevant clauses. To begin with, all PSCs provided at the outset that "Pertamina shall have and be responsible for the management of the operations contemplated under the contract" and the contractor "is responsible to Pertamina for the execution of such

operations."¹²⁸ In one word, management responsibility rested with Pertamina throughout the contract. In order to implement this responsibility, the contract goes on to stipulate that Pertamina shall assist and consult with contractor with a view to the fact that contractor is responsible "for the preparation and execution of the Work Programme..."¹²⁹

This clause was viewed as a "masterpiece of ambiguity" when it was first introduced and at one time caused much contradiction between foreign companies, which were interested in seeing their money well spent, and Indonesia, which was interested in retaining full management control. While the companies wished to define the clause more clearly and implementable, Pertamina tried deliberately to keep it vague and one of principle.¹³⁰ Each seemed to have legitimate reasons for its contention. Pertamina took management control as granted because "you are a contractor and you work for me",¹³¹ while oil companies insisted that they could not afford the separation of the investment function, with their concomitant risk-taking requirement, from the managerial function, with their innate responsibility to ensure the proper utilization of the capital invested. Apart from the fear of losing control over their operations, foreign companies had several other apprehensions. For instance, the management clauses could provide a legal pretext or base for possible attempts to eject or nationalize foreign companies. The controversy created by the management clauses was

effectively removed by subsequent active participation of a large number of independent companies that were willing to accept the management control.¹³²

Under the above general principle, managerial control is implemented in the following aspects. The contractor is obliged each year to "submit for approval to Pertamina a Work Programme and Budget of Operating Costs for the Contract Area setting forth the Petroleum Operation the Contractor proposes to carry out" during the ensuing year.¹³³ Moreover, Pertamina has the right to "propose a revision as to certain specific features of said Work Programme and Budget of Operating Costs."¹³⁴ These are the key contractual provisions through which Pertamina exercises its management control.

Other important areas where Pertamina exercises managerial responsibility are price control, submission of information and title to equipment, all of which will be discussed at some length in due course.

Aside from the above managerial functions, Pertamina has further control over the contractor on other matters such as the transfer of the under-expenditure, disposition of any or all of contractual rights, etc. The conduct of these activities requires the consent or prior written consent of Pertamina.¹³⁵

Assignment of contractual rights and interests under PSCs is distinguished between affiliates and non-affiliates. Both partial and full assignment to the former is less strict and

requires only prior notice and an assurance that the assignee company will not hold more than one PSC. Assignment to non-affiliates, on the other hand, requires Pertamina's prior written consent if the transfer involves only part of the contractual rights and obligations. Both Pertamina and the government's approval are required for the transfer of all rights and obligations to non-affiliates.¹³⁶

These are the PSC management clauses where Pertamina's management and control are supposed to assert themselves and where all foreign companies's major policies and operational decisions are subject to Pertamina's approval, revision and supervision.¹³⁷

In practice, the management function during the first phase of the contract is carried out by reviewing and approving the work programme and budget, including exploration schemes, drilling operations and all service sub-contracts. These submissions are generally approved with little dispute. Some minor alterations are occasionally proposed by Pertamina, but the contractor still has the right to appeal.¹³⁸ After commencement of commercial production, Pertamina's supervisory role is exercised in the form of operational meetings, usually held now bimonthly, formerly monthly, between its BPPKA and the contractor. Both parties review operations for the first two months and discuss and settle any differences.

Actually, foreign companies have found themselves, in effect, free to make their own decisions relating to petroleum

operations. The emphasis of the contract on management responsibility is largely a formality with peripheral influence.¹³⁹

As to the effectiveness of the management clauses, it is widely agreed that the "government control has been more theoretical than real."¹⁴⁰ Two factors are perhaps accountable for Pertamina's nominal control. First, Pertamina does not possess the adequate managerial resources to implement meaningfully management control over every facet of the enterprise. Second, Pertamina deliberately refrains from interference in the contractor's operation.

Overall, the management structure in the PSC is viewed favourably by both parties. Foreign companies appreciate the manner in which Pertamina discharges its responsibility relating to the management clauses.¹⁴¹ Pertamina is generally happy with the contractor's submission to its "management" and the image of national control over the resource.

K. Submission of information and title to equipment

Since all mineral oil and gas are natural resources controlled by the state with Pertamina as its agent, which has the exclusive authority to mine, all PSCs stipulate that Pertamina "have title to all original data resulting from the Petroleum Operations."¹⁴² Accordingly, contractors are placed under an obligation to "submit to Pertamina copies of all such original geological, geophysical, drilling, well, production

and other data and reports..."¹⁴³ Pertamina in turn makes a promise not to disclose the submitted data to any third party without prior consultation with the contractor.

The submission-of-information clause makes no mention of the term of the confidentiality. Pertamina is contractually bound only to discuss the matter with the company affected but is not obligated to listen to the company.

In practice, Pertamina's benefit from this clause is limited since companies usually submit the raw data but not copies of the processed secondary report, which is the product of the companies' overseas headquarters evaluation. Moreover, the value of the clause is further reduced because many companies reportedly hold on to their submissions as long as possible.¹⁴⁴

Another relevant consequence of state ownership of natural resources and management control over extraction is Pertamina's title to equipment. The PSC always states that all equipment purchased by the contractor for the purpose of petroleum operations becomes the property of Pertamina when landed at an Indonesian port. Pertamina is bound to discharge, on behalf of the contractor, all import duties on such equipment.¹⁴⁵ The contractor is allowed to recover the cost of such equipment after commercial production commences.

To use such equipment, the contractor is required to make rental payments at a rate commensurate with the useful life of the relevant asset, but not to exceed 10 per cent per annum,

until the total of the payments equals the purchase price.¹⁴⁶ Pertamina has the right to use the equipment for any alternative purpose on the condition that such use does not interfere with the contractor's performance of the petroleum operations.

The title-to-equipment clause does not, nevertheless, apply to leased equipment belonging to a third party who performs services as a sub-contractor. The leased equipment is allowed in and out of the country freely.

Since this provision does not apply to leased equipment owned by sub-contractors and rental payments for such equipment are written off as a cost recovery element, production-sharing contractors apparently prefer to pay slightly higher rentals to sub-contractors rather than purchase their equipment and have it become the property of Pertamina.¹⁴⁷ So the advantage derived by Pertamina from this clause has become questionable.

L. Cost recovery/cost oil

One of the most important features of a PSC is the cost recovery mechanism, which allows the contractor to "recover all Operating Costs" from production if there is a commercial discovery.¹⁴⁸ This portion of crude oil used for reimbursement of the operating costs is commonly referred to as "cost oil".

The cost oil has undergone three distinctive alterations

since the inception of the PSC. Until 1976, the cost oil was set at the first 40 per cent of the annual gross production, i.e., the contractor could only recover its costs from up to 40 per cent of production each year. If during any given year, the allowable operating costs exceeds the limit, the unrecovered excess was allowed to be carried forward and recovered in succeeding years.¹⁴⁹ The 40 per cent cost recovery entitlement under the standard PSCs was a generous provision under which most companies were able to recover the bulk of their costs in fewer than five years.¹⁵⁰ It was a major attraction to numerous international oil companies in Indonesia in the early years of PSCs.

The 1976 model PSC introduced several strict new terms, including a change from the old cost recovery system, under which up to 40 per cent of annual production was automatically reserved to oil companies for cost recovery, to a new one based on a double-declining balance depreciation method.¹⁵¹ The new terms completely revised the cost recovery procedure and foreign firm's cost recovery was prolonged over seven to 14 years.¹⁵² The unilateral change in cost recovery allowance, since it affected the structure of exploration incentive, was considered devastating. Foreign investors were generally dissatisfied with Indonesia's treatment of international commercial agreements and reacted by greatly curtailing exploration expenditures.¹⁵³

Under the third generation PSCs, the cost recovery is

rearranged as a result of the introduction of FTP by the 1988 incentive package. FTP is a portion of production that is split between the government and the contractor before any deduction of cost recovery.¹⁵⁴ FTP serves in effect as a cap on the cost recovery. As a consequence, the contractor can recover its operating costs each year only from the remaining 80 per cent of production after deduction of FTP.

Operating costs are defined in the PSC to consist of two major types: non-capital cost, which refer to those operating costs incurred and related to the current year's operations, such as wages and salaries, administration, exploration and production drilling expenditures, rental payments, *etc.*, and capital cost, which means expenditures made for items that normally have a useful life beyond the year incurred, including equipment, tangible properties, building, transportation facilities, *etc.*¹⁵⁵

Interest on any monies borrowed for petroleum operations was expressly excluded from operating costs under the first generation PSCs because Pertamina considered it then to be shareholder or head office costs rather than genuine operating costs.¹⁵⁶ Since the 1976 model PSC, interest has been treated as a recoverable operating cost, subject to certain limitations.¹⁵⁷

For cost recovery purposes, non-capital costs can be recovered directly in the current year as soon as income from the contract area permits. Unrecovered costs are reimbursable

on a straight-line basis. Capital costs are recovered in the form of depreciation, which is carried out over one half of the depreciation life by an accelerated checking balance method (the double-declining balance method). This method allows production-sharing contractors to depreciate capital costs earlier. The contractor also has the option to switch to the straight-line method whenever it is advantageous.¹⁵⁸

Cost recovery/cost oil is now made up of: exploration and development costs, operating costs, current year depreciation and amortization, interests on financing, investment credit, and unrecovered costs carried over from previous years. Once the original exploration and development costs are recovered, operating costs represent the majority of recoverable costs. At this stage cost recovery may range from 10 per cent to 30 per cent of the production.¹⁵⁹

After some empirical analysis, the result shows that the rate of depreciation permitted under the current cost recovery procedure is "moderate".¹⁶⁰ The availability of only moderate rates of cost recovery, in conjunction with the effect of the ring-fence provision mentioned earlier, "result in a rather long period required for the recovery of costs."¹⁶¹ Major oil companies generally need to spread their capital cost recovery over some 14 years.¹⁶²

M. Investment credit

Closely related with the issue of cost recovery is the

provision of investment credit. The 1976 model PSC made a complete change in cost recovery from the old system, which was regarded as the "worst feature of the new contracts", as it would lead to a slowdown in recouping for exploration and development investment. The abolition of the 40 per cent cost oil met strong opposition from investing companies. In response, Indonesia introduced in 1977 the concept of investment credit with a view to facilitating their recovery of costs.¹⁶³

All PSCs concluded thereafter have an investment credit provision which stipulates that the contractor may recover an investment credit amounting to a specified percentage of the capital expenditure pertaining to a field development.¹⁶⁴ The credit is taken out of gross production before recovering operating cost and tax deduction. The investment credit itself is subject to taxation and may be carried forward to succeeding years if it is not fully taken.

The investment credit percentage was set at 20 per cent prior to 1984, with the condition that the commerciality requirement, namely, a minimum of 49 per cent of the total revenue over the life of a field for the government, is satisfied. The investment credit portion was refixed at 17 per cent with the government take condition being reduced to 25 per cent thereafter.¹⁶⁵

Under the third generation PSCs, the credit percentage remains at 17 per cent, but the minimum 25 per cent government

take condition is abolished.¹⁶⁶ Moreover, an additional more generous credit is set up for deep sea contract areas with a water depth over 600 feet, with the credit percentage being set at 110 per cent for oil and 55 per cent for gas.¹⁶⁷

The implications of the investment credit are twofold. On the one hand, it serves as an incentive for the contractor to recover, through cost recovery, an additional percentage of certain capital costs. On the other hand, the investment credit will obviously reduce the ultimate profit oil split for both the contractor and the government.

N. Production split/profit oil

Together with the management and cost recovery clauses, the production split/profit oil constitutes the heart and soul of the PSC.

The crude oil remaining after deduction for costs is regarded as "profit oil" or "equity oil", which is to be shared between Pertamina and the contractor in accordance with a pre-determined ratio. The ratio is set by Pertamina in the draft contract and is therefore not subject to negotiation.

Under the standard PSCs, the remaining 60 per cent of production was split at a ratio of 65/35 in favour of Pertamina.¹⁶⁸ This original split began to change in 1972 when a formula of graduated increase of the government's share of profit oil was introduced in some PSCs. Under this arrangement the split remained at 65/35 up to a defined base

level, beyond which the split escalated when production reached certain levels.¹⁶⁹

Under the second generation PSCs, the profit split changed significantly with an increase in Pertamina's share from 65 per cent to 85 per cent of the production.¹⁷⁰ The PSCs in this generation set a new pre-tax split at 65.9091 for Pertamina and 34.0909 for contractors.¹⁷¹ But the latter's share became fully taxable at a rate of 56 per cent under Indonesian tax laws (old tax law).¹⁷² The remainder of production after taxation was shared between the two parties according to the above pre-tax split. The net effect of the tax change resulted in a post-tax split at a new ratio of 85/15 in favour of Pertamina.¹⁷³ If the domestic market commitment was taken into account, the real profit split was closer to 88/12.¹⁷⁴ When the new tax law was passed in 1984 to reduce the tax rate to 48 per cent, the profit split was refixed at 71.1853 for Pertamina and 28.8642 for the contractor in order to compensate the lower tax rate and keep the post-tax split unchanged at 85/15.¹⁷⁵

Under the third generation PSCs, The share for the profit oil was almost completely restructured by the 1988 and 1989 incentive packages. The substantial change is the progressiveness in production sharing in place of the previous fixed split. Table 10 provides an illustration of the new profit split for all PSCs in Indonesia.

Table 10: Profit Oil Split for All Indonesian PSCs

Categories of production	Current status	Future term and conditions		
		Existing & extended contracts	New contracts	
			Conventional areas	Frontier areas
(1)	(2)	(3)	(4)	(5)
1. 1st marginal field in a contract area with an average production 10,000 b/d within the 1st two years	Existing & extended PSC: 85/15 Frontier area: up to 50,000 =80:20 thr 150,000=85:15 over 150,000=90:10	85:15 (No change)	80:20	75:25
2. Pre-tertiary recovery rocks	Same as above	Same as left	Same as left	Up to 50,000 =75:25 thr 150,000=80:20 over 150,000=85:15
3. Tertiary re-covey EOR project	Same as above	80:20(not for approved/committed projects)	80:20	75:25
4. Deep sea areas(over 600 ft)	Same as above	Same as left	Same as left	Same as left
5. Other areas	85:15	85:15	85:15	Up to 50,000 =80:20 thr 150,000=85:15 over 150,000=90:10
6. Gas split	70:30	70:30	70:30	70:30

Note: (1) The terms of "marginal field", "pre-tertiary reservoir rocks", and "frontier/conventional areas" are not defined in the incentive packages.

(2) Production unit = b/d.

Source: Based on the 1988 and 1989 Incentive Packages, in Pertamina, Pertamina on the Move (Hong Kong: Hill & Knowlton Asia Ltd, 1990), pp.116-19.

It is clear from the table that, for contracts signed after 1988, the production split may slide between 75/25 and 90/10 depending on the nature of the fields and production volumes which is always divided into three levels. The original split of 85/15 seems to remain predominant over other ratios. In all cases, the profit split for gas has always remained at a ratio of 70/30 in Pertamina's favour regardless of different fields and production.¹⁷⁶ It is presumed that these new profit splits will be carried out after deduction of FTP, the investment credit and operating costs, though it is not explicitly stated in the incentive policies.

O. First Tranche Petroleum

FTP is a new concept introduced by the 1988 incentive package. It is, however, retroactive to all existing and extended PSCs. FTP is a portion of oil/gas production amounting to 20 per cent which will be split between Pertamina and the contractor every year on the basis of applicable profit split ratio before any deduction of cost recovery.

For Pertamina, FTP constitutes, in effect, a royalty in kind which varies according to the volumes of production and the applicable sharing ratios. For instance, it is a 17 per cent royalty payment when the profit split ratio is 85/15.¹⁷⁷ For production-sharing contractors, it constitutes another cost recovery cap. FTP is also taxable.

P. Taxation

Taxation of foreign oil companies was a non-issue under standard PSCs, which provided that contractors' tax liability was included in Pertamina's share of profit oil and Pertamina would pay and discharge such taxes for the account of foreign companies.¹⁷⁸

In reality, Pertamina paid, out of its own share of profit oil, the contractor's Indonesian taxes on the latter's behalf, and furnished the company its tax receipts issued by the appropriate tax authority. This unique practice, which had worked to the satisfaction of both parties, turned out for various reasons to be unacceptable when the United States Internal Revenue Service (IRS) ruled in 1976 that such inclusion was not considered a payment of tax but rather a payment of royalty, and was therefore not qualified as a tax credit under the U.S. tax laws.¹⁷⁹ The net difference between these two treatments is that while a royalty is only 50 per cent tax deductible, a tax is fully deductible.¹⁸⁰ This ruling triggered much debate among interested parties and individuals in both Indonesia and the United States, and resulted in a series of substantial changes, including the introduction of taxation into PSCs.¹⁸¹

In response to the IRS ruling, the 1978 Decree of the Ministry of Finance, provided for two types of taxes for foreign oil companies: a normal corporate income tax of 45 per cent of taxable profit and a further dividend tax of 20 per

cent on interest, dividends and royalties after deducting corporate tax,¹⁸² for a total effective composite tax rate of 56 per cent.¹⁸³ This tax introduction effectively resolved the tax problems for American oil companies under the PSC system.¹⁸⁴

So since then production-sharing companies have been required to pay "Indonesian Corporate Tax and tax on interest, dividend and royalty imposed on it pursuant to the Indonesian Tax Laws"; and Pertamina is obligated to "assume and discharge other Indonesia taxes of contractor including transfer tax, import and export duties on materials, equipments and supplies brought into Indonesia by contractor..."¹⁸⁵

Indonesia further ordered in its Decree of Ministry of Finance in May 1984 that PSCs concluded thereafter were subject to a new income tax of 35 per cent of taxable income and a further dividend tax of 20 per cent on the balance,¹⁸⁶ which together made a total tax rate of 48 per cent of the taxable income.¹⁸⁷

This tax system remains unchanged under the third generation PSCs except for the provision by the 1988 incentive package that a contractor is entitled to a tax incentive calculated monthly from the contractor's taxable income to compensate the divergence between the government set price and the realized price.¹⁸⁸

The issue of pricing is of importance since the determination of it has a major impact on a contractor's

profits. Indonesia's PSCs use an "export price" figure for cost recovery and tax calculation. This price has traditionally been the government-set price, which used to be an OPEC-type guide price prior to 1986.¹⁸⁹ The official selling price has long been the contractors' concern, for it often causes revenue losses resulting from the actual difference between the selling price and the realized export price. In response to contractors' concern and for tax incentive purposes, Indonesia recently introduced a new pricing formula under which the oil price is now set by the government on the basis of a monthly average spot prices for a basket of five internationally traded crude oils.¹⁹⁰ This price applies to all PSCs for both cost recovery and tax purposes.

The gas price has also been traditionally controlled and fixed by the government. The LNG price is generally linked to the price paid to crude oils. Under the third generation PSCs, the gas price will be oriented towards field development economics for new projects, but not for approved and committed projects.¹⁹¹

So far as production sharing is concerned, the introduction of taxation of foreign oil companies may be considered to represent some deviation from the original arrangement. It also complicates to a certain degree the government-company relationship.

As a final point, the inclusion of foreign companies' tax

into the host country's share of profit oil can be treated as either a royalty, or a tax, or a combination of both.¹⁹² In fact, the IRS reversed at the end of 1983 its ruling to accept such an inclusion for U.S. tax creditability.¹⁹³

Q. Domestic market obligation

The PSC has several provisions which are designed to make the contractor's operations serve domestic economic development. Most directly affected is the domestic supply obligation.

Domestic supply was not required in the early PSCs. Since 1968 all PSCs have incorporated a uniform provision obliging foreign companies, after commercial production commences, to fulfil their obligations towards the supply of the domestic market in Indonesia, the so-called domestic market obligation.¹⁹⁴ The total amount to be supplied is calculated through a complex formula.¹⁹⁵ Suffice it to say that the quantity each company supplies varies according to its own production volume and decreases as overall Indonesian oil production—including Pertamina's—increases, providing that the *pro rata* quantity does not exceed 25 per cent of total production from its contract area.¹⁹⁶ In the late 1970s, Pertamina took about 19.2 per cent of the output, effectively reducing the oil companies' profit by a few cents per barrel and creating a real profit split of 89/11.¹⁹⁷

The domestic supply oil price prior to 1988 used to be:

for the first five years oil (New Oil), the same price the contractor receives for recovery of operation cost, i.e., the export price; after the first five years oil (Old Oil), at cost plus \$0.20 per barrel.¹⁹⁸ This nominal payment for the Old Oil has been increased to 10 per cent under the 1989 incentive package, and further to 15 per cent under another incentive arrangement introduced in late 1992, of the export price for both New and Old Oils for all PSCs, both current and new.¹⁹⁹ During the moratorium of the first five-year period, the proceeds the contractor receives in excess of \$0.20 per barrel prior to 1988, or of 10 per cent of the export price thereafter, is required to be used preferably to assist financing of continued exploration efforts by the contractor in its contract area or in other areas of the Republic of Indonesia if such opportunity exists. Such proceeds can be used freely at the contractor's discretion should there be no such opportunity.²⁰⁰

R. Participation

Participation requirement was not brought into being until the 1976 model PSC and has since become a standing clause for all PSCs. The participation clause provides that Pertamina has the right to demand that a 10 per cent undivided interest be offered to either a limited liability company or Indonesian entity, collectively called "the Indonesian Participant", designated by Pertamina.²⁰¹ The demand is to be

made upon commercial discovery. The "Indonesian Participant" is carried by the contractor throughout the exploration period and, therefore, assumes no exploration risks.

In return to the right of participation, the "Indonesian Participant" is required to repay the contractor a proportionate share of all past operation costs, such as information compensation and production bonus incurred on his behalf. The reimbursement may be made, at the participant's option, either in cash or out of his production entitlement.²⁰² The relationship between the participant and the contractor is to be regulated by a joint venture operation agreement, the main principles of which are always embodied in a standard exhibit to the PSC.²⁰³

The government participation clauses in modern petroleum contracts bother most contractors; they can be strong disincentives to foreign investment. In the Indonesian case, the government participation provision has less implications for two reasons: first, the country rarely exercises its option to participate;²⁰⁴ second, if exercised, the participation role is nominal since the "Indonesian Participant" holds only a minority interest in the joint venture.

S. Training, employment and local preference

All three generation PSCs attach importance to the issue of Indonesianization, which is realized through training and

employment of Indonesian personnel and giving preference to local goods and services.

Under all PSCs, one of the contractor's obligation is to "prepare and carry out plans and programmes for industrial training and education of Indonesians for all job classifications with respect to operations... "205 The contractor agrees to employ qualified Indonesian personnel in its operations and, after commercial production commences, will undertake the education and training of Indonesian personnel for labour and staff positions, including administrative and executive management positions. Costs and expenses for the training and education are recoverable and can be included in operating costs.²⁰⁶

Currently, about 6,000 Indonesians are being employed by foreign contractors, as compared with 2,000 in 1978. This has meant a reduction in expatriate staffs from 45 per cent in 1978 to 16 per cent today.²⁰⁷

Another obligation for the contractor in this respect is to "give preference to such goods and services which are produced in Indonesia or rendered by Indonesian nationals, provided such goods and services are offered at equally advantageous conditions with regard to quality, price, availability at the time and in the quantities required."²⁰⁸

Prior to 1988, all procurement was supervised and controlled by Pertamina and the government. Major changes took place thereafter. Under the new procedures, production sharing

contractors were allowed to purchase equipment up to a value of Rp 1 billion, subject only to the post-audit inspection; procurement of materials and services between Rp 1 billion to Rp 3 billion requires BPPKA's approval; procurement beyond Rp 3 billion must be approved by the government. Imports of goods and services that are available on the local market still require prior approval, but contractors at exploration stage remain entirely free to purchase their equipment.²⁰⁹

Anyway, the relevant procurement procedures are currently being simplified and the 1988 incentive package promises that further simplification will be made in line with the government's "deregulation policy". In fact, PSC contractors do not have to worry about Indonesia's preferential requirements to use domestic goods, because no sophisticated exploration equipment is made locally and about 90 per cent of the oil and gas exploration equipment used in Indonesia is therefore imported. So far Pertamina has not issued any regulations that prevent the importation of equipment by foreign contractors.²¹⁰ The preferential requirements, like the managerial control, are therefore more nominal than real.

T. Dispute settlement

All PSCs have a standard dispute settlement clause which employs a three-step procedure for resolution of disputes:

First, consultation: Both parties are expected to meet periodically and discuss the conduct of the petroleum

operations and to make "every effort to settle amicably any problem arising therefrom."²¹¹

Second, arbitration: Disputes which cannot be settled amicably shall be submitted to the decision of an *ad hoc* arbitration, which resorts, to some extent, to the International Chamber of Commerce (ICC); any vacancy in the arbitration committee will be filled by the President of ICC and the arbitration will be conducted in accordance with its rules of arbitration.²¹²

Third, judicial settlement: In the event that the arbitration is not successful, the dispute will be referred to Indonesian courts of law for resolution.²¹³

The applicable laws are explicitly stated to be the laws and regulations of the Republic of Indonesia, which apply to all PSCs.²¹⁴

As a last assurance of the Indonesian sovereignty over its natural resources, the PSC goes on to provide that no term or provisions of the contract, including the agreement on arbitration "shall prevent and limit the Government of Indonesia from exercising its inalienable rights."²¹⁵

U. Termination

Termination is not permitted during the first two or three years from the effective date.²¹⁶ After the minimum contract terms, the contract may be terminated under any of the following circumstances. First, the contractor is entitled

to terminate voluntarily the contract at any time should he consider that "circumstances do not warrant continuation of the petroleum operations".²¹⁷ This optional termination will be effected by giving a written notice and consulting Pertamina. The contractor will thereupon be relieved of its obligations under the contract, except those required prior to such relinquishment. Second, if petroleum is not discovered at the end of the six- to 10-year exploration period, the contract will terminate automatically in its entirety, unless the contractor elects to extend it.²¹⁸ Third, aside from the foregoing voluntary and automatic terminations, the contract can also be mandatorily terminated by either party upon giving 90 days' written notice if a major breach of the contract is committed by the other side.²¹⁹

3. Variations of the PSC

In addition to the straight PSCs, Pertamina has also introduced in recent years a number of variations, the principal ones being the following:

(1) Joint operation agreement

A JOA is an arrangement under which Pertamina has a 50 per cent participation interest.²²⁰ Under this form of contract, foreign companies agree to join forces with Pertamina to further develop onshore areas formerly reserved

for Pertamina. The contractor is obliged to match or reimburse Pertamina's previous expenditures or pay all exploration and development costs for a certain period, usually three years. After then, all costs will be borne equally and production will also be divided equally. After the contractor recovers its production costs from its 50 per cent of production, the remainder of which is shared on a basis of the standard PSC split, i.e., 85/15 in favour of Pertamina. Other obligations and rights are generally similar to those of a PSC. So a JOA may be said to be a PSC with 50 per cent Indonesian participation.

The first JOA was signed in 1977. Pertamina has shown renewed interest in such an arrangement recently. By the end of 1990, Pertamina had signed 20 JOAs with foreign companies."

More recently, Joint Operating Board (JOB) contract has been offered, featuring a JOB consisting of Pertamina's and its partner's professionals. The JOB is accountable to and supervised by a Joint Operating Committee (JOC) composed of the two parties' representatives. A JOB contract is a modification of a JOA's terms.

(2) Enhanced oil recovery contract

Foreign companies were previously prohibited from participation in secondary recovery of petroleum in areas reserved for Pertamina. This reservation policy was reversed in 1986 when Pertamina solicited bids from selected companies

to take part in an enhanced oil recovery (EOR) project.

Under an EOR contract, foreign companies are given two years as a pilot phase to conduct feasibility studies and to determine the commercial viability of the project. Cost recovery and production sharing are governed by the same terms as those under a JOA except that cost recovery is limited to 65 per cent.²²¹ The first such contract was signed in 1989 and Pertamina has so far concluded a total of three EOR contracts.²²²

(3) Technical assistance contract

A technical assistance contract (TAC) is an agreement under which the contractor takes over the operation of a producing field, including personnel and equipment. Production up to a specified level, based on an agreed decline curve, goes to Pertamina and the contractor receives any incremental production above the said level. Currently, two TACs remain in effect.²²³

(4) Petroleum loan agreement

Under a petroleum loan agreement (PLA), the principal and interest on the loan is repaid in crude oil after commercial production commences. In addition, the lender is entitled to purchase 40 per cent of production at prevailing market price. The right to purchase is 10 years from the commencement of production. The risk loan is to sink if no commercial

discovery is made.

(5) Technical evaluation agreement

Under a technical evaluation agreement (TEA), a foreign oil company pays a fee for access to Pertamina's geological data on an area and for conducting some additional limited seismic work on it. If the area in question is approved by the company to be prospective, Pertamina may open it for international bidding. The technical evaluation company is entitled to match any higher bidder and has certain advantages over other companies.

At this point, perhaps not much appraisal of these variants can be made since they have been operative only for a short time and in a limited number. Nonetheless, the observation made on the PSC in the following sections remains largely relevant to these variations because these variants are only different forms of the PSC.

**VII. The production-sharing contract and
environmental protection/sustainable development**

1. Environmental protection in Indonesia

As noted earlier, Indonesia was opened to foreign investment in the late 1960s with a view to boosting its

economy. Environmental issues were a direct product of the rapid resources-intensive and export-oriented industrial development since the early 1970s. The burgeoning population provided an added dimension to its environmental degradation. The country now faces a number of environmental problems, such as industrial pollution, deforestation and resources depletion.²²⁴

The development of environmental awareness in Indonesia has benefited much from having in its bureaucracy a large number of the so-called technocrats, educated abroad (mainly in the United States) in the 1960s, and from the fact that the government has traditionally been willing to listen attentively to outside advice if it is useful to Indonesia. With their close connection with, and attention to, the environmental development in North America, these technocrats were quick to see the relevance of this new approach to the deteriorating situation in Indonesia which relied heavily on the development of natural resources as the road from poverty to prosperity and as the means to satisfy the people's basic needs. International aid programmes, such as the Environmental Management Development in Indonesia (EMDI) with Canadian assistance, has also given impetus to Indonesia's environmental development.²²⁵ It is interesting to note that the environmental initiatives in Indonesia seemed to be led by those government managers charged with social and economic development responsibilities rather than by scientists and

public interest groups in developed countries.

Nonetheless, the major landmark in the growth of official environmental awareness was Indonesia's participation in the Stockholm Conference in 1972. The first formal initiative to achieve environmental management was not taken until the Ministry of Development Supervision and Living Environment was set up in 1978 to administer environmental policies for the country.²²⁶ The environmental movement in the country has since gained momentum, which is represented by the passage of some important environmental legislation in the 1980s.²²⁷

The year of 1982 saw the promulgation of Act No.4 concerning Basic Provisions for the Management of the Living Environment.²²⁸ This act, containing some important principles for environmental management, serves as the basis for further regulations.²²⁹ More recently, Government Regulation No. 29 of 1986 on Analysis of Impact upon the Environment requires all industrial activities, existing and proposed, to carry out preliminary environmental impact reports, or assessments, if necessary.²³⁰ Although the regulation takes an unusually long period of from four to six years to come into effect for different groups of developers, the pace is fairly creditable by most international standards.

But a variety of problems have impeded the successful implementation of Indonesia's environmental policies and regulations. First, most of Indonesia's environmental acts "generally take the form of a statement of principles and

requirements, without laying down regulatory machinery".²³¹ Second, environmental legislation is often unclear as to the division of responsibility among the institutions involved. As a result, few agencies have set up the full complement of institutions to date.²³² Third, the central environmental agency is assigned only with a coordinating role; it does not have the authority to implement environmental policies and regulations, as this remains the responsibility of the sectoral agencies and regional government. So Indonesia's main constraints to sound environmental management seem to be institutional.²³³ Fourth, many regional decision makers such as governors and provincial assemblies favour economic development to environmental protection for short-term benefits.²³⁴ Fifth, the general lack of funds, technology and qualified personnel also impedes environmentally conscious development. In addition, Indonesia shares the popular view of the developing world that every country has the right to development and should maintain control of its own natural resources, especially forests.

Because of these ideological, legal and institutional impediments, implementation and enforcement of current environmental legislation represent a major problem in Indonesia's environmental management. For instance, "environmental reporting is generally unheard of".²³⁵ There have been no cases where a project has been stopped because of an environmental report.²³⁶ Indonesia's official efforts to

protect the rain forests are largely ineffective, and its valuable tropical forests are among the least protected in Asia.²³⁷ As a matter of fact, "Indonesia has tended to act only when the weight of evidence against polluters is substantial",²³⁸ and business actions are generally in response to the threat of litigation or prosecution.²³⁹

To sum up, environmental appreciation and awareness in Indonesia have developed at a relatively early stage vis-a-vis many other developing countries. The spectrum of government interests and responsibilities has also been broader than those being dealt with among the developing world at the same time. But the overall environmental regulation is still not satisfactory, as pointed out recently by one Indonesian lawyer:

Until very recently, legal protection of the environment has not been an important issue. It would appear that the Government is aware of both domestic and international pressure to control the environment and has implemented some measures to rectify various matters. However, whilst the Government appears well intentioned, the approach, to date, has been rather unformulated—there is no comprehensive environmental legislation with laws that are more procedural than substantial.²⁴⁰

Greater attention must be given to implementation and enforcement if the existing legislation is to achieve any practical results.

2. The production-sharing contract and environmental protection

In spite of the relatively favourable development in environmental awareness and legislation, and of the fact that offshore petroleum development may cause serious environmental consequences, Indonesia's PSC, like the MCC, has displayed little concern for the social and ecological impact of the extractive operation. PSCs, both model and individual, do not have a separate article dealing with environmental protection. The issue is only briefly referred to in the general obligation clause for the contractor, which reads in full that the contractor:

Be responsible for the preparation and execution of the Work Program, which shall be implemented in a workmanlike manner and by appropriate scientific methods, and CONTRACTOR shall take the necessary precautions for protection of navigation and fishing and shall prevent extensive pollution of the sea or rivers. It is also understood that the execution of the Work Program shall be exercised so as not to conflict with Government obligations imposed on the Government by International Law.²⁴¹

This environmental provision appears far from legally sound for a number of important reasons. First, its primary objective is obviously the "execution of the Work Program". Environmental protection is given only a subordinate position. Second, environmental obligations are not spelled out in operational terms. For instance, the phrase "extensive pollution" is obviously a very broad term. Its meaning remains uncertain and its magnitude is hard to define. Third, it

appears under this provision that the contractor assumes no responsibility unless its operations have caused "extensive pollution". Fourth, the provision has failed to specify the environmental goals to be achieved and several important requirements, such as specific preventive measures, clean-up operations, insurance programmes, restoration/abandonment, are missing. The flattering words of the provision sound more like policy suggestion rather than legal requirements. They are not sufficiently precise and enough to compel foreign companies to take their environmental obligations seriously.

In addition to the above limitations, nowhere in the PSC is the national environmental legislation mentioned. The contract has thus failed to refer production-sharing contractors explicitly to Indonesia's existing environmental regulations.

The loose environmental obligations may give rise to disputes between the contracting parties. In fact, they have already caused problems in practice. There has been some controversy as to who is responsible for the removal costs after a field is abandoned. Currently, 319 installations are located in Indonesian offshore waters, mostly in areas close to navigation routes.²⁴² Many of them will have to be removed in the 1990s. The cost of removal of production platforms is considerable and the responsibility for their maintenance and for the damage they may cause to navigation and passing vessels has become burdensome. Pertamina has roughly estimated

that the cost of removal averages \$1.6 million per installation, with a total cost of \$500 million for all removals.²⁴³

As examined, PSCs have no specific provisions regarding the abandonment of offshore platforms. Pertamina has been making an attempt through negotiations with contractors to have the maintenance and lighting costs included in PSCs.²⁴⁴ But on the legal basis that all equipment becomes the property of Pertamina once brought into the country, it is difficult to argue that the contractor has any responsibility to bear removal costs, which responsibility lies clearly with Pertamina.²⁴⁵ To solve the problem, Pertamina needs to perform a radical operation on the title-to-equipment clause.

The delicate environmental provisions are perhaps deliberate, because Indonesia must consider the extent to which the benefits from environmental protection exceed the cost incurred in the context of a pressing need for foreign investment and economic development.²⁴⁶ This also explains why these provisions have remained unimproved throughout contractual revisions in the past. In short, the broad terms of environmental reference are basically unenforceable because they contain no enabling definitions and regulations.

3. The production-sharing contract and sustainable development

Indonesia is very fortunate in that is endowed with natural resources, such as petroleum. While the PSC system has facilitated a smooth and rapid exploitation of petroleum resources over the past several decades which in turn allows a greater economic development rate, the massive extraction also creates various problems, among them, depletion of the petroleum resource.

Exhaustion of petroleum reserves has long worried in Indonesia for about 20 years. Driven by the fear that existing fields will dry up within the next three to four years, Pertamina has to find new reserves and then tap them quickly to replace old fields.²⁴⁷ For this and other reasons, the PSC is designed with strong incentives for both the government and companies to optimize development and maximize production in the event of a commercial discovery. As it now stands, the contract contains virtually no regulation for sustainable development.

Over some 30 years of quickened production under PSCs, Indonesia's current oil production capacity of 1.6 million b/d is predicted to decline to 670,000 b/d by the year 2000 with gas production falling to 3.6 billion cbft/d from 4.056 billion cbft/d during the same period.²⁴⁸ Oil exports, which fell from a dangerously high 80 per cent of the total in 1983

to 38 per cent in 1989 partly as a result of the government diversification away from being a one-product economy,²⁴⁹ will virtually dry up, falling to 75,000 b/d by 2000, compared with 655,000 b/d at present.²⁵⁰ Indonesia now faces the danger of becoming a net importer of crude oil by the end of the century. The country has to step up exploration activity in order to avoid such a likelihood.²⁵¹ In the last analysis, the oil supply in the country will run out within 20 years at the current rates of depletion and in the absence of substantial new discoveries.²⁵²

Consequently, "as in many developing countries, Indonesia faces the dilemma of selecting a proper course *between conservation and depletion of irreplaceable natural resources.*" (emphasis added)²⁵³ The country has recognized the issue of sustainable development, but actions need to be taken towards change in the PSC system.²⁵⁴

VIII. Assessment of the production-sharing contract

Indonesia, like many other developing countries involved in the oil business, has been driven as much by political considerations as by economic ones in its pursuit of a contract form, which could satisfy its political desire to assert sovereign rights over natural resources and meet the economic requirement of developing them with the introduction

of foreign capital and technology. The PSC is a compromise between political philosophy and economic reality.

The PSC is a unique resources system introduced, for the first time in history, by a developing country. It embodies several distinctive departures from its predecessor which can be seen from the following comparison:²⁵⁵

Table 11: Comparison of the PSC and Work Contract

Production-sharing contract	Work contract
a. Gov't retains management of the resources and its development;	Contractor has effective management and control over the enterprise;
b. Work programme and budget are annually submitted for approval by Pertamina;	Submission of work program and budget is not required under most work contracts;
c. Ownership of oil remains vested in the state and title to contractor's share passes at the point of export;	Petroleum belongs to State but title to production passes to contractor at the point of sale;
d. Contract is based on production sharing;	Contract is based on profit sharing;
e. Equipment becomes Pertamina's property upon entry in Indonesia;	Contractor retains the ownership of equipment and is only obliged to give a purchase option upon expiration of contract;
f. Contract is signed and approved by government;	Contract is ratified by law;
g. Pertamina is the holder of authority to mine	Contractor is granted the exclusive right to explore

Table 11: (continued)

with contractor providing services;	for and produce petroleum;
h. Contractor is reimbursed with production for risks assumed and services rendered.	Contractor receives all production as reward with an obligation to pay royalty and taxes.

Source: Compiled by the author.

The PSC has been operative for nearly 30 years and has yielded much political and financial information. It is time to make some assessment of the system. Most importantly, the PSC recognizes the prevailing trends of national control over natural resources by giving ownership and management to the producing country; the system also acknowledges the essential role still to be played by foreign companies in highly risky and capital- and technological-intensive exploration by assigning the operating rights to the latter.²⁵⁶ It is also important that the PSC gives both parties the right to receive a certain amount of production to meet their essential objectives, namely having access to crude oil. This feature accounts in part for the rapid expansion of the system all over the world in the past several decades. Furthermore, the PSC has emerged to be a potent instrument for conflict minimization.²⁵⁷ The management responsibility and legal

control vested in Pertamina enables it to intervene at critical points during the operation to prevent and avoid dilemmas in the traditional conflict areas of production policy, price setting and accounting procedures.²⁵⁸

As a last point, the PSC places an emphasis on mutuality of interest in the relationship. Both parties express in the PSC that they undertake to carry out the contract in accordance with the principles of mutual good will and good faith. One can read this mutuality clause in a number of different ways and react to it accordingly, but one cannot deny the improvement achieved by the PSC over all previous arrangements which largely ignored the importance of this principle. Indeed, the concept of production sharing itself is a clear recognition and manifestation of the principle of mutuality of interests.

Two more remarks are still relevant to the summary of the PSC system. First, the PSC does not distinguish between onshore and offshore development, though it was originally designed and used for offshore extractions. The same terms and conditions apply to both onshore and offshore, with the only exception being the investment credit introduced by the 1989 incentive package for the deep sea contract areas. Second, the major alterations made in the PSC through the years all served to weaken the concept of production sharing and have complicated the production-sharing process.

The PSC as a resources development system is certainly

not perfect. Some of its weak points merit further discussion. The most controversial features of the PSC are perhaps its management clauses. Legally, management responsibility is always vested in Pertamina and the contractor is responsible only for the execution of the extraction. In practice, Pertamina does not possess sufficient capability to achieve the aim of full managerial control over all aspects of the operation and its authority to approve companies' work programmes remains a somewhat token one. In fact, it is the contractor who retains effective control despite the management clauses.

An examination of the existing relationship between Pertamina and foreign companies reveals the disparity between the written words and reality. So one may argue that too much or too little management has been achieved under PSCs. While Indonesia has claimed that oil exploitation in Indonesia is in the hands of Indonesians, others may argue that the management clauses only create an "appearance of domestic control".²⁵⁹ Nonetheless, the debate over the management clauses does not detract from the fact that Pertamina's management capability has been significantly improved over the years. As to the effectiveness of the management clauses, it is fair to say that under these provisions the state legally retains overall management responsibility, but the oil company exercises day-to-day control in practice.

Like the management clauses, the Indonesianization

provision remains largely ineffective due to its nature of general commitment. As one commentator points out:

Yet all these commitments set no clear-cut target which could provide a yardstick to assess the company's compliance with the government's dicta in this regard. Moreover, the equivocal nature of the contract provision has generated disagreement over definition, timing and enforcement.²⁶⁰

Production-sharing contractors have found themselves basically free to employ and train their staff regardless of the contractual requirement of Indonesianization.²⁶¹

Another major problem area that has remained with Indonesia's PSC is certainly its window-dressing environmental provisions. The system has, consciously or unconsciously, failed to address the issue in a proper manner. To be a truly modern resource development system that can meet the challenge of the world, both today and tomorrow, the contract must redress its ignorance by incorporating effective provisions for environmental protection and sustainable development.

In the final analysis, Indonesia's "contract terms remain among the world's toughest".²⁶² Fortunately, that toughness has largely been redressed by the country's great potential for hydrocarbons, its stable political and economic climate, and the generally cooperative nature of Pertamina and the Indonesian government. So large international oil companies still select Indonesia, regardless of its tough contract terms, on which to gamble their money.

IX. Summary

The production-sharing contract has spread from Indonesia to numerous developing countries across the world.²⁶³ It is even utilized as a mechanism for settling a maritime boundary dispute between Indonesia and Australia.²⁶⁴ The popularity of the PSC among both producing countries and foreign companies stems from its laudable features, all of which have political appeal to governments and perhaps to oil companies who can no longer be conspicuously in control of the petroleum resources of producing countries. The success of the PSC in developing countries is mainly due to political motivations, for the system creates an image of national control over petroleum development.

The PSC has become an established petroleum development system through extensive national practice, as opposed to the concession system and as an alternative to other contractual arrangements. Despite its major defects in the environmental aspect, the system provides, on the one hand, producing countries with a sound basis for petroleum development and, on the other hand, foreign oil companies with a stable environment for risk investment. It is not an overstatement that the PSC system is an "important contribution made by Indonesia" to the world petroleum industry.²⁶⁵ The following comment made 15 years ago still provides an objective evaluation of this system:

the PSC represents an important effort to equalize the historical imbalance between the producing countries and the foreign petroleum companies. Although the contracts exaggerate the actual shift in power between the parties, they provide an appearance of equality as well as a means for ultimately achieving such equality.²⁶⁶

Notes:

1. Indonesia's oil industry celebrated its Centennial in 1985. See generally, Sanusi, B., "A Short History of the Indonesian Petroleum and Natural Gas Industry", 16 OPEC Bull. 18 (1985); Carlson, S., Indonesia's Oil (Boulder, Colorado: Westview Press, 1977), pp.7-18; Kindley, M., "Indonesia", 8 O & G Investor 46-61 (1988).

2. This company, emerging as the leader in production and refining, expanded by merging with Shell Transport and Trading Company, as a leader in transportation and marketing, on a 60/40 basis into a new company named the Royal Dutch/Shell Group, known today as "Shell".

3. Two of the major companies from U.S. were California Texas Oil Company (Caltex), jointly owned by Standard Oil of California and Texaco, and Stanvac, jointly owned by Standard of New Jersey and Socony Vacum (Now Mobil).

4. Gelb., A.H., Oil Windfalls: Blessing or Curse? (New York: Published for the World Bank by Oxford University Press, 1988), p.197.

5. Based on information from Sanusi, *supra* note 1, p.19.

6. Economist Intelligence Unit (EIU), Country Profile: Indonesia 1990-91 (London: Business International Ltd., 1990), p.37; "Indonesia—Looking for Oil and Gas: as Explorations Step up so Do Equipment Imports", 14 EAER 16-19 (1992).

7. Johnstone, D., *infra* note 92, p.34. See also "Far East Report: Indonesia, Malaysia Push Petroleum Work", O & G J., December 3, 1990, p.50.

8. Data quoted from "Indonesia—Looking for Oil and Gas", *supra* note 6, p.17. Please note that the reserve estimates vary considerably. For instance, Directorate General of Oil and Gas (MIGAS) of Indonesia reported recently that Indonesia's proven and probable oil and gas reserves is approximately 11 billion barrels of oil and nearly 102 trillion standard cbft of gas. For estimates by Pertamina, see U.S. Embassy, 1991 Petroleum Report, *infra* note 65, p.11.

9. Secretary of OPEC, OPEC Member Country Profile, March 1983, p.32.

10. Valencia, M.J., South East Asian Seas: Oil under Troubled Waters, Hydrocarbon Potentials, Jurisdictional Issues and International Relations (Singapore: Oxford University Press, 1985), p.34.

11. Gadon, T., "Offshore Oil Prospects for the Year 2000", 11 Nat. Res. F. 320 (1987).
12. Statistics of the Bank of Indonesia, cited in *infra* note 65, p.89; see also *supra* note 6, EIU, Country Profile: Indonesia, p.38, and "Indonesia—Looking for Oil and Gas", p.18.
13. Energy Information Administration (EIA), The Petroleum Resources of Indonesia, Malaysia, Brunei and Thailand (Washington, D.C.: Dept. of Energy, 1984), p.7.
14. For the text of the East Indies Mining Law of 23 May 1899 (Netherlands Statute No. 124, Netherlands Indian Statute No. 214), see Fabrikant, R., Indonesian Petroleum Industry: Miscellaneous Source Material (Singapore: Institute of Southeast Asian Studies, 1973), pp.1-29.
15. For the text of the new law, see *ibid.*, pp.30-108.
16. *Supra* notes 14 and 15.
17. Ooi, J.B., The Petroleum Resources of Indonesia (Kuala Lumpur: Oxford University Press, 1982), p.4.
18. Sec. 13 of 1899 East Indies Mining Law, *supra* note 14, p.10.
19. *Ibid.*, secs. 16 and 24, pp.10-11, 14-15.
20. *Ibid.*, sec. 35, pp.20-21.
21. Oon, K.C., The Politics of Oil in Indonesia: Foreign Company-Host Government Relations (Cambridge: The Cambridge University Press, 1986), p.35.
22. Section 5A consists of four brief paragraphs which gave the colonial government the right to prospect and develop petroleum resources itself or delegate this right to companies or individuals. Rights and obligations were not spelled out in this Section and were left to be negotiated. For the text of Section 5A, see Fabricant, Miscellaneous Source Material, *supra* note 14, p.4.
23. Bartlett III, A.G. et al., Pertamina: Indonesian National Oil (Singapore: Amerasian Ltd, 1972), pp.76-77.
24. The Indonesian Government signed in the mid 1950s the last batch of "let alone" agreements with the three major oil companies, Stanvac, Caltex and Shell, operating in Indonesia. See Carlson, Indonesia's Oil, *supra* note 1, pp.12-23.

25. Sutowo, I., "The Role of Oil in National Life", in Fabrikant, Miscellaneous Source Material, supra note 14, pp.460-64; Ir. Wijarso, "A Comprehensive Look at Indonesia's Energy Policy", 16 OPEC Bull. 6 (December/January, 1986).

26. Law No. 37 was revoked and replaced by Law No. 11 of 1967 regarding basic provisions on mining. For the text and a discussion of the Law No. 44, see *infra* note 58 and its accompanying text.

27. Foreign companies strongly resisted a transformation from concessions to a new co-operation in accordance with the newly enacted law. The Indonesian Government was almost forced into issuing an ultimatum to state that it would take unilateral steps with all possible consequences if no resolution were found at a certain date. For a more detailed discussion of the negotiations between Indonesia and foreign companies, see Bartlett, Pertamina, supra note 23, p.186-240.

28. HE President Soeharto of Indonesia, "Century of Indonesia's Oil Industry", 16 OPEC Bull. 16 (November 1985).

29. For the major sections of the Tokyo agreement reached and signed on January 1, 1963, see, Ooi, Petroleum Resources of Indonesia, supra note 17, p.21.

30. For a definition of work contract, see William, H.R. and Meyers, C.J., Manual of Oil and Gas Terms, 8th ed. (New York: Matthew Bender, 1991), p.1376.

31. Contract of Work between P.N. Pertamina and P.T. Stanvac Indonesia dated September 25, 1963, in Fabrikant, ed., Miscellaneous Source Material, supra note 14, pp.348-93; also reprinted in Barrows Company, ed., Asia and Australasia: Basic Oil Laws and Concession Contracts, Supp. 2 (New York: The Petroleum Legislation Co, 1964), pp. Stanvac 1-59 (hereinafter Asia Contracts).

32. *Ibid.*, Preamble.

33. *Ibid.*, art. 3.

34. *Ibid.*, art. 3 (a) and Exhibits C and D.

35. *Ibid.*, art.1.

36. *Ibid.*, art. 3.

37. *Ibid.*, art. 4 (a).

38. *Ibid.*, art. 4 (c).

39. *Ibid.*, art. 5. This split ratio was changed to 85/15 after the increase in oil price in 1974.
40. *Ibid.*, arts. 18 and 19.
41. Fabri, N. *infra* note 92, p.305; Fabrikant, R., *infra* note 92, p.309.
42. Sutowo, *supra* note 25, p.467.
43. O & G J., December 3, 1990, p.51.
44. Agoes, E.R., "Indonesia and the LOS Convention: Recent Developments in Ocean Law, Policy and Management", 15 Marine Policy 122 (1991).
45. U.N. Economic and Social Commission for Asia and Pacific (ESCAP), Study on the Implications of the New Ocean Regime Deriving from the 1982 United Nations Convention on the Law of the Sea: Vol. 2, Indonesia and the Law of the Sea (New York: United Nations, 1990), p.23 (hereinafter New Ocean Regime).
46. Agoes, *supra* note 44.
47. The High Seas Convention was ratified by Indonesia with a reservation that waters enclosed by archipelagic baselines are internal waters.
48. Barrows Company, Asia Contracts, *supra* note 31, Supp. 38, 1973, pp. Indonesia A 0-10; see also U.N. Office for Ocean Affairs and the Law of the Sea, Law of the Sea: Baselines, National Legislation with Illustrative Maps (New York: United Nations, 1989), p.187.
49. Kusuma-Atmadja, M., "The Concept of the Indonesian Archipelago", 10 Indonesian Quarterly 14 (1982).
50. *Cf.* Agoes, *supra* note 44, pp.125-26.
51. *Ibid.*, pp.126-28.
52. ESCAP, New Ocean Regime, *supra* note 45, p.20.
53. Arts. 46-54 of the United Nations Convention on the Law of the Sea, UN Doc. A/CONF.62/122, October 1982.
54. U.N. Office for Ocean Affairs and the Law of the Sea, Law of the Sea Bull., No. 18, June 1991, p.3, 7.
55. For a list of the maritime boundary delimitation agreements, see ESCAP, New Ocean Regime, *supra* note 45, pp.29-30. See also Kittichaisare, K., The Law of the Sea and

Maritime Boundary Delimitation in South East Asia (Singapore: Oxford University Press, 1987).

56. Nayoan, G.A.S., "Offshore Hydrocarbon Potential of Indonesia", 6 Energy 1225 (1981).

57. Art. 33 (2 & 3) of 1945 Indonesian Constitution, see McBeath, G.A. and Boyle, K.M., "Indonesia (Constitution)", in Blainstein, A.P., and Flanz, G.H., ed., Constitutions of the Countries of the World: Historic Constitutions (Dobbs Ferry, N.Y.: Oceana Publication, 1990), P. Indonesia, issued April 1990, 26. The 1945 Constitution was replaced by the new Constitution of August 14, 1950. Art. 33 of the former constitution is reproduced into Article 38 of the new one with minor literal changes.

58. Law No. 44 of 1960 Regarding the Mining of Oil and Gas, in Barrows Company, Asia Contract, supra note 31, Vol. 1, 1959, pp. A 1-26; reprinted in Fabrikant, Miscellaneous Source Material, supra note 14, pp.109-32.

59. For an account of Indonesia's petroleum legislation, see Fabri, N., "Indonesia: Minerals and Petroleum—Commentary", Australian Min. & Pet. Ass'n Yearbook, 1989, pp.302-07.

60. P.T. Permian (Perusahaan Negara Pertambangan Minyak Nasional—State National Oil Mining Company) by Government Regulation No. 198 of 1961; Pertamina (Perusahaan Negara Pertambangan Minyak Indonesia—State Indonesia Oil Mining Company) by Government Regulation No. 3 of 1961; and P.N. Permigan (Perusahaan Negara Pertambangan Minyak dan Gas Nasional—State National Oil and Gas Mining Company) by Government Regulation No. 19 of 1961. For a brief history and activities of the three companies, see Partlett, Pertamina, supra note 23, pp.184-85, 205-40.

61. P.T. Pertamina (Perusahaan Negara Pertambangan Minyak dan Gas Bumi Nasional—The National Oil and Gas Mining State Company) was formed by Law No. 27 of 1968.

62. Law No. 8 of 1971 Regarding State Oil and Natural Gas Mining Enterprise (Pertamina), in Barrows Company, Asia Contracts, supra note 31, Supp. 32, 1972, pp. Indonesia A 0-14.

63. *Ibid.*, art. 6.

64. *Ibid.*, art. 12. This government regulation, however, has not been issued until the time of this writing. The terms and conditions of the PSC are set out in the subsequent model PSC prepared by Pertamina.

65. Appendix 19: Government Organization and Appendix 20: Pertamina Organization Chart, in U.S. Embassy, The 1991 Petroleum Report: Indonesia (Jakarta: Embassy of the United States of America, July 1991), pp.147-60.
66. For a chart of the Council of Commissioners, see *ibid*; and Bartlett, Pertamina, *supra* note 23, pp.372-73.
67. For a discussion of Pertamina's subsidiaries and their activities, see "Indonesia: Pertamina", 15 (9) OPEC Bull. 20-32 (1984); U.S. Embassy, 1991 Petroleum Report, *supra* note 65.
68. *Ibid.*; see also Machmud, T.N. "Country Revision: Indonesia", in Barrows Company, Petroleum Legislation, Supp. 19 (New York: The Barrows Company Inc., 1976), pp.4-5.
69. Dr. Ibnu Sutowo may be regarded as the principal architect of the PSC, but many Indonesian oil people have contributed to its success.
70. Quoted in Kraar, L., "Oil and Nationalism Mix Beautifully in Indonesia", Fortune, July 1973, pp.99.
71. For background information of the contract, see Bartlett, Pertamina, *supra* note 23, pp.154-58; Kobayashi Group subsequently formed a new company named North Sumatra Oil Development Co., Ltd. (Nosodeco) to implement this contract.
72. *Ibid.*, p.157.
73. *Ibid.*, p.226. The contract was later amended to include exploratory drilling and an offshore area.
74. *Ibid.*
75. *Ibid.*, p.285.
76. Barrows Company, Asia Contract, *supra* note 31, Supp. 13, 1967, pp. A 1-15.
77. Some suggest that the concept of production sharing was originated in Bolivia or Venezuela as early as the 1950s. Even if that is the case, it is still fair to say that it was Indonesia that refined the PSC to a high degree of efficiency.
78. Nayoan, G.A.S., "Variations to the Indonesian Production-Sharing Contract: Impact on Upstream Activities", Institute for International Research, Paper B, 1989.
79. The Typical Production Sharing Contract for Exploration/Exploitation Agreements between Pertamina and Private Contractors, in Barrows Company, Asia Contracts, *supra* note

- 31, Supp. 25, 1969, pp. A 0-24.
80. Draft Production Sharing Contract of August 1976 (1976 model PSC), *ibid.*, Supp. 52, 1977, pp.1-55.
81. For the major change introduced in 1976, see Greiff, T., "International Business: Oil and Gas (Indonesia)", 19 Harv. Int'l L.J. 396 (1978); Johnson, M., "Oil I: Recent Development", 13 Bull. of Indonesian Econ. Studies 34-40 (1979).
82. Incentive Packages of August 31, 1988 and February 22, 1989 (on file in the author's office). For a summary of the packages, see Pertamina, Pertamina on the Move (Hong Kong: Hill and Knowlton Asia Ltd., 1990), pp.116-19; U.S. Embassy, 1991 Petroleum Report, *supra* note 65, pp.143-46.
83. EIU, Country Profile: Indonesia 1990-1991, *supra* note 6, p.38.
84. O & G J., December 3, 1991, p.5.
85. Statistics of Directorate General of Oil and Gas, cited in U.S. Embassy, 1991 Petroleum Report, *supra* note 65, p.98, xv, and 7; For a complete list of all PSCs, see Appendix 21, in *ibid.*
86. Barrows, G., "A Survey of Incentives in Recent Petroleum Contracts", in Beredjick, N and Wälde, T., ed., Petroleum Investment Policies (London: Graham & Trotman, 1988), p.226.
87. Omorogbe, Y., "The Legal Framework for the Production of Petroleum in Nigeria", 5 J.E. & Nat. Res. L. 279 (1987).
88. Smith, E.E., "Typical World Petroleum Agreement", a paper delivered at the Rocky Mt. Min. Law Fnd., International Resources Law: A Blueprint for Mineral Development, February 18-19, 1991, p.34.
89. Oon, Politics of Oil in Indonesia, *supra* note 21, p.41.
90. Kusuma-Atmadja, M. "Indonesia's National Policy on Offshore Mineral Resources: Some Legal Issues", in Borgese, E.M., Ginsburg N. and Morgan, J.R., ed., Ocean Yearbook 9 (Chicago: The University of Chicago Press, 1991), p.92.
91. For another definition and more references, see William, H.R., and Meyers, C.J., ed., Manual of Oil and Gas Terms, *supra* note 30, pp.973-74; Smith, E.E. and Dzienkowski, J.S., "A Fifty-Year Perspective on World Petroleum Arrangements", 24 Texas Int'l L.J. 37-38 (1989).

92. For discussions of the PSC, see Johnstone, D., "Share and the Share Alike", 12 O & G Investor 34-39 (1992); Fabrikant, R., "Production-Sharing Contract in the Indonesian Petroleum Industry", 16 Harv. Int'l L.J. 303-51 (1975); ———, "Pertamina: A Legal and Financial Analysis of a National Company in a Developing Country", 10 Texas Int'l L.J. 495-536 (1975); ———, Legal Aspects of Production Sharing Contracts in the Indonesian Petroleum Industry (Singapore: Institute of Southeast Asian Studies, 1973); Beals, R.E., and Gillis, M., "The Evolution of Indonesian Hard Mineral Agreements 1976-1977", 4 Nat. Res. F. 341-358; Oon, Politics of Oil in Indonesia, *supra* note 21, pp.23-141; Kusuma-Atmadja, *supra* note 90, pp.91-103; Makarim, N.A., "Indonesia: Minerals and Petroleum", Australian Min. & Pet. Law Ass'n Yearbook, 1989, pp.258-300; Fabri, N., "Comment on Indonesia: Minerals and Petroleum", Australian Min. & Pet. Law Ass'n Yearbook, 1989, pp.301-336; Blinn, K.W. et al., International Petroleum Agreements (London: Euromoney Publications, 1986), pp.69-79; Mikesell, R.F., Petroleum Agreements in Developing Countries (Washington, D.C.: Resources for the Future, Inc., 1984), pp.59-91. Barrows Company, World Petroleum Arrangements (New York: The Barrows Company Inc., 1985), pp.554-63; For more references, see William and Meyers, Manual of Oil and Gas Terms, *supra* note 30, pp.973-74.

93. Art. 12 (3) of the Pertamina Law, *supra* note 62.

94. The documents used in making the following observation are the following except otherwise specified:

(a) the 1976 Model PSC, *supra* note 80;

(b) Production Sharing Contract dated 12 February 1979 between Pertamina and Citco Indonesian Petroleum Corp. (Siri Block—East Java Sea), in Barrows Company, Asia Contracts, *supra* note 31, Supp. 70, 1981, pp.50-93; and

(c) Production Sharing Contract of 30 August 1985 between Pertamina and Sceptre Resources Bunyu (offshore Bunyu east Kalimantan), *ibid.*, Supp. 89, 1986, pp.1-27.

The above contracts will be collectively referred to as the "Model and Individual PSCs" in the following discussion.

95. *Ibid.*, Preamble of the Model and Individual PSCs.

96. *Ibid.*, sec. VI, art. 1.4.

97. *Ibid.*, Preamble.

98. *Ibid.*, sec. I, art. 1.

99. Fabri, *supra* note 92, p.314.

100. *E.g.*, PSC between Pertamina and Prof. Dr. Wendell Phillips of 4 February 1970, in Barrows Company, Asia Contracts, *supra* note 31, Supp. 26, 1970, pp. A 0-31.
101. The 1989 Incentive Package, *supra* note 82.
102. U.S. Embassy, 1991 Petroleum Report, *supra* note 65, pp.8-10.
103. Data compiled by the author from examining over 100 PSCs.
104. Based on information from U.S. Embassy, Petroleum Report, *supra* note 65, p.7.
105. *Cf.* sec. III of the Model and Individual PSCs, *supra* note 94.
106. *E.g.*, sec. III of the Sceptre PSC, *supra* note 94.
107. *E.g.*, sec. II, art. 1.5 of Citco PSC, *supra* note 94.
108. *E.g.*, *supra* note 106, sec. III, art. 1.5.
109. *Supra* note 105, sec. III, art. 1.6.
110. *Ibid.*, sec. III, art. 1.7.
111. U.S. Embassy, 1991 Petroleum Report, *supra* note 65, pp.168-72.
112. *Supra* note 105, sec. VIII, art. 1.
113. Data compiled by the author from examining over 100 PSCs.
114. Fabri, *supra* note 92, p.324.
115. Statistics of Directorate General of Oil and Gas, cited in U.S. Embassy, 1991 Petroleum Report, *supra* note 65, p.7.
116. Sec. V of the Model and Individual PSCs, *supra* note 94.
117. Data compiled by the author from examining over 100 PSCs.
118. Fabri, *supra* note 92, p.325.
119. Makarim, N. and Christensen, P., "Indonesia", Int'l Fin. L. Rev. (Supp.), April 1991, p.42; U.S. Embassy, 1991 Petroleum Report, *supra* note 65, p.64.
120. *Ibid.*, p.3.

121. Statistics of Directorate General of Oil and Gas, cited in *ibid*, p.7.
122. Sec. V of the Model and Individual PSCs, *supra* note 94.
123. *Ibid.*, sec. XV, art 3 (3.1).
124. *Ibid.*, sec. VI, art. 1.7.
125. *Ibid.*; and the 1988 and 1989 Incentive Packages, *supra* note 82.
126. For example, Marathon discovered KH Field on the Kakap Block in the Indonesian sector of the South China Sea in 1980 and began to petition Pertamina regarding commercial status for its discovery in 1982. But in Pertamina's view, the discovery was not large enough to allow the contractor to recover all its sunk costs and the required capital investments and still leave a reasonable share of production for Indonesia. After much prolonged negotiation, commercial status was granted to Marathon's discovery and the field went on stream in March 1986.
127. The 1988 and 1989 Incentive Packages, *supra* note 82.
128. *Ibid.*, sec. V, art. 1.3 (a) of the Model and Individual PSCs, *supra* note 94.
129. *Ibid.*, sec. V, arts. 1.2 (d) and 1.3 (a).
130. Oon, Politics of Oil in Indonesia, *supra* note 21, p.116.
131. Pertamina, Pertamina on the Move, *supra* note 82, p.20.
132. For more information, see Fabrikant, *supra* note 92, pp.312-17; Oon, Politics of Oil in Indonesia, *supra* note 21, pp.90-128.
133. Sec. VI, art. 1.3 of the Model and Individual PSCs, *supra* note 94.
134. *Ibid.*, sec. VI, art. 1.4.
135. *Ibid.*, sec. VI, art. 1.2 and sec. V, art. 1.2.
136. Makarim, *supra* note 92, pp.286-87.
137. On the other side, there are clauses which limit Pertamina's managerial function by providing the company with an escape mechanism to make unilateral changes to its submissions should it deem such changes to be "proper and advisable". For instance, sec. VI, arts. 1.5 and 1.6 of the

- Model and Individual PSCs, *supra* note 94.
138. Oon, Politics of Oil in Indonesia, *supra* note 21, p.118.
139. *Ibid.*, pp.117-18.
140. *Ibid.*; see also Fabrikant, *supra* note 92, p.315.
141. Cf. Pertamina, Pertamina on the Move, *supra* note 82, p.12.
142. Sec. V, art. 1.3 (e) of the Model and Individual PSCs, *supra* note 94.
143. *Ibid.*, sec. V., art. 1.2 (1).
144. For further discussion, see Oon, Politics of Oil in Indonesia, *supra* note 21, pp.120-22.
145. Sec. X, art. 1.1 and sec. V, art. 1.3 (b) of the Model and Individual PSCs, *supra* note 94.
146. Fabri, *supra* note 92, p.326.
147. Kusuma-Atmadja, *supra* note 90, p.9; Fabrikant, *supra* note 92, pp.331-32.
148. *Supra* note 145, sec. VI, art. 1.2.
149. E.g., Sec. VI, art. 1.2 of the Production Sharing Contract between Pertamina and Mobil Petroleum Indonesia Inc. of 14 March 1973, in Barrows Company, Asia Contracts, *supra* note 31, Supp. 44, 1975, pp.20-21.
150. Greiff, *supra* note 81, p.397.
151. Sec. VI, art. 1.2 of the 1976 model PSC, *supra* note 80; and the Decree of the Ministry of Finance of the Republic of Indonesia promulgated 19 July 1978, in Barrows Company, Asia Contracts, *supra* note 31, Supp. 61, 1979, p.6.
152. *Supra* note 150, p.396.
153. Jenkins, W., "Down to Business", Far E. Econ. Rev. August 12, 1977, p.88; ———, "Going Down, Down, Down", *ibid.*, July 29, 1977, p.60; ———, "A Rethink on Investment", *ibid.*, January 28, 1977, p.38.
154. See the text and its accompanying note 177 in this chapter.

155. Art. 2 of Exhibit C: Accounting Procedures of the Model and Individual PSCs, *supra* note 94.

156. Art.5 (2) of the Decree of the President of the Republic of Indonesia No. 467 of 1961, in Barrows Company, Asia Contracts, *supra* note 31, Supp. 8, 1966, p. Indonesia E 2. Cf. Fabrikant, *supra* note 92, pp.321-22.

157. For instance, financing must be with non-affiliates; loans should be obtained at rates not exceeding prevailing commercial rates; and financing plan and amounts must be included in each year's budget of operating costs for the prior approval of Pertamina.

158. *Supra* note 155, art.4.

159. Johnstone, *supra* note 92, p.36.

160. Kemp, A., Petroleum Rent Collection Around the World (Halifax, N.S.: The Institute for Research on Public Policy, 1987), pp. 168-69.

161. *Ibid.*

162. Greiff, *supra* note 81, p.397; Oon, Politics of Oil in Indonesia, *supra* note 21, p.147.

163. Sacerdoti, G., "Indonesian Oil Hopes Revive", Far E. Econ. Rev., April 29, 1977, p.43; see also Wall Street J., October 25, 1977, p.3.

164. E.g., sec. VI, art. 1.7 of the Sceptre PSC, *supra* note 94.

165. *Ibid.*, and the 1988 and 1989 Incentive Packages, *supra* note 82. As for the commerciality requirement, see the text and its accompanying notes 123 and 126 in this chapter.

166. *Ibid.*, the 1988 and 1989 Incentive Packages.

167. *Ibid.*

168. Sec. VI, art. 16 of the 1976 model PSC, *supra* note 80.

169. Makarim, *supra* note 92, p.285. For an example of this profit split formula, see Mobil PSC, *supra* note 149.

170. For an account of the new split ratio, see Greiff, *supra* note 81, pp.396-402.

171. Sec. VI, art 1.3 of the Model and Individual PSCs, *supra* note 94.

172. Art. 1 of the Decree of Ministry of Finance of the Republic of Indonesia, effective on January 1978, promulgated 19 July 1978, in Barrows Company, Asia Contracts, *supra* note 31, Supp. 61, 1979, p.2.

173. When the tax rate is 56%, the company's post-tax percentage share of the profit oil is therefore $(34.09 \times 0.44)\%$ or 15%; Pertamina's share is $(65.91 \times 0.56)\%$ or 29%, making a total Indonesian take of $(56 + 29)\%$ or 85%.

174. See Petroleum Economist, Vol. 46, 1977, p.33; Scheidecker, W.R., "Petroleum Development in Far East in 1976", 61 AAPG Bull. 1836 (1977).

175. U.S. Embassy, 1991 Petroleum Report, *supra* note 65, p.65.

176. For a table of hypothetical split and calculated profit shares and entitlement, see *ibid.*, pp.66-67; For a discussion of the split, see Fabri, *supra* note 92, pp.328-31.

177. When the split ratio is 85:15, the Government's share of the FTP is therefore $(20 \times 0.85)\%$ or 17%.

178. Sec. VI, arts. 1.7 and 1.8 of the 1976 model PSC, *supra* note 80.

179. U.S. Internal Revenue Service Decision of 14 July 1976 Regarding Tax Deduction by Production Sharing Ventures, in Barrows Company, Asia Contracts, *supra* note 31, Supp. 51, 1976, pp.17-18.

180. Sacerdoti, G., "Jakarta's Bid to Spur Oil Search", Far E. Econ. Rev., February 11, 1977, p.96.

181. Russell, H.F., "The Foreign Tax Credit for American Oil Contractors in Indonesia: An Allocation Approach", 10 Cornell Int'l L.J. 307 (1977); Khan, K.I.F., "Petroleum Taxation and Contracts in the Third World: A Law and Policy Perspective", 22 (1) J. World Trade, 82 (1988).

182. *Supra* note 172.

183. The 20% dividend tax on remaining income after 45% of corporate tax of the taxable income is equivalent to a tax rate of $(20 \times 0.55)\%$ or 11% on pre-tax income. The total tax rate is therefore $(45 + 11)\%$ or 56%.

184. Internal Revenue Service (IRS), Internal Revenue Bull. (Washington, D.C.:, IRS, June 12, 1978).

185. Sec. V. arts. 1.2 (s) and 1.3 (b) of the Model and Individual PSCs, *supra* note 94.

186. Barrows, *supra* note 86, p.240.
187. The dividend tax rate of 20% is equivalent to a tax rate of $(20 \times 0.65)\%$ or 13% on pre-tax income, so the total tax rate is therefore $(35 + 13)\%$ or 48%.
188. The 1988 Incentive Package, *supra* note 82.
189. *Supra* note 156, art. 10.
190. U.S. Embassy, 1991 Petroleum Report, *supra* note 65, pp. 25-27. For the recent evolution of official selling price, *ibid.*, pp.110-11.
191. The 1989 Incentive Package, *supra* note 82.
192. Russell, *supra* note 181, pp.307-34.
193. Blinn, International Petroleum Agreements, *supra* note 92, p.78, 245.
194. Sec. V, art. 1.2 (p) of the Model and Individual PSCs, *supra* note 94.
195. *Ibid.*
196. For a detailed discussion of domestic supply and calculation of the liability as well as a simplified numerical example, see Oon, Politics of Oil in Indonesia, *supra* note 21, pp.110-12.
197. Sacerdoti, *supra* note 180, p.95.
198. Sec. V. art. 1.2 (q) of the Model and Individual PSCs, *supra* note 94. Please note that the Model and Individual PSCs provide that the domestic oil must be sold to Pertamina at \$20 cents per barrel, but other source explains that in actuality the oil is sold "at cost plus \$20 cents per barrel". Cf. Sacerdoti, *ibid.*, p.95.
199. The 1989 Incentive Package, *supra* note 82; for the incentives introduced in 1992, see O & G J., September 28, 1992, p. newsletter.
200. Sec. V. art. 1.2 (q) of the Model and Individual PSCs, *supra* note 94.
201. *Ibid.*, sec. XVI, art.1.
202. *Ibid.*, sec. XVI, art. 6.1 and 6.3.
203. *Ibid.*, and Exhibit D.

204. Johnstone, *supra* note 92, p.39.
205. *Supra* note 200, sec. V. art. 1.2 (m).
206. *Ibid.*, art. 1.2.
207. Pertamina, Pertamina on the Move, *supra* note 82, p.63.
208. *Supra* note 200, sec. V, art. 1.2 (r).
209. Makarim, *supra* note 92, p.287.
210. "Looking for Oil and Gas", 14 EAER 16-19 (1992).
211. Sec. XI, art. 1.1 of the Model and Individual PSCs, *supra* note 94 .
212. *Ibid.*, arts. 1.2 and 1.5.
213. *Ibid.*, art. 1.4.
214. *Ibid.*, sec. XV, art. 2 (2.1).
215. *Ibid.*, art. 2 (2.2).
216. *Ibid.*, sec. XIII, art. 1.1.
217. *Ibid.*, art. 1.2.
218. *Ibid.*, sec. II, art. 1.2.
219. *Ibid.*, art. 1.3.
220. For a discussion of JOA, see U.S. Embassy, 1991 Petroleum Report, *supra* note 65, p.68; Wirojudo, G.K., "Geological Studies on a Risk-Reducing Factor in Exploration Ventures with Special References to the South China Sea", 10 Energy 519 (1985).
221. U.S. Embassy, 1991 Petroleum Report, *supra* note 65.
222. *Ibid.*
223. *Ibid.*
224. Cribb, R., "The Politics of Pollution Control in Indonesia", 30 Asian Survey 1123-35 (1990).
225. EMDI is a joint project of the Ministry of Population and Environment, Indonesia and Dalhousie University, and is supported by the Canadian International Development Agency (CIDA). For a history and mandate of EMDI, see Conover, S.

A.M. and Hanson, A.T., "The Development of AMDAL in Indonesia", 2nd draft, EMDI project, Dalhousie University, February 28, 1988, pp.1-50.

226. The Ministry of Development Supervision and Living Environment (PPLH) was formed in 1978, which was later converted into the Ministry of Population and Environment (KLH) in 1983.

227. Harjasumantri, K., Environmental Legislation in Indonesia, 2nd ed. (Yogyakarta, Indonesia: Gadjah Mada University, 1989), pp.1-6.

228. Act No. 4 of 1982 concerning Basic Provisions for the Management of the Living Environment, enacted on March 11, 1982, reprinted in Harjasumantri, *ibid.*, pp.24-42.

229. For a study of the act, see *ibid.*, pp.1-23.

230. Cribb, *supra* note 224, pp.1127-28.

231. *Ibid.*, p.1126.

232. The World Bank, Indonesia: Sustainable Development of Forests, Land, and Water (Washington D.C.: The World Bank, 1985), p.120.

233. For details, see Mclorie, M., Siswanto, J. and Stewart, I., "Line versus Coordinating Departments: the Impact of Organizational Structure and Mandate", a project paper for MPA 5100B, School of Public Administration, Dalhousie University, April 13, 1992, pp.1-34.

234. *Ibid.*, p.19.

235. International Institute for Sustainable Development (IISD), Business Strategy for Sustainable Development: Leadership and Accountability for the '90s (Winnipeg, Canada: IISD, 1992), p.90.

236. Cribb, *supra* note 224, pp.1126-27.

237. Sricharatchanya, P. and Vatikiotis, M., "Environment: Too Little; Tug-of-War over Trees", 143 Far E. Econ. Rev. 40-41 (1989); "Tropical Forests: An Endangered Species", 36 World Press Rev. 36-38 (1989).

238. Cribb, *supra* note 224, p.1130.

239. IISD, Business Strategy for Sustainable Development, *supra* note 235, p.90.

240. Makarim and Christensen, *supra* note 119, p.43.
241. Sec. V, art 1.2 (d) of the Model and Individual PSCs, *supra* note 94.
242. Cameron, P., "Offshore Rigs", 11 EAER 18 (1980).
243. *Ibid.*
244. Cameron, *ibid.*, p.18; Kusuma-Atmadja, *supra* note 90, pp.98-99.
245. According to Pertamina officials, the purpose of the title-to-equipment provision transferring ownership to Pertamina is to provide the contractor with exemption from customs duties on imported equipments. It is a system for recovering investment costs. Therefore it is at least partly a benefit conceded by the government to the contractor. This argument does not seem to hold much water since if that is the case, why did the government not simply introduce a customs exemption clause for the contractor.
246. Oon, Politics of Oil in Indonesia, *supra* note 21, p.127.
247. Sacerdoti, *supra* note 163, p.42-43.
248. "Pace of Exploration Quickens in Indonesia", O & G J., December 30, 1991, p.34.
249. "Oiling the Wheels", The Banker, May, 1991, p.62.
250. Goldstein, C., "Traditional Exporters Fear Production Decline: Bottom of the Barrel", Far E. Econ. Rev., December 6, 1990, p.49.
251. "Looking for Oil and Gas", EAER, June 1992, p.17.
252. Bamber, D., "Energy Finance: Asian Demand Outstrips Supply", Euromoney, June-July 1990, pp.69-71.
253. EIA, The Petroleum Resources of Indonesia, *supra* note 13, p.11.
254. For general information on sustainable development of natural resources in Indonesia, see the World Bank, Indonesia: Sustainable Development, *supra* note 232.
255. For a comparison of the PSC with the work contract, see Kusuma-Atmadja, *supra* note 90, pp.97-98; Machmud, T.J., "Country Review: Indonesia", In Barrows Company, Petroleum Legislation, *supra* note 68, Supp. 1., 1976, p.7; Beals and Gillis, *supra* note 92, pp.353-54.

256. Greiff, *supra* note 81, p.402.
257. Fabrikant, *supra* note 92, pp.341-48.
258. *Ibid.*; Kusuma-Atmadja, *supra* note 90, pp.97.
259. Fabrikant, *supra* note 92, p.337.
260. Oon, Politics of Oil in Indonesia, *supra* note 21, p.98.
261. *Ibid.*
262. U.S. Embassy, 1991 Petroleum Report, *supra* note 65, p. xv, 6.
263. The PSC is in effect in the following countries: Angola, Albania, Bangladesh, Benin, Myanmar (Burma), China, Chile, Egypt, El Salvador, Equatorial Guinea, Ethiopia, Gabon, Ghana, Guatemala, Guyana, Honduras, India, Indonesia, Ivory Cost, Israel, Kenya, Liberia, Libya, Malaysia, Morocco, Mozambique, Nepal, Nigeria, Oman, Peru, Philippines, Qatar, Romania, Sri Lanka, Sudan, Surinam, Syria, Tanzania, Togo, Trinidad-Tobago, Tunisia, Vietnam, Yemen, etc.
264. After many years of dispute over a maritime boundary in the "Timor Gap" area, Indonesian and Australia finally resolved the issue by signing the "Treaty on the Zone of Cooperation in an Area between the Indonesian Province of East Timor and Northern Australia" on December 11, 1989. Of the three Annexes to the treaty, the third one is a "Model Production Sharing Contract" patterned upon the Indonesian model. For the treaty and its annexes, see 29 I.L.M. 469-537 (1990). For a discussion of the treaty, see Moloney, G.J., "Australiar-Indonesian Timor Gap Zone of Cooperation Treaty: A New Offshore Petroleum Regime", 8 J.E. & Nat. Res. L. 128 (1990); Livesley, K.P., "The Timor Gap Treaty", in IBA, Energy Law '90 (London: Graham & Trotman, 1990), pp.69-93.
265. *Ibid.*, p.32.
266. Fabrikant, *supra* note 92, p.351.

Chapter Five

Brazil's Risk Service Contract

I. Introduction

Aside from those producing states favouring the modern concession contract and the production-sharing contract, other developing countries have sought to develop a contractual arrangement that was able to assure maximum national control over petroleum development while with the least foreign involvement. Such an arrangement emerged in the form of service contracts in the 1960s.

Development of the service contract concurrently with the production-sharing contract was not coincidental, rather it reflected the general dissatisfaction of developing countries with the harsh relationship under the traditional concession system.

The concept underlying the service contract was slow to be accepted and did not gain currency until 1976 when Brazil opened its offshore for international participation under what is known as the "risk service contract" (RSC). Since then the Brazilian type of RSC has frequently been cited as a model of this kind of arrangement.

II. Brief description of Brazil's petroleum industry

Brazil was always thought to be rich in oil, but it was not until the late 19th century that attempts were made to search specifically for the substance. Exploration efforts continued sporadically over the next half-century but, being fruitless, generated little enthusiasm for oil prospects in the country. In the years before 1930 and for some time afterwards, there was hardly an "oil issue". "In 1930 Brazil's oil industry was almost classically underdeveloped."¹

Oil development in Brazil was stimulated by the political turmoil of petroleum nationalism that swept through the oil-producing countries of the region in the 1930s.² In response, Brazil created a state oil monopoly in 1938, even before it discovered any oil. The first oil was discovered by a government drilling crew on January 21, 1939. By 1949, five oil fields had been discovered. Production began in 1940, albeit at a low rate of fewer than 500 b/d.³

The aim of modern Brazil has been to build as rapidly as possible a more diversified export-oriented economy based on the country's rich resources. Central to the success of the overall development programme has been the need to establish an adequate energy industry. With this aim in mind, Brazil adhered to the Latin American political tradition that natural resources should be the property of the state, and their

development should be carried out by a state agency. The result of this policy was the establishment of *Petróleo Brasileiro S.A.* (Brazilian Petroleum Corporation), more commonly known as "Petrobrás", whose aim was to achieve self-sufficiency in oil production and refinery capacity.⁴

Petrobrás conducted vigorous exploration campaigns, which resulted in a discovery of 15 fields in the 1950s, 55 in the 1960s, and 90 during the 1970s and early 1980s. Brazil has produced over 1.3 billion barrels of crude oil in 43 years since production began in 1940. In 1982, the country became the third largest producer in South America, behind Venezuela and Argentina, and the 26th largest in the world.⁵

In spite of Petrobrás' aggressive exploration efforts, Brazil did not show promise of becoming self-sufficient in oil production.⁶ On the contrary, the world's largest tropical nation became the biggest oil importer among less developed countries over the period from 1950s to 1970s.⁷ By 1982, the country was still importing more than one-half of its petroleum needs, at a cost in excess of \$10 billion annually, which was about 52 per cent of the value of goods exported.⁸

The Brazilian economy was considered as one having been built upon the premise of cheap and readily available imported oil. However, the steep rise in world oil prices in the decade after 1972 seriously jeopardised its rapid economic growth. As part of the response to that crisis, the country shifted its exploration efforts from onshore to offshore, and has become

one of the world's leading areas of offshore exploration over the past two decades. The intensified offshore effort paid off with a great contribution to the total domestic production, with around 70 per cent of that production coming from offshore fields.⁹

Despite Brazil's success in offshore development, it has become apparent that even with various programmes to reduce the import bill, self-sufficiency in oil appears to be as remote as ever. In 1991 the country produced only about 670,000 b/d, equal to almost 50 per cent of the country's oil requirement.¹⁰

Out of its entire territory of 8,511,957 km², the onshore sedimentary basins and continental shelf cover a total area of 3,970,000 km², that is to say, about 43 per cent of the country has the potential for oil and gas deposits.¹¹ Its proved oil reserves total about 2.8 billion barrels and the offshore fields account for about three quarters of known reserves.¹² Overall, Brazil has developed in a relatively short period a giant petroleum industry represented by Petrobrás, which is today the 13th largest oil company in the world.

III. Offshore and petroleum legislation

1. Maritime legislation

Facing the open South Atlantic and occupying one half of South America, Brazil is a continental as well as coastal state whose maritime frontier stretches over 9,200 km.¹³ Such a prominent geographical position has nevertheless not led it to become a maritime state. Traditionally, Brazil showed little interest in the ocean and its uses. Up until the mid-1960s, no ocean issues had ever caught the national attention, save the 1963 French-Brazilian "lobster war".¹⁴ The country was largely disinterested in the law of the sea matters and was not a party to any of the four Geneva conventions.¹⁵

Brazil's modern maritime legislation can be said to have started from its continental shelf claim in 1950. In June 1968, Brazil issued a decree which redefined the continental shelf as a submarine area at a depth of 200 meters or to a further point where it could be explored by the coastal state.¹⁶ For many years, Brazil was a three-mile territorial sea state, which was more a result of tradition than a deliberate act.¹⁷ On November 18, 1966, Brazil extended its territorial waters from three to six miles. The limit was soon increased to 12 miles in 1969, and again to 200 miles on March 25, 1970.¹⁸ Brazilian territorial waters, after the final extension, comprise more than 900,000 km², well over one-

fourth of its enormous land territory.¹⁹ One year later, Brazil passed a law on April 1, 1971 to establish a 200 mile exclusive economic zone (EEZ).²⁰ Apart from this legislation, the Brazilian Constitution has said since 1967 that the territorial sea, EEZ, continental shelf, and their resources are the property of Brazil.²¹

The 1970 decision to expand the territorial waters to 200 miles was a watershed in the evolution of Brazil's maritime jurisdiction. Up to 1970, Brazil's maritime claim had been quite cautious and moderate, but thereafter Brazil emerged as a leader of the "territorialists", the group expressing the most extreme and ambitious territorial sea claim of 200 miles.²²

The motivations for change towards an expanded maritime policy were diverse. But the fundamental consideration was the protection of ocean resources for Brazilian use:

Sine 1964 Brazilian maritime claims have increased dramatically and have become increasingly nationalistic and protective of natural resources, especially *offshore oil*. (emphasis added)²³

Brazil has completed its legislation on all the maritime zones permitted under contemporary international law. The Brazilian territorial sea, EEZ and continental shelf are unique in that they overlap one another in their entirety: they form, in effect, a three-in-one maritime zone. Brazil is fortunate to have only a few maritime boundaries to delimit, thanks to its favourable geographical position facing the open Atlantic. It settled two of its maritime boundaries with

Uruguay and French Guiana in 1975 and 1983 respectively.²⁴

Brazil ratified the 1982 LOS Convention on December 22, 1988.²⁵ It remains to be seen how the discrepancy between the international convention and the Brazilian domestic legislation on the width of the territorial sea can be satisfactorily solved.

The complete nature of its maritime legislation and its freedom of boundary problems enable Brazil to carry out an offshore petroleum exploration programme smoothly.

2. Petroleum legislation

(1) Previous provisions

Brazil won its independence from Portugal and became an empire in 1822. Mining legislation was a continuation of the colonial regime, with the only exception that ownership of subsoil wealth was vested in the nation instead of the Portuguese Crown. Under the republic's first Constitution of 1891, the subsoil and its wealth belonged to the surface owner. The new Constitution apparently switched to the accession system.²⁶ Again, the 1934 Constitution of Brazil did away with the accession system and stipulated that mines and other subsoil resources exploration and exploitation could only be carried out upon permit or concession from the federal government.²⁷ The permit/concession system established by the 1934 Constitution was by and large followed by the subsequent

legislation.²⁸

The year of 1938 saw the first promulgation of several decrees to deal with petroleum specifically. Of these Decree-Law No. 395 was of importance in Brazil's petroleum history for it established the National Petroleum Council (CNP) and assigned to it the exclusive supervision of supply as well as pricing, storage and transportation policies relating to crude oil. The decree further provided that the CNP could "carry out the official operations of oil and natural gas exploration through a technical agency to be created..."²⁹

It should be mentioned that, under the 1946 democratic Constitution which opened the way to broader participation in the national petroleum industry, Brazil made an effort to draft a comprehensive petroleum law which intended to introduce formally a concession system and permit foreign exploration, but the Petroleum Statute was eventually defeated by radical oil nationalism.³⁰

In short, the early history of Brazil's mining and/or petroleum legislation may be said to be one of frequent alteration in terms of the systems adopted towards foreign participation.

(2) Governing legislation

The Brazilian General Mining Code does not apply to petroleum and kindred substances.³¹ The first piece of legislation to govern petroleum activities in Brazil appears

to have been Decree-Law No. 3236 of May 7, 1941, which provided that all deposits of petroleum and natural gas existing in the country were the private property of Brazil and all operations in this sphere of activity were subject to the authorization and supervision of the CNP.³²

After years of deliberation, Brazil was finally able to enact Law No. 2004 of October 3, 1953 (Petrobrás law), which stipulates that the petroleum industry of Brazil is to be a "monopoly of the Union", to include exploration, production, and refining. The monopoly is exercised through the CNP as the organ of policy and supervision and the state oil company Petrobrás as the executive agency. Excluded from the monopoly is marketing, though it is not explicitly stated.³³

The Petrobrás law, which deals more with internal regulation of the petroleum industry than with foreign participation, is still the basic law on petroleum activities in Brazil.³⁴

The oil monopoly established by the Petrobrás law has been frequently debated in Brazil. In order to protect it from any possible infringement, the 1967 and 1969 Brazilian Constitutions contain a clause to entrench the monopoly. The clause reads:

Exploration for and extraction of petroleum in the national territory shall constitute a monopoly of the Union, as prescribed Law.³⁵

On October 5, 1988, Brazil promulgated another new constitution, which had dramatic impact on the energy and

mineral resources industry. As regards petroleum exploration, the 1988 Constitution not only adopts a nationalistic view, but also goes further to regulate the subject more expressly and extensively than ever before. The Constitution provides that the monopoly

includes the risks and results flowing from the activities mentioned therein; the Union is prohibited from assigning or granting any kind of participation, in cash or as a percentage, in the exploitation of petroleum or natural gas deposits...³⁶

This constitutional monopoly provision is the culmination of the Brazilian oil nationalism movement. It prohibits the use of any type of risk-taking agreement for petroleum exploration. Fortunately, the latest Constitution contains a transitional provision which reads that "risk contracts concluded with *Petróleo Brasileiro* (*Petrobrás*) for petroleum exploration and that are in force on the date of the promulgation of the Constitution are hereby exempted from the prohibition..."³⁷ By so providing, the new Constitution explicitly validates all the existing service contracts. Foreign service contractors feel greatly relieved by this saving provision.³⁸

The foregoing form the regulatory framework for petroleum activities in Brazil. They represent the essential legislation to have in mind when examining the RSCs that were encouraged to start in 1975, and permitted between 1975 and 1988, and allowed to be in operation thereafter, although new ones are currently not permissible.

IV. Legal history of Brazil's petroleum arrangements

Brazil has more than a century's experience in developing its indigenous energy resources. As far as petroleum concession is concerned, the history may be broadly divided into three periods.

1. Concession period (prior to 1938)

Brazil's oil concession history is no shorter than that of other major producing countries. The first oil concessions in Brazil were granted in 1864 to two Englishmen. Nothing more was known of these two concessions except that they had a 90-year exploration term. Both concessions were terminated prematurely before 1893 after scratching the surface.³⁹

In the early 20th century, mining concessions were controlled by the states under a very loose federal system created by the 1891 Constitution. During this period, the State of Amazonas awarded three 50-year oil concessions to foreign companies. Sao Paulo also granted a 35-year concession to Standard Oil of New Jersey, which did not explore but held the land in reserve.⁴⁰ All these concessions gave the concessionaires full and exclusive exploration rights to the entire states.⁴¹

Since there has been a persistent distrust of foreigners

in Brazil, concessions in the country were not entirely free from nationalistic bias. The country was by and large concerned more with excluding foreigners from oil activities than placing a real interest in finding and developing a national source of oil. Consequently, foreign oil companies were unwelcome in Brazil prior to 1938; "they were not prevented from coming, but received neither support nor cooperation in their efforts."⁴²

2. State monopoly (1938-1975)

The pervasive xenophobia attitude provided fertile ground for petroleum nationalism. The slogan "O petróleo é nosso" (oil is ours) was voiced by nationalists whenever it was suggested that outside participation could accelerate the drive towards oil self-sufficiency. It was further claimed that "the country which did not control its petroleum could not be considered independent".⁴³

Guided by such a perception, Brazil frequently passed legislation to reinforce the "monopoly of the Union" over oil established since 1938. The national debate over the issue of national monopoly versus foreign participation in oil exploration has raged much of its history.

It may be seen from the above review that Brazil's monopoly over oil was shaped by radical petroleum nationalism, and was the culmination of two widely accepted myths: Brazil

was rich in oil and foreign companies craved it. The country was unable or unwilling to walk out of the myths until the mid-1970s.

3. The risk service contract and its debate (1976-present)

(1) The risk service contracts (1976-1988)

After decades of excluding private capital from its petroleum exploration and, realizing that its "go-alone" policy could not be maintained any longer, Brazil ended its isolation and decided in late 1975 to authorize Petrobrás to seek service contracts with foreign companies.⁴⁴ It was natural that the change, which represented a radical departure from tradition, met considerable opposition from nationalist sentiment. The government repeatedly had to assure the nation that Petrobrás' monopoly would not be breached.⁴⁵

The decision to encourage foreign companies to take part in the oil industry in Brazil was the result of a number of inevitable and accidental factors. First and foremost, past experience in self-sufficiency in oil had proved that it was unlikely that Petrobrás would have the financial and technical resources to take on a task of such magnitude and at the speed that was required. Second, the oil crisis, coming as it did at a time of sharply increasing consumption and falling production in Brazil, forced a change in thinking in favour of seeking cooperation of foreign companies. Third, the steep

rise in oil prices since the oil crisis convinced many Brazilians that the cost of imported oil, which was once considered an acceptable price to pay for national pride, was excessive. Fourth, Brazil's oil deficit increased from 77 per cent in 1970 to nearly 80 per cent in 1976, and the oil import bill rocketed from around \$500 million in 1972 to around \$1.8 billion for the first six months of 1975.⁴⁶ Finally, the change was clearly tied to the recognition of the inadequacy of indigenous reserves and production to meet the country's needs. It was estimated that total domestic production could possibly reach 700,000 b/d by the end of the 1970s, but by which time demand could average as much as 1.3 million b/d.⁴⁷ All these considerations contributed to the shift in Brazil's oil policy.

The result was seven rounds of bidding by domestic and foreign private companies for RSCs between April 1976 and October 1988.⁴⁸ The first two rounds were almost exclusively for offshore acreage and resulted in the award of 17 risk service contracts. In late 1978, Petrobrás announced the third bidding round and, in addition to 21 offshore areas, the country opened 21 onshore blocks to the private sector for the first time in over 40 years.⁴⁹

International enthusiasm was not high for the early rounds of risk contracts. Petrobrás, however, made the contract terms more attractive in subsequent rounds. It presented its largest ever offerings to private companies in

its sixth and seventh rounds in 1981 and 1982 respectively. The sixth round opened the remaining onshore basins, which covered an area of two million km² or close to 700 individual blocks. The seventh round covered the balance of the offshore areas, amounting to 540,000 km² or about 200 blocks.⁵⁰

Table 12: Petroleum Bidding Rounds in Brazil

No.	Round	Date
1	1	1976
2	2	1977
3	3	1978
4	4	1979
5	5	1980
6	6	1981
7	6A	1981
8	7	1982

Source: Correspondence with Mr. Mozart da Costa Freitas, Head of Division of Contracts of Petrobrás, March 7, 1992.

During the 13 years (1976 to 1988) in which risk contracts were permitted, a total of 243 such contracts were signed by Petrobrás with 35 foreign oil companies, and the foreign contractors' risk investments amounted to \$1.767 billion. Of these expenses incurred by foreign contractors, only \$101 million resulted in discoveries and \$307.6 million was spent on development.⁵¹ Foreign risk contractors shot a total of 166,000 km seismic lines and drilled a total of 222

wells, with 192 as wildcats (120 onshore and 72 offshore) and 30 development wells (24 onshore and six offshore). Total depth drilled was 634,000 metres. Of the total wells drilled, only five (one offshore and four onshore) are commercially productive.⁵²

Of a total sedimentary basin area of 5,110,000 km², including offshore areas down to a depth of 2,000 meters, Brazil reserved for Petrobrás 760,000 km²; 4,350,000 km² more have been or are still under risk service contracts. Of the areas offered, approximately 1,184,000 km² are offshore and 3,160,000 are onshore.⁵³ In other words, Brazil opened approximately 85 per cent of its sedimentary basins for oil exploration and production by foreign and domestic private companies.

The last exploration contract terminated on November 3, 1990. But those contracts with commercial discoveries are still active.

(2) The risk service contract debate (1989 onwards)

Since oil was discovered in Brazil, the question of foreign participation in domestic exploration has never ceased to provoke nationwide emotional debates. The 1975 government decision to engage foreign companies through RSC terms certainly stirred up much altercation in the Brazilian society.

The debate has been centred on the constitutionality and

legitimacy of the RSCs between different interest groups which can generally be divided into two. In the view of the most extreme opponents of the RSC, the move to sign service contracts with foreign companies is unconstitutional and illegal. Those who favour the government action hold the view that the state oil monopoly has not efficiently discharged its responsibilities and that the RSC is likely to bring an increase in production and a consequent reduction in oil imports.⁵⁴ Overall, "Brazilian public opinion, however, welcomes any government measure intended to help the country approach or attain energy self-sufficiency."⁵⁵

The 1988 constitutional ban on the service contract has opened another round of debate on the issue. The state oil monopoly is once again embroiled in a national dispute. The central issue is, this time, whether to continue the monopoly or move towards privatization and free market reform.⁵⁶ As one can assume, the prohibition of further use of service contracts is welcomed by nationalistic elements; on the other hand, "it is accused of being too nationalistic."⁵⁷

It is apparent that the controversy over oil in Brazil has been an ideological and emotional problem. The extreme nationalism and emotional attitudes have played a major role in shaping the endless debates. But, as one Brazilian writer observed, the majority of them "unfortunately bear the flaw of either blind one-sidedness or lack of sound legal or technical support, or both."⁵⁸

The call for the return of risk contracts for oil exploration and production through constitutional amendment appears to have gradually gained the upper hand. The new President of Petrobrás, Eduardo de Freitas Teixeira, has continued the tone of his embattled predecessor by attacking the state oil monopoly concept and defending the return of risk contracts for private domestic and foreign companies.⁵⁹ It is felt that "this is the only way to reduce the country's dependence on oil imports, due to Brazil's scarce financial resources, (in order to augment) Petrobrás investments for increasing domestic production".⁶⁰ Indeed, Brazil has the potential for many O & G discoveries both onshore and offshore, but "it would seem unlikely that this potential will be fully realized without future foreign investment."⁶¹

Proposals to lift the constitutional ban on foreign participation in upstream petroleum operations have frequently been voiced recently. In view of the current circumstances in Brazil, it is likely that the Constitution will be amended to allow the return of the RSC.⁶² As a matter of fact, the current administration has recently submitted proposals for amendments to the Constitution, not only to allow the return of risk contracts but also to end Petrobrás' monopoly.⁶³

V. The risk-bearing service contract

1. The origin and definition of service contracts

(1) The origin of service contracts

Service contracts originate in the oldest contractual relationships: payment given for services completed. Various contracts based on this philosophy have been used for centuries, so in a sense, the service contract is not a new concept at all. In the oil industry, using such contracts between an owner and a contractor to cover routine types of work on a lease, such as building roads, clearing locations, and essentially all other operations except the actual drilling of the well, is not uncommon.⁶⁴ But the use of the service contract in developing countries as a predominant legal arrangement for attracting oil exploration and production by international oil companies is only of recent origin.

As indicated, in a drive towards permanent sovereignty over natural resources, some developing countries established a national monopoly over all petroleum-related activities. Because of their limited knowledge and capability, they had to hire the services of private companies in developing their petroleum resources. Furthermore, these countries were often financially unable to assume the great exploration risks, so

they began to devise contracts under which the risks and costs were undertaken by foreign contractors in return for a fee or a certain amount of production.⁶⁵ So, like other modern petroleum arrangements, the service contract is a compromise between the principle of national sovereignty over natural resources and the demanding realities of the need for foreign investments.⁶⁶

The exact origin of this type of contract is uncertain.⁶⁷ One source believes that the first service contract was granted in Argentina in 1958, and other countries in Latin America followed suit.⁶⁸ Another source reports that Venezuela signed a limited service contract with Mobil in 1962.⁶⁹ Other writers seem to agree that this form of contract originated in Iran in 1966 when the French company Enterprise d'Activités et de Recherches Pétrolières (ERAP) took the lead in becoming a contractor to the National Iranian Oil Company (NIOC) by signing the so-called "agency agreement" and undertook to perform technical, financial and other commercial services for the account of NIOC.⁷⁰

For various reasons, the service contract was very slow to gain acceptance in its early days and only a few contracts were signed during its first 20 years. The introduction of the Brazilian type of RSCs in 1976 gave significant impetus to its wide application, particularly in Latin America.⁷¹ The Brazilian risk service contract stemmed from the service contract signed between Petrobrás International S.A.

(Bráspetro), an international subsidiary of Petrobrás, and the Iraq National Oil Company in 1972.⁷² Brazil is perhaps the place where the service contract finds its widest application, both in terms of the number of contracts signed and the areas covered by them.

(2) Definitions of service contracts

The term "service contract/agreement" has several synonyms: it is "agency agreement" in Iran and Iraq,⁷³ "operation contract" in Bolivia.⁷⁴ In Colombia it is also called the "association contract" because the state oil company is entrusted by law with exploration and production of the state-owned hydrocarbon resources and undertakes such tasks in association with private contractors.⁷⁵

Moreover, the term "service contract" has been applied to many different types of agreements based on the philosophy of payment given for service completed, which can be classified into two broad categories: non-risk service contract and risk service contract.⁷⁶ The non-risk service contract, or the "pure service contract" as it is often called, is an agreement under which an international oil company agrees to perform specific tasks for a producing country and is given a flat fee. As the name of this form of contract suggests, oil companies under such an arrangement do not carry any element of exploration risks. On the contrary, all the risks and costs are carried and borne by the producing country.⁷⁷ The pure

service contract is less employed in developing countries for the reasons mentioned above.

The other category is the risk service contract, or more specifically a risk-bearing service contract, also sometimes referred to as a risk contract, a risk clause contract, or simply a service contract.⁷⁸ Under the RSC, a private oil company agrees to provide all the risk capital and services for exploration and development. The capital and services are reimbursed and remunerated in cash or in the form of buy-back oil, or in both, after oil is produced. As its label indicates and as distinguished from the non-risk service contract, the RSC places the burden of undertaking the risks and costs of exploration on the service company. For unsuccessful efforts, the service contractor receives nothing.⁷⁹

It is to be noted that as risk service contracts have developed, the payment of "risk fee" to the foreign contractor has become diversified. It can take the form of a fixed fee per barrel, or can be graduated according to the sizes of discoveries, the amount of risk capital invested, a complex formula designed by the government, or other factors.⁸⁰

2. The risk service contract

(1) Recent developments of the RSC

Unlike most Latin American countries which adopted the service contract either by passing new petroleum legislation

or by issuing presidential orders, Brazil adopted the service contract simply by outlining a "model contract". Thus, the Brazilian contractual system does not have a strong statutory foundation. The seed of the future controversy over the legality of the contract was planted at the outset.

As examined before, the Brazilian petroleum legislation has no procedural or substantive stipulations on the exploration and exploitation practices of foreign companies. The terms and conditions under which private companies may explore for oil and produce it are all left to the model contracts prepared by Petrobrás.

The RSC model, as with other contractual arrangements, was dynamic and went through a number of evolutionary changes to adapt itself to reality. The evolution process may be said to fall into two major phases. The RSCs concluded prior to 1981 under the first three model contracts were generally characterized by firm exploration commitments."

International response to the early risk contract invitations was not as great as had been expected, due largely to the tough contract terms. The conditions, however, were progressively liberalized by Petrobrás both as a result of the industry's criticism and the government's initiative. The year of 1980 witnessed some considerable changes in both the new model contract and the petroleum policy, which included: (a) greater selection of areas to choose from; (b) availability of geological data for whole basins; and (c) provision of

"drilling option" in particular.⁸²

With the introduction of new incentives, foreign companies' interest in Brazil's exploration grew notably and more RSCs were signed. The agreements concluded after 1980 were improved RSCs, featuring some flexibility in contractual obligations represented by the "drilling option".

(2) Essentials of the RSC

In the introduction to this study, it was stated that very little information is available on modern petroleum agreements. This is particularly true for the Brazilian RSCs. Executed RSCs in Brazil are treated as strictly confidential, which makes any detailed analysis of the contract terms extremely difficult.⁸³ The basic terms and features of the Brazilian RSC system can only be studied, therefore, through a combination of various sources.⁸⁴

A. Procedure and effectiveness

Brazil awards service contracts through competitive bidding.⁸⁵ To participate as a bidder, an applicant is required to pay a fee, e.g., \$400,000 in 1976 and \$250,000 in 1977, for a set of geological and geophysical data, which is to be for its sole and exclusive use. If the applicant consists of more than one company, each company must make the payment.⁸⁶

According to Brazil's practice, bidding variables usually

include, *inter alia*: (a) number of blocks; (b) minimum expenditure; (c) exploration programme; (d) commencement of the first drilling; (e) cash bonus or other advantages the bidder wishes to offer; (f) effective interest rate on development investment; (g) term for recovery of capital investment; (h) proposed services remuneration.⁸⁷ The essential element in bidding has been the percentage of the service remuneration paid to the contractor.

Petrobrás alone decides which applicants to invite for contract negotiation and reserves the right to accept or refuse all or any of the bids received, "without being obliged to justify its decision on the subject."⁸⁸ Upon signature by the foreign company and Petrobrás, the contract becomes effective and Brazil as the producing country is not involved any further.

Procedurally, before commencing the execution of services, the contractor must obtain the necessary authorization of the federal government to operate a subsidiary or to constitute a Brazilian company of limited liability. All activities to be carried out by the contractor shall be executed through its Brazilian branch or the company created.⁸⁹

The service contract in Brazil is chiefly executed and supervised by Petrobrás. An international oil company conducting petroleum exploration activities does not operate under many government constraints. Statutory requirements

governing petroleum exploration are mostly imposed upon Petrobrás since implementation of national petroleum policy is principally Petrobrás' responsibility to the government. Regulatory contacts in Brazil outside Petrobrás involve only importation and exportation of equipment required by the contractor in his operations, obtaining permission to bring in funds and personnel needed for the performance of its services. A service contractor, so long as it performs its contractual obligations, does not in theory have to worry about statutory and regulatory requirements. In a word or two, petroleum operations in Brazil are subject to far fewer supervising entities than in many other countries. This makes doing business easier in Brazil where an oil company deals with only one oil authority—Petrobrás.

B. Object and scope of the contract

It is explicitly stated at the beginning of the contract that the object of the RSC is the rendering by the contractor of the following two types of services:

(a) technical services to "carry out all the Operations necessary to the Exploration, Evaluation and Development" in the service area; and

(b) financial services to furnish all funds required for the performance of the exploration and evaluation operations and, in the event of a commercial field, all the development funds and any other funds necessary to the execution of this

contract.⁹⁰

It is clear from these express provisions that Petrobrás' objective is to increase high risk exploration activity in Brazil through the utilization of foreign technical and financial support.

Excluded from the objective of the contract are the technical and financial services needed for petroleum production, which will be taken over and conducted by Petrobrás.⁹¹ The reason for the exclusion of the service contractor from production speaks for itself, because during the production period risk capital and pioneering technology are no longer required and a developed field has begun to produce economic returns.

C. Risk clause

The risk clause, from which the risk-bearing service contract derives its name, certainly represents one of the basic features of the contract, though the concept of risk capital is not unfamiliar to the petroleum industry.

All RSCs state in their preambles that it is national policy that the exploration of the petroleum potential of the country shall be accelerated by means of risk investments by contractors. The contractor has to enter into the contract dealing expressly with this obligation.⁹² The risk obligation is reiterated in the risk clause which provides that exploration and development services "shall be carried out at

the sole cost and risk of CONTRACTOR."⁹³ As a consequence of the risk obligation, the costs incurred by the contractor in the performance of the services shall be only reimbursed to it when there is a commercial discovery, otherwise, the contractor's capital and technological investment is to be sacrificed, and the contractor is not entitled to any remuneration, payment or right whatsoever.⁹⁴

D. Contract periods

The RSC does not specify the total duration of the contract, but divides it into three periods, the exploration period, the development period, and the production period. The characteristics of these periods are as follows.

(a) The exploration period

This period has a duration of three years for an offshore contract (five years for onshore) which is further divided into two phases: (i) the first phase during the first year (the first three years for onshore), at the end of which the contractor must exercise the option to withdraw from the contract or to continue with it and enter into (ii) the second phase of two more years.⁹⁵

The exploration period may be extended at the contractor's option for a further year (two years for onshore), provided that such additional period is linked to an investment programme including the drilling each year of at least one exploration well in addition to the minimum

expenditure and work programme.

If petroleum is discovered during the exploration period(s), a second additional year shall be permitted, at the contractor's sole discretion, for evaluation. In the event of another discovery during the second extension, a third additional period as agreed between Petrobrás and the contractor will be granted exclusively for the purpose of evaluation.⁹⁶

(b) The development period

The development period commences on the date of a commercial discovery and terminates on the date that all installations required for producing, gathering, storing, transporting and delivering petroleum are satisfactorily completed by the contractor and accepted and received by Petrobrás.⁹⁷

(c) The production/remuneration period

Though not explicitly stated, the service contract has a third period of production during which remuneration is paid to the contractor for its services rendered.⁹⁸ The remuneration period is proposed by the contractor in its initial bid and determined by the two parties in the contract. For instance, the remuneration period was 12 years in the service contract dated November 13, 1980 between Petrobrás and Conoco Grupi Petroleum Services Inc. (Conoco contract).⁹⁹ It is to be noted that the term of the remuneration overlaps substantially, but is not supposed to exceed, the production

period.

In sum, Brazil's RSC has only a fixed term for exploration period; the contract periods for development and remuneration are not specified in the model contracts and may vary from contract to contract, according to individual field development progress and contract bidding.

E. Service area

There is no restriction on the service area in terms of its size and the total number of blocks that may be awarded. An oil company may apply for any number of blocks, but must specify the priority given to each block. Petrobrás has the right to award contracts up to a number to be established at its sole discretion.¹⁰⁰ Petrobrás has granted 38 contract areas to Pecten International since 1978.¹⁰¹ The service area may range from 2,575 km² to 7,510 km², but is commonly around 3,000 km².¹⁰²

F. Relinquishment

The RSC has a compulsory relinquishment programme for the service area. The contractor must relinquish 50 per cent of the service area at the end of the initial exploration period if it elects to have the additional exploration period(s). Selection of the area to be retained shall be made by the contractor in accordance with the following two configuration requirements: first, selection of no more than two areas; and

second, each area to be defined by a single line drawn along a grid of one minute longitude by one minute latitude.¹⁰³

If petroleum is discovered, development areas will be delimited for each commercial field by a single line drawn along a grid of half a minute longitude by half a minute latitude so as to encompass the full area of the commercial field, provided that the limits of the service area are always respected.¹⁰⁴

G. Jurisdictional clause

One of the characteristics of the Brazilian type of RSCs is its incorporation of a jurisdictional clause, which reads in part that:

... CONTRACTOR also hereby expressly recognizes that Brazil is the sole owner and has full jurisdiction over the continental shelf, the territorial sea of 200 (two hundred) nautical miles, the water depth, bed and subsoil of such sea and the corresponding airspace, as well as over any and all natural resources existing therein.¹⁰⁵

Moreover, the contractor is required to undertake not to engage in any litigation whatsoever under any jurisdiction with respect to the unconditional ownership and full jurisdiction in question.

It is a unique contractual practice to incorporate a jurisdictional clause into a petroleum agreement. Brazil, to the author's knowledge, is the only producing country to compel foreign oil companies to recognize explicitly Brazil's sovereign right and unilateral jurisdictional claim in private

commercial contracts. Nevertheless, the legal effect of this practice in terms of influencing international recognition of the Brazilian 200-mile territorial waters claim still remains unclear.

H. Title to resources

As mentioned, it is a Latin American political tradition that all subsoil and mineral rights belong to the state. The service contract affirms this principle providing that Petrobrás has the exclusive right to execute the government's monopoly of petroleum resources. "Petrobrás is the sole and unconditional owner of all petroleum and rare gases produced and recovered in consequence of the services carried out by CONTRACTOR under this contract."¹⁰⁶ The award of a service area does not create any right of any nature in favour of the contractor to the service area, or to the seabed, or the subsoil, or to any natural resources existing therein.¹⁰⁷ As such, the service contractor, unlike a concession holder or a production-sharing contractor, has no legal title to any production from the field discovered and developed by him.

Subject to the above provision, the contractor is nevertheless entitled to purchase a certain quantity of production under the "buy-back" provision. But this entitlement is merely a contractually defined purchase entitlement rather than a legal title to oil.

All other mineral resources existing in the service area

and which may be discovered or located by the contractor shall automatically belong to Petrobrás. The contractor is required to report any discovery immediately and is not entitled to any indemnifications or compensations for such discoveries.¹⁰⁸

I. Contractor's obligations and rights

In return for the grant of the right to service, the contractor has important obligations. Under a RSC, he must:¹⁰⁹

-
- | | |
|--|---|
| a. Pay an unrecoverable bonus (e.g., \$500,000); | minimum exploration expenditure; |
| b. Disburse the minimum work expenditure; | g. Assist Petrobrás during the transfer of any production unit; |
| c. Commence the drilling within time limit; | h. Carry out all services in accordance with good petroleum practice without causing ecological damage to public and private property, and carry out cleaning operations in the event of pollution; |
| d. Take all disbursements required for development operations upon a commercial discovery; | i. Keep Petrobrás informed by furnishing daily, weekly and/or monthly reports on the progress of operations as well as a final report upon the completion of each operation; |
| e. Report to Petrobrás at the end of exploration period on the expenditure and pay any difference between the disbursement and the obligation; | |
| f. Deliver a bank draft covering the total | |

- j. Provide Petrobrás with full and complete facilities so as to enable it to inspect at all time all the operations;
 - k. Maintain full records of all technical operations and keep accounting records of all activities;
 - l. Comply with all applicable provisions of laws, and regulations issued by the competent authorities;
 - m. Furnish to Petrobrás all information, data, and interpretations concerning the operations;
 - n. Respect industrial property rights and keep Petrobrás free from claims resulting from violation of such rights;
 - o. Be always mindful of the rights and interests of Brazil and Petrobrás.
-

It should be pointed out that elaboration of many of the above obligations is furnished in detailed provisions. The one exception to further elaboration is the obligation with respect to environmental protection, which has always remained a weak link in the RSC. This serious shortcoming will be considered at length in another section of this chapter.

The contractor's rights in return for the performance of the above obligations include first, the right to make risk capital investment, or more specifically, to explore for and develop oil field(s) in the service area; and second, the right to receive reimbursement and remuneration for successful services.

Obviously, the obligations for a service contractor far

outnumber the rights granted to him; its rights are confined to payment for services completed.

J. Exploration, development and production

(a) Exploration

During the exploration period, the contractor is obliged to spend a minimum expenditure in the performance of a minimum exploration programme. The minimum disbursement for exploration is warranted by a bank letter of guarantee which is delivered on the effective date of the contract and must also be adjusted quarterly so as to reflect the balance of such obligation.¹¹⁰

Since publication of executed contracts is prohibited, a comprehensive survey of the minimum expenditure and exploration programme is difficult. Table 13 is indicative of the exploration obligation under a recent Brazilian RSC.

In addition, the contractor is further required to prepare and submit for approval to Petrobrás an annual exploration programme and budget for activities to be carried out in the following year.¹¹¹ Under the 1976 model contract, no change was allowed in programmes and budgets already approved by Petrobrás without previous authorization.¹¹² This requirement was, however, relaxed in the 1977 model contract; the contractor is entitled to make expenditures in excess of the budget up to, but not exceeding, 10 per cent of each budget item, providing that the previously approved overall

budget will not exceed in more than five per cent, and such excess expenditures is promptly reported to Petrobrás.¹¹³

Table 13: Examples of Minimum Exploration Obligations under Brazil's RSCs

	1st phase	2nd phase
Minimum expenditure	\$ 1,100,000	\$ 8,000,000
Work programme	a) 1,400 km seismic line; b) processing previous seismic survey; c) geological and other investigations, as necessary, in contractor's opinion	a) 1 wildcat well b) geological and other investigation, as necessary in contractor's opinion

Source: Conoco Service Contract of November 13, 1980, in Barrows Company, Petroleum Legislation, Supp. 68 (New York: The Barrows Company Inc., 1987), p. 35, 43.

Strong objections were frequently voiced by foreign companies to the minimum exploration obligation because they did not want to commit themselves to a minimum investment of up to \$15 million per block after the seismic survey had showed poor prospects for drilling.¹¹⁴

In response to the pressure from the oil companies as well as the discouraging drilling results, Brazil gradually liberalized the rigid investment obligation that required drilling of one or two exploratory well regardless of the geological survey, by introducing a "drilling option" clause.

Under this provision, the contractor may perform only the required seismic work and refrain from drilling any exploratory wells if the survey fails to show encouraging prospects in the service area. The first risk contract to include such a provision was signed for an offshore area left over from previous invitations in 1978.¹¹⁵ The "drilling option" provision was eventually incorporated in the 1980 model contract. Under this provision, a service contractor is obliged to invest only in seismic surveys, and has the option to drill if there are indications of good prospects or to return the service area without further obligation if the seismic results turn out to be negative.¹¹⁶

The "drilling option" is an unprecedented incentive in petroleum arrangements. But it undermines, in essence, the foundation of not only RSCs but also all other types of arrangements which are all based on exploration risks. The "drilling option" certainly works to the advantage of oil companies, since their initial compulsory risk investment will be substantially reduced if they exercise the option.

In the event that petroleum is discovered, the contractor is charged with appraising such discovery and must prepare a tentative evaluation work programme and budget. The evaluation operations shall not exceed the exploration period or the additional exploration periods or the period mutually agreed by the contracting parties.¹¹⁷

(b) Development

Upon completion of evaluation activities, the contractor is required to submit a report on the commerciality of the field and, if the field is to be developed, a development programme and budget, which should include, *inter alia*, an estimate of the investment and expenses, a schedule for completion and the area to be retained for development, to be agreed upon by the parties.¹¹⁸

The contractor is allowed to make expenditures in excess of the budget up to, but not exceeding, five per cent of each of the budget item, provided, however, that the overall agreed budget is not exceeded by more than three per cent.¹¹⁹

During both the exploration and development periods, the contractor is further allowed, in the event of emergency or extraordinary circumstances requiring immediate action, to take all actions it deems necessary or advisable to protect the interests of the parties, any cost so incurred being considered as exploration or development expenses.¹²⁰

(c) Production

As mentioned, Petrobrás will take over and conduct all production operations from the commencement of commercial production. During the transfer of the production operation, the contractor is responsible for the operation and maintenance of the production facilities and will bear all expenses which are considered as reimbursable development expenses.¹²¹

Up to this time, the contractor's service responsibility

and obligation to Petrobrás has been substantially completed. Nevertheless, the contractor still has access to all production facilities and is entitled to receive field information. Petrobrás may still ask the contractor to continue furnishing technical and operating services, but under conditions and principles to be set forth in a separate agreement. During the course of production, Petrobrás may decide that major new capital investments such as secondary recovery facilities are necessary. The contractor is entitled, but not obliged, to make such major new investments, with reimbursement as in the past.¹²²

The immediate take-over and exclusive conduct of production operations by Petrobrás following development under the early RSCs had been a major complaint from oil companies because they felt that they were set aside during the production period after venturing a fortune on a single chance. They certainly wanted to operate the oil fields that they had discovered and to control production operations rather than turn them over to Petrobrás.¹²³ Their concerns were taken into account by Petrobrás and the original production procedure was revised and supplemented in 1979 by the provision of a Joint Supervisory Committee (JSC) for the production stage.

Under this provision, Petrobrás and the contractor will constitute, prior to commencement of commercial production, a JSC consisting of four members, with two being appointed by

each side. The responsibility and mandate of the JSC is to: (i) establish the operational procedures during the production period; (ii) set up the projected Maximum Efficiency Rate (MER); (iii) provide interchange between its members relative to all production operations, and (iv) review technical data and accounting records generated from the production operations.¹²⁴

The provision of a joint management body is not unusual in modern petroleum arrangements. In the Brazilian case, the JSC not only allows an effective "presence" of the contractor after the take-over by Petrobrás, but more importantly links the risk obligation with the management function. This partially offsets the serious flaw in the production take-over because the contractor may participate in management at the production stage.

Overall, the contract terms on exploration, development and production have been progressively relaxed through the introduction of provisions such as the drilling option and JSC. The drilling option, which substantially precludes the foreign companies from exploration risks, is a major innovation by Brazil in world petroleum agreements. Its incorporation into the improved RSCs represents a significant deviation from the risk-bearing principle. With such a provision built in, the Brazilian risk-bearing service contract is no longer as risky as it once was.

K. Commerciality

Under the 1976 model contract, determination of commerciality rested with Petrobrás. The early RSCs all provided that "Petrobrás's decision on this matter shall be final and not subject to reexamination."¹²⁵

The final say by Petrobrás on commerciality was regarded by most companies as a very stringent provision. Strong arguments were voiced for its revision.¹²⁶ The provision on commerciality was soon redesigned by Petrobrás so as to reflect the contractor's interest in such an important issue.

According to the new provision, a discovery shall only be considered as a commercial field if production yielded an income greater than 110 per cent of the sum of: (a) the reimbursement, interest and remuneration to be paid by Petrobrás to the contractor, and (b) the production charges estimated for the field in question. If the field is less than 110 per cent but greater than 100 per cent, the discovery is considered marginal. If the field is less than 100 per cent, the field considered non-commercial. As far as the final say is concerned, the contract provides that if Petrobrás believes that the field is commercial but the contractor does not, such field will be relinquished at the end of the exploration period. If the contractor believes that the field is commercial but Petrobrás does not, the contractor's conclusion shall prevail in principle.¹²⁷

It goes without saying that the changes made in the 1977

version handing the final say on commerciality from Petrobrás over to the contractor are fundamental. Two immediate appraisals of the commerciality clause are available. First, Brazil's RSC provides a clear yardstick of commerciality, which may automatically prevent controversy from arising in this traditional area of disputes in petroleum arrangements. Second, the final say on commerciality by contractors may be regarded as another feature of the Brazilian RSC because not many producing countries are willing to make the compromise on such an important matter.

L. Payment to the contractor

In accordance with the principle of payments for service completed, Petrobrás shall implement, from the start of commercial production, payment for services rendered by the contractor. Payment to the service contractor comprises three categories:

(a) Reimbursement of exploration investment

Funds invested by the contractor in exploration operations and consolidated for the commercial field in question will be reimbursed to the contractor *with no interest*.¹²⁸

(b) Reimbursement of development expenses

Funds advanced by the contractor for the purpose of development of the commercial field(s) shall be reimbursed *with interest*, at the rate of an agreed percent per annum.¹²⁹

The interest rate is a matter of bidding by the contractor, but it is usually agreed upon and set at somewhere equal to the prime rate of the Bank of America, plus one per cent.¹³⁰

(c) Remuneration for services

In addition to the reimbursements, Petrobrás will also pay to the contractor, during a certain number of years and for each commercial field, a quarterly amount computed in accordance with a specific formula provided for in the contract.

The remuneration period is a major bidding variable, ranging from 10 to 20 years after production start-up. Typical payout periods run about 13 years.¹³¹ In the Conoco contract, the remuneration is to be made within 12 years.¹³²

The formula for determining the remuneration has also undergone some evolution. Under the 1976 model contract, the annual service remuneration was computed in accordance with the following formula:

$$SR = \frac{M Q X}{100}$$

where:

SR = remuneration for the service rendered by contractor;
M = market price of crude oil;

Q = volume of the annual production achieved in each commercial field;

X = value between 0 and 100, varying according to production levels, pursuant to a specified table.¹³³

This formula was soon altered. The 1977 model contract embodied a new version of the formula:

$$R = (Q_1 X_1 + Q_2 X_2 + Q_3 X_3) P$$

where:

R = the remuneration for the services rendered by the contractor;

P = the market price of crude oil as defined in the contract;

Q₁, Q₂ and Q₃ = shares of quarterly production volume obtained in each commercial field as shared in accordance with a specified table.

X₁, X₂ and X₃ = values between 0.00 and 1.00, varying with relevant shares of production levels, in accordance with a specified table.¹³⁴

For the purposes of remuneration, the market price of the crude oil delivered FOB terminal (the price equivalent to the then current sale price of crude oil in the international market at arm's length long-term transactions) will be used, with due adjustment for quantity, quality and location differences as specified by Petrobrás. If the contractor believes that the specified price is not representative of the international market, it shall so notify Petrobrás. The matter

shall be determined by arbitration if the parties are unable to agree on a solution.¹³⁵

A number of main changes have been brought into being by the new formula: first, the payment of remuneration is accelerated from annually to quarterly; second, the computation of economic benefits is more related with field economics because quarterly production, which is further divided into three shares, has been taken into account; third, more progression has been introduced into the contractor's remuneration, which is computed on the basis of a sliding-scale formula that takes into account the volume of production and the international market price.

Notwithstanding the above provisions, payment to the contractor is subject to the following important restrictions. All payments should not be greater than net incomes received by Petrobrás from production of the commercial field in question. Whenever such incomes are smaller than the payments due, the balance in favour of the contractor shall be deferred and added to subsequent payments. In this way, Petrobrás does not have to use resources from outside the relevant commercial field to meet financial responsibilities generated by it. Another restriction is that no payment—reimbursements, remunerations, deferments or accumulations—shall be due or effected after the end of the remuneration period, "therewith becoming null any balance eventually due in favour of the CONTRACTOR."¹³⁶

Though termed differently, the reimbursement of the exploration and development expenses are equivalent to a cost recovery and the remuneration for services to a profit-sharing arrangement, as under other petroleum arrangements. On the whole, payment to the contractor as well as pricing under Brazil's service contract is relatively concise and straightforward, but the rate of risk capital return is moderate, averaging typically at about 13 years.¹³⁷ Foreign companies are generally discontent with the fiscal package, particularly their payments in cash and not in kind.

M. Buy-Back Provision

Foreign service contractors are unhappy with their remunerations in cash, though this is somewhat offset by the arrangement to buy back some production. All RSCs contain a buy-back provision which entitles the contractor to purchase, at the prevailing market price, a certain quantity of crude oil produced from the field(s) discovered by him, but limited to the value of his remuneration from Petrobrás. Nonetheless, the buy-back provision does not provide for a guaranteed legal right. In the event that the national supply of petroleum comes to a crisis, the contractor's right to acquire crude oil "may be partially or completely suspended by Petrobrás."¹³⁸

The suspension provision is regarded by foreign companies as the most unacceptable aspect of the RSC because it works entirely to the detriment of their interests.¹³⁹ In spite of

the constant criticism voiced by the companies, no substantial change has been introduced to the suspension provision whereby Petrobrás still enjoys the power to suspend the contractor's right of purchase when the government so decides.

N. Natural gas

The issue of natural gas has never received enough attention in petroleum agreements. This is the case under the Brazilian RSCs. Under the 1976 terms, the contractor was not entitled to any return whatsoever of its exploration expenses in the event of a natural gas discovery.¹⁴⁰

This was certainly not fair in view of the fact that the same exploration risks were faced vis-a-vis an oil discovery. Needless to say, the lack of return was disliked by oil companies. They insisted on a revision of the RSC to allow them to recover the full costs of discovering and developing a gas field.¹⁴¹

Because of the companies' objection, the 1977 model contract made a substantial change in the provisions which allow a gas discovery to enjoy the same treatment as a petroleum discovery. The remuneration for a commercial gas discovery is calculated by using the same formula and table, but with two adaptations: first, the limits of the table related to production levels is multiplied by 1,000; and second, the contractor is not entitled to any remuneration, reimbursement or right with respect to a discovery if its

development can not be commenced within five years.¹⁴² The gas provisions were further improved under the 1980 model contract, but the basic principles remained intact.¹⁴³

The price of gas remains the subject of negotiation, but the contract provides clear guidelines for establishing the price, which should take due account of, *inter alia*, the quantity and quality of natural gas; and the international market price of competing or alternative fuels.¹⁴⁴

Brazil has so far been one of a few countries to have introduced more elaborate gas provisions in petroleum agreements.¹⁴⁵

O. Taxes

Under the RSCs, contractors are solely responsible for income tax and other taxes that may be imposed on their remunerations and interests.¹⁴⁶ The Brazilian income tax is 25 per cent of the net income, or a little less in the case of a company domiciled in a country which has signed a treaty on double taxation with Brazil. Such tax also applies to the interest received on the reimbursed development expenses.¹⁴⁷

The taxes due on remuneration and interest is withheld at a source by Petrobrás which provides the contractors with receipts to show that payment of such taxes has been made.

Taxes on services and other taxes that may be levied by reason of contractors' activities are regarded as exploration and development expenses and, therefore, are reimbursed to the

contractor in the manner provided for in the contract. Furthermore, any increase in the current tax as well as the establishment of new taxes are borne by Petrobrás, provided they are not applicable on a general basis, i.e., not uniformly applicable to all legal entities domiciled outside Brazil but having revenues from a source in Brazil.¹⁴⁸

Because of the structure of this type of arrangement, less emphasis is usually placed on tax and royalty payments by the service contractor. The level of tax rate is relatively less important: if the tax rate is high, the service fee is higher, or *vice versa*.¹⁴⁹

Another point to be emphasized is that no royalty is employed with this arrangement, which represents another remarkable feature of the RSC.

In short, the RSC has perhaps the simplest tax regime of the petroleum agreements. Under such a regime, a service contractor is subject to not only low tax rates but also easy tax administration. This explains in part the success of the RSCs in drawing risk capital to Brazil's oil hunt.

P. Title to movables and immovable

Besides holding title to petroleum resources, Petrobrás is also sole and unconditional owner of any land acquired for the purposes of service activities during the life of the contract.¹⁵⁰ All movables which are incorporated into buildings, or any other installations of a permanent

character, become an integral part of the fixed assets to be transferred to Petrobrás. All fixed assets related to petroleum operations are to be transferred to Petrobrás at the end of the exploration period or of any extended periods. If any commercial field is discovered and developed by the contractor, the assets will be transferred to Petrobrás from the date of commencement of commercial production. The provisions relating to properties do not, however, apply to the machines and equipment used on a temporary basis.¹⁵¹

Q. Insurance and confidentiality

All RSCs contain articles on insurance and confidentiality. Under the insurance provisions, a contractor is required to take out insurance policies on the subject matter of the following three major categories: (a) materials, which are to become the property of Petrobrás; (b) any and all damages caused to third parties as a direct or indirect result of the risk services, for which policies must be permanently maintained; (c) all other insurance policies as may be required at any time by Brazilian laws and regulations.¹⁵²

In addition to the compulsory insurance requirement, the contractor may also take out, at its discretion, voluntary insurance policies on any of its assets.¹⁵³

The premiums for the compulsory insurances are regarded as exploration or development expenses, but those for the voluntary insurance is to be paid and borne by the contractor

alone.¹⁵⁴

The provisions of confidentiality stipulate that all information of any kind under the service contract "shall be treated by CONTRACTOR as strictly confidential", so that none of the contents are disclosed to any third party without the previous written consent of Petrobrás. More stringently, the contract provides that the confidentiality shall not be voided by the expiry or termination of the contract and will constitute a continuing obligation and remain "in force at all times".¹⁵⁵

As a result of the confidentiality obligation, neither references to nor any notes on the contract are allowed to be made public or to be published in newspapers, periodicals, books or by any other means. This accounts for the lack of information and comment on the Brazilian RSCs.

As far as insurance and confidentiality are concerned, it is enough to say that the requirements in these respects are comprehensive and extraordinary in modern petroleum agreements. The requirement of total confidentiality after the contract expires is exorbitant for two reasons. First, it is unnecessary from a practical viewpoint. Secondly, it is not likely that anything can be kept confidential permanently. It is advisable for the contract to provide for a specific term of confidentiality after the expiry or termination of the contract.

R. Arbitration, applicable law and jurisdiction

Ad hoc arbitration of any disputes arising from the execution or interpretation of the contract that cannot be settled by mutual agreement is provided for in the contract. The conduct of the arbitration and the constitution of the arbitration board are similar to those under the modern concession and the production-sharing contract, except for the following points:¹⁵⁶

(a) any vacancy in the arbitration board, be it the arbitrator or the president, shall be filled by the President of the Tribunal de Justiça (Court of Justice) of the State of Rio de Janeiro upon request;

(b) arbitration shall be commenced and shall take place in the City of Rio de Janeiro;

(c) the arbitrators shall be guided in the settlement of any dispute by the laws of Brazil; and

(d) the arbitration shall be governed by the Brazilian Code of Civil Procedure.

Aside from the national arbitration procedure, the RSC contains explicit provisions on the applicable law and jurisdiction, under which the RSCs "shall be governed solely by the laws of Brazil" and all questions and controversies that may arise under the contract "shall be decided by the competent judges or courts of Brazil, to whose jurisdiction the Parties expressly submit themselves".¹⁵⁷

In the final analysis, the national arbitration set forth

in Brazil's RSC is not quite in line with general petroleum contractual practice, which is to provide for international arbitration. Foreign companies do not take it lightly for obvious reasons. They certainly prefer international arbitration of disputes to national arbitration procedures.

S. Calvo Clause

In making concession contracts with foreign companies, it has long been the legal practice of Latin American states to insert a "Calvo Clause", under which the foreign contractor agrees not to seek the diplomatic protection of its home state.¹⁵⁸ The RSC, as a principal form of foreign investment contract in Brazil, is no exception to this Latin American tradition and embodies a clause which reads in part:

The Parties undertake to make use solely of the means provided in this Contract for the purpose of settling controversies and disputes which may arise during the life of this contract... (and) not to discuss or make claims or complaints regarding matters arising out of this Contract by diplomatic means before any international organization...¹⁵⁹

In theory, a contract clause of private law is not capable of depriving a state of its right to diplomatic protection or of depriving an international tribunal of its jurisdiction. In practice, the rule of international law on local remedies often makes the clause superfluous since the right of diplomatic protection will take place only if justice is denied in the course of exhausting remedies in the local courts.¹⁶⁰ But in this case, all foreign contractors appear

to have accepted the clause. The net effect of such acceptance is that the possibility of diplomatic protection or international jurisdiction is ruled out even if there is a denial of justice by the local courts.

It should be pointed out that the provisions concerning the applicable law, dispute settlement and the "Calvo Clause" are all rooted in the legal fact that Brazilian courts have jurisdiction over all obligations to be performed in Brazil and all matters arising out of acts practised in Brazil.¹⁶¹

T. Assignment

Under all RSCs, a contractor is not allowed to assign, sell or otherwise dispose of the capital stock of its branch or subsidiary company. Unless otherwise previously and expressly authorized in writing by Petrobrás, the contractor and its subsidiary company shall under no circumstances assign or transfer the contract.¹⁶²

VI. The risk service contract and environmental protection/sustainable development

This section discusses and examines the environmental and sustainability provisions of the Brazilian type of RSCs, beginning with an introduction to the general environmental development in Brazil.

1. Environmental policy and law in Brazil

In the 1960s and 1970s Brazil enjoyed particularly rapid economic growth, which is often described as having been built on the premise of inexpensive and readily available imported crude oil.¹⁶³ The country is regarded as "the industrial locomotive of Latin America" for the economic miracle it has achieved. Unfortunately, the Brazilian economy, though ranked the tenth largest in the world, has now been left with severe ecological damage and environmental problems of immense proportions.¹⁶⁴

For a long time, Brazil, like many other developing countries, did not realize it would be in its own interest to protect the environment. At the 1972 Stockholm Conference, Brazil led a number of developing countries in confronting industrialized countries on whether economic growth should be tempered by measures to protect the environment. Brazil has also been resentful over suggestions that its development efforts should be impaired by environmental restrictions.¹⁶⁵

There has been widespread disparagement in environmental values in Brazil. Many government agencies and interest groups have traditionally favoured economic development over environmental protection, which is often compromised.¹⁶⁶ Brazilian governments, including the current administration, are known for their anti-environmental attitudes.¹⁶⁷ For

instance, the Amazona's Governor Bilberto Mestrinho said in a recent interview: "Environmentalists care more about trees and monkeys than people. It is absurd."¹⁶⁸

It was not until recently that the connection between economic development "at any cost" and environmental damage has been acknowledged. Brazil has eventually concluded that its natural assets have been "intensely and disorderly exploited".¹⁶⁹

Brazil has no history of environmental legislation. In recent years, Brazil passed a number of environmental laws,¹⁷⁰ among which is the National Environmental Policy of 1981, which stands as the country's most important environmental protection device. Its general objectives are "the preservation, improvement, and recuperation of environmental quality... conditions for socio-economic development, national security and protection of the dignity of human life" and the establishment of a comprehensive administrative system to deal with environmental concerns.¹⁷¹ In sum, the law lays down some broad policy guidelines for environmental affairs and its primary emphasis is on administration, not judicial action.

Unfortunately, this law and others "have stalled", as Brazilian people put it informally, and its provisions have been ignored daily.¹⁷² In fact "before 1988 there were no constitutional precepts establishing administrative, criminal, or even civil responsibilities for environmental damage."¹⁷³ To date, "many conservation areas and national parks exist

only on paper."¹⁷⁴

Of more importance in this respect is Brazil's Constitution of 1988 which contains a new chapter on the environment. The chapter reads in part:

Everybody has a right to an ecologically balanced environment as it is a good for common use by the people, and as it is essential to a healthy quality of life; the Public powers have thus an obligation to defend it, and the collectivity to preserve it, for present and future generations...¹⁷⁵

It is clear that this Constitution has provided a comprehensive mandate to defend and recompose the environment and to guarantee a rational utilization of natural resources for the present and future generations.

Most importantly for our discussion, the 1988 Constitution makes a special provision for the mining industry which provides that "anyone who exploits mineral is obliged to restore the damaged environment by such technical means as may be required by the appropriate public agency, pursuant to law."¹⁷⁶

The 1988 Constitution is an important advance in Brazil's history towards protection of the environment. It elevates environmental problems to a national concern, whereas all prior constitutions emphasized economic concepts.¹⁷⁷ To this author's knowledge, it is perhaps the world's most comprehensive legislation on this subject at the constitutional level. But it remains to be seen whether Brazil is able to achieve the environmental goals set forth in its Constitution.

In fact, enforcement of the environmental laws in Brazil has always been sporadic and enforcement was, until recently, unheard of in many parts of the country.¹⁷⁸ There are several reasons for this. Perhaps the most important is that there has been a lack of political will to protect the environment. Another reason for the ineffectiveness is that the environmental agencies are grossly understaffed and underfunded for the enormous task they face.¹⁷⁹

Contrary to Brazil's official environmental policy and legislation, there have been affirmative policy determinations in private: "Brazil, as a developing country, cannot afford to allocate too many of its scarce public and private resources to environmental protection instead of to productive activities..."¹⁸⁰ This accounts in part for the poor record of environmental protection in Brazil.

In conclusion, as far as the Brazilian history of and practice in environmental protection are concerned, the situation can be summarized by one commentator in the following words:

... the national and state governments rarely gave priority to environmental protection or pollution control except in emergency situations involving serious and immediate threats to public health or safety. Their emphasis was on political control and economic growth, especially industrialization.¹⁸¹

As a result of its short-sighted and venal policies, Brazil faces an ecological catastrophe. This huge country, which contains the world's largest tropical rain forest, the biggest river system and the richest array of plant and animal life

has, among other things, the highest absolute levels of deforestation on the planet, which typifies the global environmental crisis. Brazil's decades of untrammelled development has destroyed 415,000 km² (160,000 mile²)—an area the size of Iraq—of the Amazon rain forest.¹⁸² If the traditional attitudes and practices are continued, there will be more rampant and widespread environmental destruction.

2. The risk service contract and environmental protection

The massive environmental destruction in Brazil has been caused by various development activities. Petroleum exploration by foreign oil companies is certainly a major contribution. Direct destruction is caused by activities such as seismic lines, drilling operations, oil spill and routine leakage.¹⁸³ But less attention has been paid to the environmental and social destruction being caused by oil exploitation.

As mentioned earlier all major regulations governing petroleum activities in Brazil were adopted before 1960s and their primary objective was to establish a national monopoly of oil rather than to regulate petroleum operations. These regulations were silent on environmental protection simply because they were passed at a time when environmental issues were not foreseen. So it is perhaps not fair to expect any environmental provisions in the early regulations when

pollution had not caused international concern.

As for the model contracts, our preceding comprehensive survey of the RSC terms reveals that, though drafted fully four years after the Stockholm Conference, the 1976 model contract did not make any reference to environmental protection.¹⁸⁴ The 1977 model contract made a little progress by adding to one of its provisions a brief paragraph which reads in full:

Such services must also be performed in such a way that will result in a minimum ecological disruption and shall cause no manage to the public and private property located along the shore. In case pollution is caused by CONTRACTOR's Operation, CONTRACTOR is obligated to carry out the clearing operations, without prejudice of its responsibility to third parties and to competent authorities, it being understood that the relevant costs shall be considered neither Exploration nor Development expenses, as the case may be.¹⁸⁵

Despite periodic revisions of the RSC terms, this provision has not been improved in subsequent model contracts and stands as the only environmental provision in Brazil's RSC system.

This provision is far from environmentally adequate for a number of important reasons: first, the provision is apparently vague and imprecise about the environmental goals to be achieved; second, it provides no specific targets or objective measures of contract fulfilment; third, the principal purpose of this provision appears to be definition of the clean-up obligation. It has little concern for serious environmental protection; fourth, it requires neither precautionary nor preventive measures during the course of

petroleum operations. In view of these defects, perhaps it is not an arbitrary statement that the RSC has no effective provisions on environmental protection and that foreign contractors have operated under no specific environmental obligations except the clean-up responsibility.¹⁸⁶

The RSC was an innovation in an environmental conservation era, and should, therefore, have included some acceptable environmental protection provisions. Their omission in the RSC was perhaps not fortuitous, given Brazil's long-standing pro-development and anti-environment policy and practice.

Under the RSCs which have no adequate environmental provisions, foreign oil companies are unleashed in their service operations. In many instances, explorations begin without any prior environmental impact assessments.¹⁸⁷ There is no environmental monitoring throughout the operations. Some oil companies have no comprehensive guidelines for operations in developing countries. For instance, in 1987, British Petroleum (BP) was exploring in eight Latin American countries. In Brazil, it had built up a network of over 100 companies in collaboration with three local corporations. These companies owned over 6,000 prospecting licences, covering 22 million hectares. Despite the fact that BP has one of the best environmental divisions of any oil company, its record in Brazil has come under scathing attack in the past for destroying rain forest.¹⁸⁸ As a further example, Shell

U.K. Ltd. did not have environmental guidelines for its operations in the tropical rainforests.¹⁸⁹ At any rate, international oil companies involved in petroleum extraction in Amazonia have been intensely criticized and made liable, in some instances, for the environmental damage their exploration activities have caused.¹⁹⁰

In conclusion, in the absence of legal provisions in either the petroleum laws or the RSCs and of an effective government and active non-governmental organizations to scrutinize the foreign oil companies, "environmental and social guidelines are simply ignored."¹⁹¹

3. The risk service contract and sustainable development

Many will perhaps agree that Brazil's "economic miracle" has been achieved at the expense of its environment. This also holds true for its petroleum industry. It is hardly likely for a country that pays little attention to its environment to think seriously of sustainability in its O & G development.

While Brazil has frequently been described as being replete with natural resources, it has been proved that the country has suffered from a lack of economically accessible large-scale petroleum reserves. Despite Petrobrás' desperate exploration efforts, self-sufficiency in oil appears to be only a distant possibility. Rightfully acknowledging this

adverse situation with respect to petroleum supply, Brazil introduced the National Alcohol Plan in 1975 to produce alcohol as a partial substitute for oil.

It is known that the petroleum exploitation in Brazil has long been destructive. In fact, production stabilized as early as during the 1970s as the rate of both onshore discoveries and onshore production declined.¹⁹² The Association of Petrobrás Engineers says that with a horizon of 15 years' production from present reserves, current output is above the limits of what could be called rational production. Signs of premature exhaustion have already been detected in many oil fields. "But the rush to reach politically-motivated production goals... has led not only to early depletion of reservoirs, but working conditions of great insecurity."¹⁹³

Throughout our examination of the RSC system, there is little evidence to suggest that the contract terms have given any thought to sustainable development of hydrocarbon resources. Under the Brazilian RSCs, Petrobrás takes over and conducts all production operations after development by contractors. In this regard, it is probably right to suggest that Petrobrás bears more responsibility towards sustainable development than do the service contractors. By contraries, "in an effort to immediately reduce its dependency on oil imports, the Government is increasing domestic production by *exploiting existing fields at a production rate that exceeds production norms.*"(emphasis added)¹⁹⁴ Such a desperate

practice is apparently in violation of the general rule in the international petroleum industry.¹⁴⁵

This predatory and destructive exploitation is hardly surprising, because the business is ruled by the "profit-at-any-cost" logic. This same phenomenon of maximization of profits has taken place in other sectors of the economy, be it import-substitute oriented or export oriented.

To conclude, the RSC has not taken into account the principle of sustainable development and, hence, the current development under the RSC system is not sustainable. It is difficult to think of a country more suitable for the principle of sustainable development than Brazil in view of its environmental destruction and exploiting development.

VII. Evaluation of the risk service contract

Although the RSC has the same objective as the modern concession contract and the production-sharing contract—namely, engaging international oil companies to develop a national resource—and while it shares some of the usual elements and terms of other agreements, the RSC has some distinctive features.

Most importantly, "there is little question of the immense political significance of its use in finally ensuring the host country full ownership of its oil and all assets."¹⁴⁶

The RSC is the first arrangement in history that can assure conceding countries the maximum national control over petroleum development with as little foreign involvement as possible. In a sense, the petroleum exploitation under the RSC amounts to direct state operation rather than "government participation". From a political standpoint, this certainly constitutes a major improvement over other current petroleum agreements. It is thus favoured by those developing countries which place more emphasis on the ownership of natural resources and national independence. Although the economic analysis of the RSC may have some validity, it often tends to obscure the political significance as outlined above.¹⁹⁷

Also outstanding is the legal significance of the RSC. It provides for the legal status of the producing state as the owner of the oil even after recovery, while relegating the foreign company to the role of a mere contractor providing services, with neither right to the service area nor title to oil production except the entitlement to buy back some crude oil. As a matter of fact, the deal envisaged under the buy-back provision amounts to a sale of crude, i.e., a business transaction denoted by a well-marked balance between the quantities of oil sold and the amount of dollars paid for it. "In no instance whatsoever is title to oil deriving from the contract vested in the Contractor."¹⁹⁸

In financial terms, the RSC makes it possible for the producing state to receive a higher economic benefit than

under other arrangements because of the government's immediate take-over of production and its exclusive expropriation of the yield. Technically, none of the production goes to the contractor.¹⁹⁹

Due to the structure of this arrangement, the RSC has little emphasis and provision on royalty and tax payments by the foreign companies. This makes the fiscal package less complex and thus reduces to some extent the chances of controversy in this traditional area of dispute. Moreover, the simple tax regime also make it possible for the contractor to make a faster recovery of cost.

Another major difference lies in the mechanism for the recovery of costs and the remuneration of the contractor, which is effected mainly in accordance with a mutually predetermined formula, and payments are made in cash.

In technical terms, the agreement is clear and straightforward. It is, therefore, relatively simpler to administer and reduces supervisory and administrative mechanisms to a minimum.²⁰⁰ This is also to the advantage of the foreign companies because they are subject to less bureaucracy in the course of executing the contracts. The RSC is a fresh device that can meet the needs of developing countries for filling gaps in finance, technology, managerial know-how and other inputs.²⁰¹ Moreover, it is to be noted that little distinction is made between onshore and offshore terms in the Brazilian RSC, the only major variation being in

exploration period. This is very peculiar in modern contractual practice, in which different terms are always set forth for the two contrasting environments.

The foregoing represents the legal nature of the RSC, which can be summarised thus: risk with no right to oil.

The legal nature of the RSC has two disadvantages. First, the RSC terms are generally considered by oil companies as "onerous" because their profits and access to production are usually limited, many companies may not be interested in these arrangements.²⁰² The second disadvantage is that, for the same reason, application of the RSC is restricted. Its widest use is in Latin American countries where the likelihood of finding oil and the size of possible reserves are comparatively greater than elsewhere.

Finally, it must be pointed out that the RSC has no effective provisions on environmental protection, and sustainable development of petroleum resources has not yet taken into account at all. This, of course, is a serious drawback of this contractual arrangement.

VIII. Summary

In the course of its development, Brazil has benefited enormously from oil while it has been for well over half a century beset with the question of whether foreign companies

should be permitted in domestic exploration.

The decision to engage foreign services in domestic oil exploration under risk terms was an attempt to supplement the national effort to achieve self-sufficiency in oil. This is evident from the results of the RSCs, which show that at least \$1.7 billion has been spent in the 243 risk contract areas and not a dollar of reimbursement has yet been made by Petrobrás to a contractor because the efforts of the contractors have not yet resulted in any commercial production.²⁰³

The RSC was carefully drafted by Petrobrás' legal staff. It is the best arrangement in terms of safeguarding national sovereignty over petroleum resources since in no instance is title to oil deriving from the contract vested in the contractor. Under the risk service formula, the Brazilian state monopoly remains unharmed as a result of the use of "hired services".²⁰⁴ For this reason, the RSC is recommended to those developing countries that consider moving in the same direction but fear being deprived of their sovereignty over petroleum resources.

Both state monopoly of and self-sufficiency in oil are legitimate goals for Brazil, but it has been proved that they are not always adequate for either economic development or environmental protection, let alone sustainable development.

In an interdependent world, co-operation in energy development is necessary under many circumstances and has, in fact, been a well established practice all over the world. The

Brazilian ban on RSCs may be viewed as a departure from the general direction prevailing in the vast majority of the developing countries in this respect. It is therefore felt that a twofold oil policy—a direct exploration by Petrobrás and indirect risk contract exploration by private companies—may be in Brazil's best interests.

In sum, a general analysis of the RSC indicates that the system is better in many respects than the concession and production-sharing forms of contract. The contract is simpler and clearer to administer and comply with. Its terms are more favourable to developing countries. Aside from the defects with respect to environmental protection and sustainable development, "the service contract seems to be regarded by most commentators as the most progressive of the contractual forms currently in operation."²⁰⁵

Notes:

1. Philip, G., Oil and Politics in Latin America: National Movements and State Companies (New York: Cambridge University Press, 1982), p.227. See also generally Smith, P. S. Oil and Politics in Modern Brazil (Toronto: The Macmillan Company of Canada Ltd, 1976), pp.7-19.
2. The wave of petroleum nationalization originated from Latin America. Bolivia took the lead in nationalizing its oil industry in 1937 and Mexico followed the suit in 1938.
3. Energy Information Administration (EIA), The Petroleum Resources of South America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, and Peru (Washington, D.C.: U.S. Government Printing Office, 1985), p.42, 48; For a table of Brazil's Petroleum milestones, see International Labour Office (ILO), Brazil and Peru: Social and Economic Effects of Petroleum Development by Morman Gall and Eleodoro Mayorga Alba (Geneva: ILO, 1987), pp.52-53 (hereinafter Brazil: Petroleum Development).
4. The first goal was reached in the early 1960s, but the second has become increasingly elusive.
5. EIA, Petroleum Resources of South America, supra note 3, p.42.
6. Brazil's domestic production in 1955 accounted only for about 3% of the total requirement, but by 1960 the state company was supplying the nation with 30% of its needs, and by 1970 the share had risen to 34.3%. However, the percentage fell back sharply to 17% in 1977 as production remained essentially static while consumption was rising at an average annual rate of 16% and imports at 26%. See "Latin America and Caribbean Oil Report", Petroleum Economist, 1979, reprinted in Barrows Company, ed., Offshore Petroleum Industry, Supp. 41 (New York: The Barrows Company Inc., 1980), pp.34.
7. Brazil's net oil imports during this period remained peaked one million b/d for years. ILO, Brazil: Petroleum Development, supra note 3, pp.8-10.
8. The World Bank, Brazil: Oil and Gas Sector Review, 1983, reprinted in Barrows Company, Offshore Petroleum Industry, supra note 6, Supp. 60, 1985, p.11, 17.
9. Economist Intelligence Unit (EIU), Brazil: Country Report No. 3 1991 (London: Business International, Ltd., 1991), p.13.

10. "Petrobrás Role in Brazil's Economy Disputed", O & G J., January 14, 1991, p.47. Cf. also EIU, Brazil: Country Profile 1990-1991 (London: Business International, Ltd., 1990), p.26.
11. EIA, Petroleum Resources of South America, *supra* note 3, p.41.
12. Please note that estimates of oil reserves in Brazil vary significantly. This figure is taken from O & G J., January 14, 1991. Other sources estimated the possible oil reserves at some 8 billion barrels. See EIU, Brazil: Country Profile 1990-91, *supra* note 10, p.28.
13. Morris, M.A., International Politics and the Sea: The Case of Brazil (Boulder, Colorado: Westview Press, 1979).
14. Morris, M.A., "The Domestic Context of Brazilian Maritime Policy", 4 ODIL 152, 154 (1977).
15. Amador, F.V.G., Latin America and the Law of the Sea, Law of the Sea Institute, University of Rhode Island, Occasional Paper No. 14, July 1972, p.9.
16. Decree-Law No. 62.837 of June 6, 1968, see *ibid.*, p.9. For a brief summary of Brazil's maritime legislation, see U.S. Depart. of State, Limits in the Sea: No. 36, National Claims to Maritime Jurisdictions, 6th Rev. (Washington, D.C.: U.S. Depart. of State, January 1990), p.21.
17. Suman, D.O., "A Comparison of the Law of the Sea Claims of Mexico and Brazil", 10 ODIL 152 (1981-82).
18. Arts. 1 and 2 of Decree-Law No. 44 of November 18, 1966, and art. 1 of Decree-Law No. 553 of April 25, 1969. For a brief summary of these two laws, see Amador, Latin America and the Law of the Sea, *supra* note 15, p.9; and art. 1 of Decree-Law Extending Territorial Sea to 200 Miles of March 25, 1970, 10 I.L.M. 1224-25 (1971).
19. Morris, *supra* note 14, p.143.
20. Decree-Law No. 68.495 of April 1, 1971, reprinted in 10 I.L.M. 1226-33 (1971).
21. Art. 4 of the 1967 Constitutions, in Bloustein, A.P. and Flanz, G.H., ed., Constitutions of the Countries of the World: Historic Constitutions Vol. 2 (New York: Oceana Publications, Inc. 1983), pp. Brazil, issued June 1975, 2-3; and art. 4 of the 1969 Constitution, *ibid.* pp. Brazil, issued August 1982, 1-2; art. 20 of the 1988 Constitutions, ———, Constitutions of the Countries of the World: A Series of Updated Texts, Constitutional Chronologies and Annotated Bibliographies, Vol.

- 2 (New York: Oceana Publications, Inc., 1971-), pp. Brazil, issued August 1990, 9.
22. Morris, M.A., "Brazilian Ocean Policy in Historical Perspective", 10 J. Maritime L. & Commerce 384-85 (1978-79).
23. Suman, *supra* note 17, p.163.
24. U.S. Dept. of State, Limits in the Sea, *supra* note 16, No. 36, 5th Rev., March 6, 1985, p.27; and *ibid.*, No. 73, September 1976, pp.1-5.
25. U.N. Office of Law of the Sea and Marine Affairs, Law of the Sea Bull., No. 19, 1991, p.1. See also Morris, M.A., "Brazil at the 3rd United Nations Conference on the Law of the Sea", 7 ODIL 135 (1979).
26. Smith, Oil and Politics in Modern Brazil, *supra* note 1, p.7. For an account of Brazil's petroleum legislation, see Neto, J.S.C., An Overview, *infra* note 84, pp.3-11.
27. The 1934 Constitution, cited in Neto, An Overview, *ibid.*, p.4.
28. For instance, the 1946 democratic Constitution reaffirmed the permit/concession system embodied in the 1934 Constitution. See *ibid.*, pp.4-6.
29. Decree-Law No. 395 of April 29, 1938, see *ibid.*, p.6-7. Other laws promulgated during this period include Decree-Law No. 538 of July 7, 1938. For the text of this law, see Appendix I, in Smith, Oil and Politics in Modern Brazil, *supra* note 1, pp.190-95.
30. For text of the bill, see Appendix II: Draft Proposal of the Petroleum Statute (1947), *ibid.*, pp.196-206.
31. Organization of American States (OAS), ed., Mining and Petroleum Legislation of Latin America and the Caribbean (New York: Oceana Publications, Inc., 1979), p. Brazil 5-21.
32. *Ibid.*, p.23; Barrows Company, ed., Petroleum Legislation, Supp. 26 (New York: The Barrows Company Inc., 1977), p.52.
33. Arts. 1 (I, II & III) and 2 (I & II) of the Decree Law No. 395, in Barrows Company, South America: Basic Oil Laws and Concession Contracts, Vol. I (New York: The Petroleum Legislation Co., 1967), pp. A 1-5 (hereinafter South America Contracts); For a summary of the law, see Barrows Company, Petroleum Legislation, *supra* note 32, Vol. III, 1970, pp. Brazil 6-7. The bulk of the law deals with the constitution, capital, directorate of and the benefits and obligations

attributed to Petrobrás.

34. For a list of relevant petroleum legislation, see Barrows Company, Petroleum Legislation, *supra* note 32, Supp. 26, 1977, pp.52-54; and OAS, Mining and Petroleum Legislation of Latin America, *supra* note 31, PP.23-33.

35. Art. 169 of the 1967 and 1969 Constitutions, in Bloustein and Flanz, Constitutions of the Countries of the World, *supra* note 21, Vol. 2, p. Brazil, issued June 1975, 67, and issued August 1982, 100.

36. Art. 177 (para. 1) of the 1988 Constitution, in Blaustein and Flanz, Constitutions of the Countries of the World: A Series of Updated Texts, vol. 2, *supra* note 21, pp. Brazil, issued August 1990, 55. For a review of the effects of new Constitution on energy and mineral resources development, see De Andrade, *infra* note 57, pp.231-37.

37. Art. 45 of the Transitory Constitutional Provisions Act of the 1988 Constitution, Blaustein and Flanz, Constitutions of the Countries of the World, *ibid*, p.79.

38. At least in one case, a "popular action" suit was brought by three radical nationalism plaintiffs against Petrobrás and Pecten, which is the only successful service contractor in finding oil out of the 243 service contracts, on the ground that the risk service contract violates the constitutional and statutory monopoly over ownership of minerals by the Republic.

39. Smith, Oil and Politics in Modern Brazil, *supra* note 1, p.7.

40. *Ibid.*, pp.8, 16-17.

41. *Ibid.* Little detail of these concessions and the activities carried out thereunder have survived.

42. *Ibid.*, pp.13-14.

43. *Ibid.*, p.74. For further information on the Brazilian petroleum nationalist movement, see *ibid.*, pp.7-74.

44. "Latin America: Brazil", in Int'l Petroleum Encyclopedia, Vol. 9, 1976, pp.181-82; and "Brazil: Review of 1975 Policy to Admit Private Exploration", Barrows Company, Offshore Petroleum Industry, *supra* note 6, Supp. 26, 1976, pp.42-43.

45. For an excerpt of the speech of the reopening given by the then President Ernesto Geisel's to the Nation on October 9, 1975, see Neto, An Overview, *infra* note 84, pp.12-13.

46. Statistics of Petrobrás, reprinted in Offshore Petroleum Industry, *supra* note 6, Supp.52, 1983, p.50.

47. "Brazil: Review of the 1975 Policy", *supra* note 44, p.43; see also "Brazil Considers Private Help", The Petroleum Economist, Vol. XLIII, No. 10, 1975, p.382.

48. For details of the 1976 bidding round, see "Brazil: Review of Exploration Effort Offshore", Offshore Petroleum Industry, *Supra* note 6, Supp. 33, 1977, pp.53-61. For brief information of contractual activities between 1976 and 1988 in Brazil, see annual report series: South America, Central America, Caribbean Area and Mexico, in AAPG Bull., Vols. 60-72, No. 10, (1976-1988); For a summary of the first six bidding rounds, see Mikesell, R.F., Petroleum Agreements in Developing Countries (Washington, D.C.: Resources for the Future, Inc., 1984), pp.100-03.

49. "Latin America and Caribbean Oil Report", *supra* note 6, pp.36-37.

50. *Ibid.*; see also "Brazil Opens More Acreage to Bidding", O & G J., September 6, 1982, p.44 ; "Latin America: Brazil", Int'l Petroleum Encyclopedia, Vol. 14, 1981, pp.108-111.

51. "Petrobrás Role Disputed", O & G J., January 14, 1991, p.50; see also De Andrade, *infra* note 57, p.236.

52. Correspondence with Mr. Mozart da Costa Freitas, Head of Division of Contracts of Petrobrás, March 7, 1992. See below for further details:

Well Status under Risk Service Contracts

No. of Wells	Status	Percent of Wells
146	Dry well	66
28	Subcommercial	13
48	Commercial	21
Total 222		100

Source: *Ibid.*

53. Statistics derived from Barrows Company, Offshore Petroleum Legislation, *supra* note 6, Supp. 43, 1980, pp.56-59; and "Latin America and Caribbean Oil Report", *supra* note 6, pp.36-37; and Int'l Petroleum Encyclopedia, Vol. 14, 1981, pp.108-111; Mikesell, Petroleum Agreements in Developing Countries, *supra* note 48, p.102.

54. "Privatization of Brazil's Petroleum Sector on Track Despite Scandal", O & G J., July 6, 1992. pp.52-55; Kelsey, *infra* note 191, pp.204-07; Neto, An Overview, *infra* note 84, pp.15-16, 19-24.
55. "Latin America: Brazil", in Int'l Petroleum Encyclopedia, Vol. 9, 1976, p.182.
56. O & G J., January 14, 1991, pp.47-51; "Privatization of Brazil's Petroleum Sector", *supra* note 54.
57. De Andrade, C.C.B., "Some Key Aspects of the Brazilian Legal Framework on Energy and Mineral Resources", 7 J.E. & Nat. Res. L., pp. 231, 236.
58. Neto, An Overview, *infra* note 84, p.22.
59. O & G J., March 12, 1990, p. Newsletter; O & G J., January 14, 1991, p.47; Brook. J., "Pumping Black Gold in Green Wold", The Globe & Mail, December 12, 1990, p. B8.
60. O & G J., January 14, 1991, p.47.
61. Davison, I., "Brazil's Many Sedimentary Basins Offer Attractive Exploration Targets", O & G J., August 5, 1991, p.55.
62. The public expectation and demanding for privatization and reform is running very high; and the country is unable to service its maintaining deficit. In order to avoid a sharp jump in oil imports, there is a need for almost \$17 billion spending in exploration and development in the next five years which is apparently beyond Petrobrás' capability. Cf. Serrill, M.S., "Brazil: Is Collor Headed for the Brink?" Time, November 25, 1991.
63. O & G J., March 5, 1990, p.15; O & G J., September 23, 1991, p.18; O & G J., July 6, 1992, pp.52-55; and O & G J., April 6, 1992, p. newsletter.
64. Peurifoy, J.C., "Rights of Parties to Service Contracts", 12 Rocky Mt. Min. L. Inst. 403-24 (1967).
65. Mikesell, Petroleum Agreements in the Developing Countries, *supra* note 48, p.29.
66. Dobinovic, T.E.J.P., "Petroleum Service Contracts in Argentina, Brazil, and Colombia: Issues Arising from their Legal Nature", 5 J.E. and Nat. Res. L., 15 (1987).
67. William, H.R. and Meyers, C.J., ed., Manual of Oil and Gas Terms, 8th ed. (New York: Matthew Bender, 1991), p.1134-35.

68. Brown, jr., E.A., "Considerations Attending Investments in Oil and Gas Operations in Latin America", Rocky Mt. Min. L. Fdn. Int'l Minerals Acquisition and Operations Inst., 1974, p. (paper 13) 14.
69. UNCTC, Main Features and Trends, UN Doc. ST/CTC/29, 1983, p.9.
70. Hossain, K., Law and Policy in Petroleum Development: Changing Relations between Transnational and Governments (New York: Nichols Publishing, 1979), p.164.
71. The service contract has been adopted in the following Latin American countries: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Uruguay, Panama, Peru, Venezuela. Its usage can also be found in: Abu Dhabi, Iran, Iraq, Saudi Arabia, Vietnam, etc.
72. For a summary of the contract, see Neto, An Overview, *infra* note 84, pp.25-28.
73. Blinn, K.W. et al., International Petroleum Agreements (London: Euromoney Publications, 1986), pp.83-86.
74. Capener, C.R., "Legal Aspects of Sino-American Oil Exploration in the South China Sea", 14 J Int'l L. & Eco. 467 (1980); "Bolivia: General Laws of Hydrocarbons", 69 Mineral Trade 14 (1972).
75. Dobinovic, *supra* note 66, p.20.
76. Some writers suggest that service contract has three basic forms: (1) the pure service contract; (2) the technical assistance agreement; and (3) the risk service contract. See Smith, E.E. and Dzienkowski, J.S., "A Fifty-Year Perspective of Petroleum Agreements", 24 Texas Int'l L.J. 40 (1989).
77. Blinn, International Petroleum Agreements, *supra* note 73, p.97; Barrows, "A Brief Survey of Incentives in Recent Petroleum Contracts", in Beredjick, N. and Wälde, T., ed., Petroleum Investment Policy (London: Graham & Trotman, 1988), p.227; William and Meyers, Manual of Oil and Gas Terms, *supra* note 67, p.11134-35; Barrows Company, World Petroleum Arrangements (New York: The Barrows Company Inc., 1985), pp.571-72.
78. Whenever used in this study, these terms are referred to the risk-bearing service contract.
79. See generally, UNCTC, Alternative Arrangements, UN Doc. ST/CTC/43, 1982, pp.54-56; ———, Main Features and Trends, *supra* note 69, pp.9-13; Blinn, International Petroleum

Agreements, supra note 73, pp.82-97; Barrow Company, World Petroleum Arrangements, supra note 77, pp.564-69; William and Meyers, Manual of Oil and Gas Terms, supra note 67, pp.1079-80.

80. Tocher, "Patterns and Trends in Agreements with Foreign Countries", Rocky Mt. Min. L. Fdn. International Minerals Acquisition and Operations Inst., 1974, p. (paper 3) 21.

81. For a brief summary of the first three model RSCs, see Mikesell, Petroleum Agreements in Developing Countries, supra note 48, pp.100-01.

82. For a summary of the changes in the 1980 model contract and Brazil's petroleum policy, *ibid.*, pp.102-03; see also "Brazil: Review of 1980—Brazil Basins Opened for Risk Contracts", Barrows Company, Offshore Petroleum Industry, supra note 6, Supp. 43, 1980, p.59.

83. The Brazilian Government has forbidden the publication of any executed contracts with foreign oil companies and has not even made public of its model contracts. The author wrote to both Petrobrás headquarters in Rio de Janeiro and its representative office in New York, but never got any useful information except one very brief letter.

84. For an overview of the Brazilian service contract, see Neto, J.A.C., Risk-Bearing Service Contracts in Brazil: An Overview, Diploma thesis, University of Dundee, May 1983 (throughout this study cited as An Overview); for a shortened version of the thesis, see ———, "Risk-Bearing Service Contracts in Brazil", 3 J.E. & Nat. Res. L. 114-20 (1985); Mikesell, Petroleum Agreements in the Developing Countries, supra note 48, pp.99-105; Wood, W.A., "Legal Aspects of Foreign Investment in Oil and Gas Exploration and Development in Brazil", 7 J.E. & Nat. Res. L. 265-74 (1989); Pels, *Infra* note 89, pp.251-91. For general contractual matters in Brazil, see De Carvalho, G.S. and Power, A.G., "Drafting Contracts under Brazilian Law: A Practical Guide to Enforceability", 14 Int'l Lawyer 115 (1980).

85. Contract references in this study will be to the following:

(1) Model Contract for Brazilian Exploration of 1976, in Barrows Company, South America Contracts, supra note 33, Supp. 42, 1976, pp.1-52;

(2) Model Service Contract between Petroleo Brasileiro S.A. (Petrobrás) and Private Contractors for Offshore Exploration /Exploitation of 1977, *ibid.*, Supp. 51, 1978, pp.1-91;

(3) For a summary of the 1979 model contract, see Barrows Company, Petroleum Legislation, supra note 32, Supp. 38, 1980, pp.45-56;

(4) The 1980 model contract is exemplified by the Service Contract Dated November 13, 1980 between Petrobrás and Conoco Grupi Petroleum Services Inc., for a summary of the said contract, *ibid.*, Supp. 68, 1987, pp.34-44.

Hereinafter the above contracts will be collectively cited as "the Model and Individual RSCs" unless otherwise indicated.

86. The Bidding Procedure of Petrobrás, in Barrows Company, South America Contracts, *supra* note 33, Supp. 49, 1977, pp.20-25.

87. The Proposal Form of Petrobrás, *ibid.*, pp.25-27.

88. Item 17 of the Bidding Procedure, *ibid.*, p. 23.

89. Art. 27 (27.1 & 27.2) of the Model and Individual RSCs, *supra* note 85. Cf. also Pels, G.J., "Mining Investment in Brazil, Peru and Mexico: A Practical Methodology", 14 Georgia J. of Int'l & Comp. L. 265-267 (1984).

90. Art. 2 (2.1) of the Model and Individual RSCs, *supra* note 85.

91. *Ibid.*, art. 4 (4.3).

92. *Ibid.*, Preamble.

93. *Ibid.*, art. 2 (2.2).

94. *Ibid.*, art. 3 (3.3).

95. *Ibid.*, art. 4 (4.1).

96. *Ibid.*, (4.2).

97. *Ibid.*, (4.3).

98. *Ibid.*, art. 19.

99. The Conoco contract, *supra* note 85.

100. Items 06 and 07 of the Bidding Procedure, *supra* note 86, p.21.

101. Wood, *supra* note 84, p.265.

102. Data compiled by the author.

103. Art. 3 (3.4 & 3.6) of the Model and Individual RSCs, *supra* note 85.

104. *Ibid.*, (3.8).
105. *Ibid.*, art. 17 (17.3) and the Preamble.
106. *Ibid.*, art. 18 (18.1) and the Preamble.
107. *Ibid.*, art. 3 (3.2).
108. *Ibid.*, art. 17 (17.2).
109. *Ibid.*, art. 5.
110. *Ibid.*, art. 5 (5.1.2 & 5.1.7). The Minimum Exploration Programme is, as a rule, attached to the RSC as Appendix II.
111. *Ibid.*, art. 11 (11.2).
112. *Ibid.*, art. 12. (12.3) of the 1976 model contract.
113. *Ibid.*, (11.3) of the 1977 model contract.
114. Mikesell, Petroleum Agreements in the Developing Countries, *supra* note 48, p.101.
115. See Hawrylyshyn, G., "Brazil Mobilizes Resources for Energy Battle", Brazilian Business, October 1979, p.30.
116. Mikesell, Petroleum Agreements in the Developing Countries, *supra* note 48, p.102.
117. Art. 12 (12.1 & 12.4) of the Model and Individual RSCs, *supra* note 85.
118. *Ibid.*, art. 12 (12.7).
119. *Ibid.*, art. 13 (13.4).
120. *Ibid.*, arts. 11 (11.3) and 13 (13.4).
121. *Ibid.*, art. 14 (14.1 & 14.5.1). Please note that the 1976 model contract was by and large silent on the procedures of production activities.
122. *Ibid.*, art. 14 (14.4, 6 & 7).
123. Hossain, Law and Policy in Petroleum Development, *supra* note 70, p.170; Mikesell, Petroleum Agreements in Developing Countries, *supra* note 48, p.101.
124. Art. 14 (14.8) of the 1980 model contract, *supra* note 85; Cf. Neto, An Overview, *supra* note 84, p.38.

125. Art. 13.4 of the 1976 model contract, *supra* note 85.
126. *Supra* note 123.
127. Art. 12.9 and 10 of the 1977 model contract, *supra* note 85.
128. *Ibid.*, art 19 (19.1 & 2) of the Model and Individual RSCs.
129. *Ibid.*, (19.3).
130. E.g., the Conoco contract, *supra* note 85.
131. "Lure of High Return Draws Risk Capital to Brazil's Oil Hunt", Petroleum Intelligence Weekly, January 14, 1980, p.6.
132. *Supra* note 130.
133. The table specified in the model contract is as follows:

<u>Annual production (m³)</u>	<u>X</u>
.....
.....
.....

Art. 19. (19.5) of the 1976 model contract, *supra* note 85.

134.

Quarterly Production for Each Commercial Field, in
Cubic Meters, and Values of X₁, X₂ and X₃:

The share up to the first 600, 000(Q₁).....(X₁)
 The share between 600,000 and 1,200,000(Q₂).....(X₂)
 The share above 1,200,000(Q₃).....(X₃)

- Art. 19 (19.5) of the 1977 model contract, *supra* note 85.
135. *Ibid.*, (19.10).
136. Art. 19. (19.8 & 9) of the Model and Individual RSCs, *supra* note 85.
137. *Supra* note 131.
138. *Supra* note 136, art. 19 (19.11, 12 & 14).
139. *Supra* note 123 .
140. Art. 20 (20.2) of the 1976 model contract, *supra* note 85.

141. Neto, An Overview, supra note 84, p.37; Mikesell, Petroleum Agreements in the Developing Countries, supra note 48, p.102.

142. Arts. 20 (20.4.c) and (20.5.2) of the 1977 model contract, supra note 85.

143. The main change is found in the gas formula which is the following:

$$R = (Q_1 X_1 + Q_2 X_2 + Q_3 + X_3) P \text{ (emphasis added)}$$

where:

All the factors have the same meaning as under the petroleum formula except: Q_1 = up to 600 million m^3 ; Q_2 = between 600 and 1200 million m^3 ; and Q_3 = above 1200 million m^3 .

Cf. Hossain, H., "Gas Clauses in Petroleum Arrangements", in Beredjick, N. and Wälde, T. ed., Petroleum Investment Policies (London: Graham & Trotman, 1988), p.169.

144. *Ibid.*

145. UNCTC, Natural Gas Clauses in Petroleum Arrangements, UN Doc. ST/CTC/SER.B/1, 1987, p.30.

146. Art. 21 (21.2) of the Model and Individual RSCs, supra note 85.

147. Neto, An Overview, supra note 84, pp.31-32.

148. *Supra* note 146, art. 21 (21.1 & 3).

149. Barrows, "A Survey of Incentives", in Beredjick and Wälde, Petroleum Investment Policies, supra note 143, p.227.

150. *Supra* note 146, art. 18 (18.2).

151. *Ibid.*, (18.3, 4 & 5).

152. *Ibid.*, art. 22 (22.1, 22.2 & 22.5).

153. *Ibid.*, (22.4).

154. *Ibid.*, (22.8).

155. *Ibid.*, art. 25 (25.1 - 25.3). This restriction does not, however, apply to the disclosure to the contractor's affiliates, subcontractors, legal advisors, and so on.

156. *Ibid.*, art. 23 (23.2, 23.4, 23.11 - 23.17).

157. *Ibid.*, art. 24 (24.1 & 24.2).

158. The Calvo doctrine developed from the writings of Carlos Calvo, an Argentine diplomat and legal scholar. See Pels, *supra* note 89, pp.253-54; For a discussion of the Calvo clause, see Shea, D.R., The Calvo Clause, Ph.D. thesis, University of Minnesota, 1955; Brownly, I., Principles of Public International Law, 4th ed. (Oxford: Clarendon Press, 1990), pp.546-47.

159. Art. 24 (24.4 & 24.5) of the 1977 model contract and art. 24 (24.4) of the 1976 model contract, *supra* note 85. While there is no single version of the "Calvo Clause", it always embodies two meanings: submission to the local jurisdiction and not to seek diplomatic protection or international jurisdiction.

160. Brownly, Principles of Public International law, *supra* note 158.

161. In accordance with Articles 88 and 89 of the Brazilian Code of Civil Procedure, the Brazilian courts are not even barred from hearing causes of action which are in the process of being adjudicated outside the country. see Neto, "Risk-Bearing Service Contract in Brazil", *supra* note 84, p.116.

162. Art. 27 (27.4 & 27.5) of the Model and Individual RSCs, *supra* note 85.

163. *Supra* note 8, p.15.

164. Brigagao, C., "Amazon and Antarctic: A New Look at Ecological Security", 22 Peace Research 44 (1991).

165. Castro, J.A.D.R., "Environment and Development: The Case of the Developing Countries", 26 Int'l Org. 401 (1972). See also Leonard, H.J. and Morell, D., "Emergence of Environmental Concern in Developing Countries: A Political Perspective", 17 Stan. J. Int'l L. 281-83 (1981); Faintly, *infra* note 170, p.2.

166. *E.g.*, primary elections in late 1990 saw an increase in support for pro-development or anti-environment candidates in the federal legislature and state-level officers. Even the Federal Environmental Agency is considered as "just another branch" of the Amazon's destructive logging industry, see "Brazil's Greens Shoot the Pianist", The Economist, March 28, 1992, p.43.

167. Brook, J., "Brazil's New Chief Raises Doubts on Amazon", The New York Times, December 25, 1989, p.A5.

163. Maier, jr., J., "Making Ecologist See Red", Time, September 16, 1991, p.63. For another example, Brazil's planning minister even observed that hopefully his country could "become the importer of pollution", The New York Times, February 23, 1972, p.38.
169. Brigagao, *supra* note 164, p.45-46.
170. For a summary of Brazil's environmental law and policy, see Fernandes, E., "Law, Politics and Environmental Protection in Brazil", 4 J. Env. L. 41-54 (1992); Faintly, R.W., "Pollution Control in Brazil", 15 Ecology L.Q. 1-68 (1988).
171. Arts. 2 to 6 of the Law No. 6.938 of August 31, 1981. For a summary of the law, see Faintly, *ibid.*, pp.26-62.
172. Fernandes, *supra* note 170, p.48.
173. *Ibid.*, p.44.
174. Serill, M.S., "Brazil's Twofaces", Time, June 8, 1992, p.45.
175. Art. 225, Title VIII, Chapter VI of the 1988 Constitution, in Bloustein and Flanze, Constitutions of the Countries of the World, *supra* note 36, p.66; also reprinted in 18 Env. P. & L. 140 (1988); For a brief discussion of the new Constitution chapter on environment, see "Brazil: New Constitution: Chapter on Environment", *ibid.*, pp.110-11.
176. *Ibid.*, art. 225 (Para.2) of 1988 Constitution.
177. Roth, P.C.L., "The Emerging Role of the Extractive Reserve in the Enforcement of Brazilian Deforestation Controls", 2 Colorado J. of Int'l Env. L. & P. 258 (1991).
178. Roth, *ibid.*, p.262; Faintly, *supra* note 170, p. 3, 6 and 30.
179. Roth, *ibid.*, p.248; Fernandes, *supra* note 170, pp.43, 46-52; Faintly, *supra* note 170, p.30.
180. Faintly, *ibid.*
181. *Ibid.*, p.5.
182. Serrill, *supra* note 174, p.44; Cf. also Fearnside, P. M., "Environmental Destruction in the Brazilian Amazon", in Goodman, D. and Hall A., ed., The Future of Amazonia: Destruction or Sustainable Development (Hong Kong: The Macmillan Press Ltd, 1990), pp.179-225; Brigagao, *supra* note 164, pp.43-47.

183. Thomson, K. & Dudley, N., "Transnationals and Oil in Amazonia", 19 The Ecologist 219-220 (1989); Roth, *supra* note 177, p.257.

184. The 1976 Model Contract, *supra* note 85.

185. *Ibid.*, art. 5 (5.1.9) of the 1977 Model Contract.

186. The Brazilian Institute of Mining has prepared a document listing the measures they consider necessary for a renewed national petroleum policy. The document includes, *inter alia*, the issue of environmental protection. See De Andrade, *supra* note 57, p.236.

187. Thomson and Dudley, *supra* note 183, p.223.

188. *Ibid.*, pp.222-24.

189. *Ibid.*, p.224.

190. "Mesquita Cobrará Dano Ambiental em Rondônia a British Petroleum", Jornal do Brasil, June 27 1989, p.7 (Brazilian Institute of the Environment and Renewable Natural Resources to fine BP for deforesting 11,933 hectares of National Forest), and "Jornal Londrino Acusa Empresa Britanica de Decastar Amazonia", Jornal Do Brasil, June 19, 1989, p.11 (BP, Alcoa, Shell, and Barclay's Bank all involved in projects blamed for environmental damage). Cited in Roth, *supra* note 177, p.257.

191. Thomson and Dudley, *supra* note 183, p.224; For a discussion on the energy crisis and the environment in Brazil, see Kelsey, T.F., "Brazil", in Kelley, D.R., ed., The Energy Crisis and the Environment: An International Perspective (New York: Praeger Publishers, 1977), pp.189-217.

192. EIA, Petroleum Resources of South America, *supra* note 3, p.47.

193. Boletim da Aepet, No. 27, March 1985, cited in ILO, Brazil: Petroleum Development, *supra* note 3, p.21; see also EIU, Brazil: Country Report No.3 1991, *supra* note 9, p.13.

194. U.S. Consulate, Brazil's Petroleum Sector (Rio de Janeiro: Consulate of the United States of America, 1984), cited in ILO, Brazil: Petroleum Development, *supra* note 3, p.26.

195. A rule in the petroleum industry is that the annual output of each oil well should not exceed 10 per cent of the calculated reserves of that well. See *ibid.*

196. UNCTC, Main Features and Trends, *supra* note 69, p.11.
197. *Ibid.*, p.13.
198. Neto, An Overview, *supra* note 84, p.117.
199. UNCTC, Alternative Arrangements, *supra* note 79, p.55.
200. Omorogbe, Y., "Contractual Forms in Oil Industry", 20 J. World Trade L. 348 (1986); Asante, S.K.B., "Restructuring Transnational Mineral Agreements", 73 AJIL 361 (1979).
201. Mikdashi, Z., "Policy Issues in Primary Industry", 7 Vand. J. Tans. L. 305 (1974).
202. World Oil, August 15, 1976, p.76.
203. Wood, *supra* note 84, p.272. Pecten is the only successful foreign service contractor which discovered the natural gas field Merluza in 1979 off Brazil. The field was planned to go on stream in 1992. For the project details, see "Royal Dutch/Shell Unit to Start Gas Flow off Brazil", O & G J., July 20, 1992, p.32.
204. Neto, An Overview, *supra* note 84, p.42; ———, "Risk-Bearing Service Contracts in Brazil", *supra* note 84, p.117.
205. Omorogbe, Y., "The Legal Framework for the Production of Petroleum in Nigeria", 5 J.E. & Nat. Res. L. 282 (1987).

Chapter Six

China's Hybrid Contract

I. Introduction

In examining the modern petroleum agreements from concession to production-sharing to service contracts, this study has moved from the case of the least government control over its petroleum development to the most or, alternatively, from the most foreign involvement to the least. The final form of arrangement in this study involves a hybrid of the prototypes.

From a national point of view, each of these arrangements has its own advantages and drawbacks. They cannot suit the different situations of developing countries around the world. Since approximately 1980, a new type of petroleum arrangement which mixes the various prototypes has been introduced. In this study, it will be described as the "hybrid" or compound contract. It is also sometimes referred to as the "comprehensive" contract.¹ The hybrid petroleum arrangements in developing countries try to combine the possible advantages of two or more existing agreements. The political objective of introduction of the hybrid contract (HC) is to retain sufficient national control over petroleum resources without hurting foreign investment.

Today a number of hybrid contracts have appeared on the

market.² Perhaps the best known example of a deliberate combination of elements is the Chinese model contract that was introduced in 1982 when the country opened its vast continental shelf to international exploration.

II. History of the Chinese petroleum industry

1. Historical background (prior to 1949)

China is perhaps one of the oldest oil-producing countries in the world. Records of oil being used can be traced back 1,800 years. The first shiyou (stone oil) was discovered and exploited as early as 211 B.C. in Shichuan province. Nevertheless, for centuries following the early drilling, there was no noticeable oil development in China.³

The first known foreign exploratory drilling was carried out in 1878 when the Qing government engaged two American engineers to drill for oil in Taiwan. But an accident in the shaft precluded further activities.⁴ In modern times, a geological survey was conducted by a U.S. team in 1920 and China's potential oil reserves were put at only 730 million barrels.⁵ It was not known under what arrangements these early drilling and survey activities were carried out. Presumably, they were not regulated by either petroleum law or a petroleum agreement simply because no petroleum industry or

legislation existed at the time.

The modern Chinese oil industry did not began until 1936 when the Yumen oil field was discovered in Kansu Province.⁶ In old China, the oil industry played such an inferior role that it can almost be ignored. There are perhaps two reasons to account for its lack of development. First, the country was for a long time considered "oil poor" by western geologists and petroleum engineers. Second, it was believed that the western oil companies had an interest in suppressing the development of a domestic oil industry in China in order to preserve the market for western petroleum products.⁷

In fact, there was no petroleum industry except for a small amount of crude production. Indigenous production was only 120,000 tons in 1949, which could meet approximately three per cent of the national demand for oil.⁸

For over a century since the 1840s, China was degraded by the western imperialist powers to a "semi-colonial" country which suffered from repeated military invasion and constant economic penetration. The country was forced by unequal treaties to concede many parts of its territory to foreign powers.⁹ This painful history provides a better understanding of China's subsequent sensitivity to the issue of sovereignty over its natural resources.

2. Collaboration with the Soviet Union (1949-1960)

At the founding of the People's Republic in 1949, China's oil industry was virtually non-existent. The first decade after the birth of the republic witnessed a collaboration with the former Soviet Union, which sent in a vast number of technicians to assist. The assistance was arranged under a bilateral treaty of friendly co-operation between the two governments rather than a petroleum contract in the conventional sense. Anyway, new China made, with the assistance of the so-called "old brother", rapid progress in the petroleum sector. By 1960, some 40 oil and gas fields had been developed and oil production increased by over 500 per cent to reach 5.2 million tons.¹⁰

The short collaboration between the two countries ended with serious political and ideological disputes simply because China did not want to be treated as a "little brother" under the Soviet baton. The result was an abrupt withdrawal of support by the Soviet Union from China in 1960. The emerging petroleum industry, like many other sectors, was hard hit by the suddenly changed circumstances because the Soviet technicians took with them all the plans and designs for many of the petroleum installations they had constructed with the Chinese.¹¹

In short, the development of the Chinese petroleum industry in the 1950s was characterized by dependence upon the

Soviet Union and its technology. Its experience with the Soviet Union taught China a sharp lesson: never again rely upon any foreign power in economic development.

3. Independence and self-reliance (1960-1978)

In response to the crisis (of the Soviets' departure), in association with other events such as the western economic embargo led by the United States, the principle of independence and self-reliance was formulated as a national development policy. The self-reliance development is a very broad concept and connotes a sort of political-economic nationalism which can take form in a variety of ways. In energy development, self-reliance means any measures that can ensure the independent development and operation of the country's energy industry.¹² With largely obsolete technology and equipment, China managed to make significant oil discoveries, with an average annual increase for crude production of 20 per cent between 1966 and 1976. The annual yield reached about 77 million tons (or 1.5 million barrels per day) in 1975.¹³ It was also during this period that China achieved basic self-sufficiency in petroleum for domestic consumption (1963) and began to have a surplus 10 years later for exports, which grew to 14 million tons in 1975.¹⁴ All major breakthroughs in the Chinese petroleum industry were achieved during this period.

It was during this period in Chinese petroleum history that there was a shift from the isolation of the 1960s to the limited openness during the 1970s, when the importation of foreign technology was combined with indigenous Chinese efforts to develop the petroleum resources.

4. Co-operation with foreign oil companies (1978 onwards)

The year 1978 is significant in Chinese history. In that year its traditional xenophobia and ideological self-reliance began to give way to reform. The new pragmatic leadership was determined to open China's door to the world in order to speed up the realization of its Four Modernizations (industry, agriculture, national defence, and science and technology). The period since then has seen dramatic changes in politics in general and in the economy in particular in China. The petroleum industry has been at the forefront of these developments as China opened its offshore to foreign exploration in 1979 and parts of the onshore area in 1985.

5. China's petroleum resources

There are 60 sedimentary basins onshore and offshore China. Of these, only 18 have been explored and more than half of them are virtually untouched. Oil deposits in the country have long been variously estimated by western oil analysts at

between 20 and 100 billion barrels.¹⁵ The latest Chinese forecasts put the figure at 78.7 billion tons (1 metric ton = approximately 7.4 barrels), and its natural gas reserve at 33,000 billion cubic meters.¹⁶ The reserve figures put China among the top ten leading producing countries.¹⁷

While China's oil production has stagnated in recent years at about 2.7 million b/d, oil consumption has jumped sharply to more than 2 million b/d.¹⁸ In 1991, the oil production reached a record high of 139.6 million tons and gas production peaked at 15 billion cubic meters. Crude oil exports were almost 580,000 b/d in 1990.¹⁹ The country has set an ambitious production target of 4 million b/d by the year 2000, pinning its hopes in part on a production spurt from a series of big offshore discoveries by foreign contractors.²⁰

In sum, starting from scratch since 1949, China's petroleum industry has developed rapidly to a stage where China is now the fifth largest oil producer and the fourth largest refiner of petroleum products in the world.²¹ The petroleum industry has been one of the great success stories of modern China and the Chinese take considerable pride in it.

III. Offshore exploration and development

1. General background

China has the seventh largest continental shelf in the world,²² and it is generally believed to be the greatest untapped offshore area today. The hydrocarbon potential of the continental shelf did not, however, generate much interest until the end of 1960s. After its first series of geophysical surveys in late 1968, the survey team under the sponsorship of the Committee for Co-ordination of Joint Prospecting for Mineral Resources in Asian Offshore Areas concluded in its report that the Chinese continental shelf "may be one of the most prolific oil reservoirs in the world..."²³ The strong indication of potential oil and gas deposits in the China seas has earned this isolated corner of the Pacific the sobriquet "another Persian Gulf", or "another North Sea".²⁴

The committee's report immediately triggered off a scramble among the coastal states for ownership of the supposed oil wealth.²⁵ Taiwan was the first to claim sovereignty over the continental shelf in the form of five "oil reserve areas" in the East China Sea in 1970. It soon concluded six concession contracts with oil transnationals, covering a total area of approximately 180,000 Km².²⁶ In the wake of Taiwan's unilateral action, South Korea and Japan also

set up seven and five mining blocks respectively and signed concession contracts with foreign oil companies.²⁷ "The unilateral claims advanced by each state overlapped to such an extent that, out of 17 designated areas claimed by Japan, Korea and Taiwan, only four remain uncontested."²⁸

China finally broke its long silence in September 1970 with a series of strong protests against the claimants, declaring that the resources of the seabed and subsoil belonged to China: "we will never permit others to lay their hands on them."²⁹ The extensive Chinese claim conflicted with most of the concession areas set up by its rivals. The issue of jurisdictional claims concerning hydrocarbon resources has since arisen frequently in relationships between China and its coastal neighbouring countries, and still remains today a matter of considerable sensitivity among them. Japan and South Korea started negotiations in late 1972 and eventually reached an agreement on joint development of their overlapping claims, comprising 35,000 km², in January 1974.³⁰ Nonetheless, the Japan-Korea joint development effort was again paralleled by repeated Chinese protests.³¹ As for China's own interest and involvement in offshore oil, the first "wet" steps were taken in the form of a series of extensive oceanographic and marine geological studies in the China Seas in the 1960s and the early 1970s. These preliminary activities resulted in the discovery of the first Chinese offshore field in the Bohai Gulf; the field went on stream in

1974. The early phase of China's offshore oil exploration was characterized by indigenous Chinese efforts to develop an independent capability to assess the offshore petroleum resources in the 1960s and to build up an offshore technological capability in the 1970s.³²

2. Offshore exploration and development

After three decades of experimentation in socialist economic construction with less success than anticipated, China has come to realize that isolationism and total self-reliance will not produce economic progress and modernization. This realism eventually bore fruit in 1978 in the form of an "open-door" policy, which paved the way and provided a more hospitable political climate for foreign investment.

A number of practical factors accounted for the radical departure from the domestic imperative of self-reliance to recent overtures to foreign investment.³³ Important among these considerations are the following domestic factors. First, China had reached the limit of its technical capability in its preliminary offshore development.³⁴ The country was well aware that it was unlikely to have its offshore resources effectively developed in an acceptable time without foreign technological assistance. Second, oil offered the greatest possibility for earning foreign currency to fuel China's modernization programme. The stakes for China were high: rapid

development of the country's offshore resources would mean the difference between increasing hard currency exports or becoming a net importer of oil at the end of this century.³⁵ Third, when compared with other big countries, China's total oil production and per capita consumption was exceptionally low. While the former Soviet Union produced 640 million tons of oil with a per capita possession of 3.2 tons and the United States 550 million tons with a per capita possession of 2.6 tons in 1985, China's total production in the same year was only 120 million tons with a per capita possession of 0.12 ton. China's total production in that year was 18.75 per cent of that of the Soviet Union and 21.7 per cent of that of the United States, and its per capita possession 0.26 per cent of the Soviet Union and 0.21 per cent of the United States.³⁶ In short, the need for oil to fuel its energy-short economy is the most important reason China has turned to foreign companies for co-operation in its offshore petroleum development.

(1) Preliminary awards

It was not until 1979 that China's offshore petroleum industry began to gather momentum. In that year the country opened its continental shelf from the Bohai Gulf in the north to the Beibu (Tonkin) Gulf in the south, with the exception of the East China Sea, for seismic surveys by foreign companies. The continental shelf area was delineated into nine huge

zones, varying in size from 71,000 km² to 141,000 km².³⁷

In mid-1979, China offered these zones for geophysical surveys and signed nine contracts covering much of the offshore area. During the contract term of 12 months, 48 oil companies from 13 countries shot more than 110,000 kilometres of seismic lines within 427,000 km² of the offshore, with a sunk capital totalling some \$200 million by the end of 1980.³⁸ The result was the discovery of 400 prospective hydrocarbon structures on the continental shelf.³⁹ The submission to China by the operators of the analysed data and reports not only enabled the latter to understand its offshore geological structure, but also provided a solid basis for the forthcoming Sino-foreign co-operation.

(2) Formal awards

In the course of preparation for the formal bidding, three seminal contracts were signed with foreign companies from Japan and France in 1980.⁴⁰ This pre-bidding experience of bilateral petroleum agreements was in effect a rehearsal by the Chinese for the large-scale offshore development in co-operation with oil multinationals that were to come.

A. The first bidding round

Upon promulgation of the Chinese offshore petroleum regulation on January 30, 1982, the newly established state oil company, China National Offshore Oil Corporation (CNOOC),

announced on February 16, 1982 that 42 blocks totalling more than 150,000 km² would be open for competitive bidding. Thirty-three companies participated in the first bidding round and submitted a total of 102 bids.⁴¹ By December 1983, 19 contracts had been awarded to groups encompassing 28 companies from nine countries.⁴² The contracts covered an area of 42,000 km² and the companies' minimum commitments during the first phase of the exploration period were to shoot 42,000 kilometres of seismic lines and to drill 67 exploration wells.⁴³ The first bidding round was characterized by limiting bidders to those who had participated in the early seismic surveys programme.

B. The second bidding round

CNOOC initiated the second bidding round between November 22, 1984 and March 11, 1987. The area available was divided into 22 blocks totalling 108,000 km². A total of 38 companies from 10 countries purchased data packages and were accepted as qualified bidders.⁴⁴ CNOOC, however, received only 24 bids and signed eight offshore contracts covering an area of 45,000 km², with 15 companies from five countries.

Apart from the formal bidding procedure, CNOOC has, since December 1985, expressed its willingness to enter into bilateral negotiations with interested foreign companies for petroleum agreements, and in this way has signed 13 more contracts for an area totalling 40,000 km².⁴⁵ This round was

characterized by CNOOC's important decision to discuss with all interested parties, and by its greater flexibility to enter into bilateral negotiations with foreign companies.

C. The third bidding round

In the face of few signed contracts and generally poor drilling results in the first two rounds, CNOOC opened the third bidding round on January 3, 1989 under terms more flexible than before. The seven tracts offered were all in the most promising area of the Pearl River mouth basin and amounted to 12,000 km².⁴⁶ So far only two contracts covering an area of 9,000 km² have been awarded, but various bilateral agreements and contracts have mushroomed to 19 for an area totalling approximately 360,000 km².⁴⁷

D. The fourth bidding round

After years of deliberation in obtaining the government's permission to open up the East China Sea to international exploration, CNOOC announced on June 30, 1992 its fourth round of international bidding for exploration in the dispute-free area of the sea on the Chinese side. The two blocks offered for bidding have a total area of over 72,000 km² with a water depth ranging from 50 to 100 metres. Fifty-three foreign oil companies expressed their interest by purchasing the bidding package.⁴⁸

Table 14: Offshore Contracts/Agreements Signed by CNOOC

Round	Date	Contracts awarded	Area (km ²)	Classification
Pre-round	79/04/27	9	426,000	Geophysical survey
	79/10/17			
	80/05/29	5	54,000	bilateral E & D
	80/09/19			
1st round	82/02/16	19	42,000	1st round E & D
2nd round	84/11/22	8	45,000	2nd round E & D
		13	40,000	various bilateral
3rd round	89/01/13	2	9,000	3rd round E & D
		19	361,000	Various bilateral
4th round	92/06/30	NA	NA	
Total		75	979,000	

Note: 1) E & D = exploration and development.

2) NA = Not available.

Source: Based on the "Summary List of E & D Contracts and Agreements for Sino-Foreign Cooperation", in CNOOC, Annual Report 1989, pp.58-69 and other various sources.

In sum, four rounds of bidding have been conducted for the Chinese offshore since the early 1980s. The United States has taken a leading role in offshore co-operation with China

from the beginning, closely followed by Japan, in terms of the number of companies participating and risk capital invested. Currently, there are six fields on stream, seven fields under construction, and three more in the preliminary development stage.⁴⁹ It is rare today to have so many fields on stream and under construction at one time. Such investment and breadth of achievement are absolutely beyond China's current financial capabilities.⁵⁰

To date, CNOOC has earned \$1.3 billion from various kinds of contract servicing, and the Chinese government has collected taxes totalling \$180 million and RMB ¥340 million (approximately \$62 million) from the offshore petroleum industry.⁵¹

The 1982-1992 decade has seen significant achievements in Sino-foreign co-operation in offshore O & G development. The contractual activities and achievements by the Sino-foreign co-operative efforts in the past decade are summarized in the Table 15.

**Table 15: Offshore Contractual Activities
in China (1982-92)**

Particulars	U.S. companies	Japanese companies	Total
Contracts signed	37	12	70
Countries/region involved			13
Participating companies	15	5	50
Foreign investments (\$ billion)	1.04	1	3.13
Exploration expenses	NA	NA	2.4
Development expenses	NA	NA	0.6
Sunk risk capital	NA	NA	0.97
Seismic line km acquired (in contract areas)	78,000	NA	500,000 350,000
Wells drilled (in contract areas)	97	NA	286 204
Oil bearing zone found	19	NA	67
Oil in place identified	NA	NA	7.8 billion barrels
Gas in place identified	NA	NA	4.7 tcf
Success rate in exploration			30%

Note: 1. tcf = trillion cubic feet.
Source: Various sources.

The 1991 offshore production was 2.39 million tons, and an increase of over one million tons each year is projected.⁵² The offshore petroleum industry has set itself targets to boost the annual production capacity to eight million tons of crude oil and 3,750 million cubic meters of natural gas in 1995.⁵³

IV. Maritime and offshore petroleum legislation

1. Maritime jurisdiction and legislation

As one of the largest countries in the world, China has the tenth longest coastline and the seventh largest continental shelf of all coastal states.⁵⁴ However, with vast continental space available for development, the country did not feel compelled, for various reasons, to turn towards the ocean for survival. Historically, China did not give much attention to the ocean and its uses, which were thought to be irrelevant to the maintenance of a great land empire. Ocean development was not on the agenda of modern China and no ocean issue had ever generated a real national interest. The ocean awareness of the nation has remained all the while at a very low level. Even the continental shelf disputes with its neighbouring countries since the late 1960s have not caught much public attention.

As a result, China showed little interest in its maritime legislation or the law of the sea matters.⁵⁵ Upon the formation of the People's Republic in 1949, China did not establish any maritime zones until the official "Declaration of Chinese Territorial Sea" on September 4, 1958, which states, *inter alia*, that the breadth of China's territorial sea shall be 12 nautical miles measured from the straight baseline.⁵⁶ The country was not a party to any of the four Geneva conventions adopted in 1958.

The 1958 declaration was largely motivated by security considerations rather than economic interests. It has remained for over 30 years as the only basic document on the Chinese jurisdiction over maritime zones. The Chinese territorial sea law was not enacted until 1992, which is in essence an mixed elaboration of the 1958 declaration and the 1982 LOS convention.

There had been no continental shelf issues for China until 1970 when it was provoked into issuing a series of strong protests against the unilateral claims by its maritime neighbours over parts of what it claimed as its continental shelf.⁵⁷ Its first official position on the continental shelf was made public in the "Working Paper on the Sea Area within National Jurisdiction" submitted by the Chinese delegation to the United Nations Seabed Committee in 1973, which states that "the continental shelf is the natural prolongation of the continental territory... the delimitation of the limits of

jurisdiction of the continental shelves through consultation on equal footing."⁵⁸

So far China has not yet established its EEZ and continental shelf regimes; nevertheless, it claims, in all the recent legislation, jurisdiction over "all other sea areas under the jurisdiction of the People's Republic of China" other than internal waters and territorial sea.⁵⁹ "All other sea areas" under China's jurisdiction implicitly refer to the EEZ and the continental shelf, the specific limits of which, however, have never been made clear.⁶⁰

Maritime disputes between China and other littoral states have frequently erupted over the past two decades, and have culminated twice in armed conflict.⁶¹ These boundary disputes reflect, in essence, competition for hydrocarbon resources. China has a large number of maritime boundaries to delimit with all its coastal neighbours, and none of them has ever reached the stage of negotiation, not to mention reaching a settlement. Several factors account for the Chinese inaction. First, there is no political will to resolve these problems, which have been considered peripheral to other more urgent issues. Another important reason is that China has, perhaps misguidedly, a wish to maintain a better image in the region by not negotiating boundary limits.

The China seas are perhaps the most troubled waters in the world in terms of their numerous territorial disputes and their complex nature. Current Chinese offshore petroleum

development has been hampered to a large extent by unsettled offshore boundary problems.⁶² The East China Sea had been excluded by China from being opened up to foreign participation until 1992, due to the explosive nature of the territorial disputes with Japan and South Korea.

To sum up, China's maritime legislation is far from complete. It has not yet promulgated any formal legislation on its EEZ or its continental shelf. As far as boundary delimitation is concerned, China's record is even poorer. None of its maritime boundaries have been negotiated and effected.⁶³ In consequence, the development of offshore oil has been effectively constrained in no small degree.

2. Offshore petroleum legislation

The history of Chinese petroleum legislation is exceptionally simple: there was no petroleum law prior to 1982. The reason for this is easy to understand. The petroleum industry was virtually non-existent prior to 1949 and subsequently there was a legal vacuum in domestic legislation.

China opened its continental shelf and signed preliminary petroleum agreements with foreign companies before any legal and organizational infrastructure was established. Clearly there was a lack of the legislative inducement or guarantees which are critical for attracting private investment in any country. In order to promote foreign exploration, the Chinese

government promulgated on January 30, 1982 the "Regulations of the People's Republic of China on the Exploitation of Offshore Petroleum Resources in Cooperation with Foreign Enterprises" (the Offshore Petroleum Regulations), which addressed in principle two major topics: conduct of petroleum operations which will be dealt with together in discussions on the Chinese contract terms, and the organization of CNOOC.⁶⁴

CNOOC was set up as "a state corporation with the qualifications of a juridical person" and was assigned the "exclusive and overall responsibility for the work of exploiting offshore petroleum resources in the People's Republic of China in co-operation with foreign enterprises."⁶⁵ CNOOC is exclusively authorized to "explore for, develop, produce and market the petroleum within the zones of co-operation with foreign enterprises" by means of calling for bids and signing petroleum contracts.⁶⁶

Established in February 1982, CNOOC has grown over the past 10 years into a relatively mature company.⁶⁷ The state company holds interests in 17 joint ventures.⁶⁸ Its investment in the 16 oil and gas fields on stream, under construction and at the pre-development stage amount to \$3.1 billion, accounting for 41 per cent of the total investment; total revenue, including government taxes, obtained by the Chinese, amount to \$11.5 billion, 62 per cent of the total allocable earnings.⁶⁹ CNOOC has strived to implement the following strategic development policies: to expand Sino-

foreign co-operation; to expand self-financed exploration and development; and to develop a new area of refining and petrochemicals.⁷⁰

The Chinese offshore petroleum policy has focused on three interrelated imperatives: (a) safeguarding the national sovereignty over petroleum resources and promoting national economic development; (b) encouraging foreign investment in domestic exploration and development of new resources in frontier areas such as the continental shelf; and (c) obtaining advanced technology, equipment and managerial experience through co-operation with foreign companies to accelerate the pace of development of the domestic industry. The Offshore Petroleum Regulations were drafted to achieve these objectives. In general terms, the petroleum legislation lays down the necessary legal and organizational infrastructure for co-operation with foreign companies in offshore development.

In order to facilitate foreign investment in general, China has enacted a great deal of legislation in a short space of time to fill what was, in this area, a legal vacuum.⁷¹ While these laws are by and large relevant to foreign involvement in offshore development, the Offshore Petroleum Regulations remain as the country's sole and basic legislation on offshore petroleum activities. In short, China has made impressive progress in establishing a legal and organizational framework that provides sufficient certainty to foreign

companies to enable them to participate in China's offshore oil exploration projects.⁷² But many detailed legal requirements are left to the model contract.

V. The evolution of the Chinese hybrid contract

1. Preliminary petroleum agreements

Before 1980, no commercial code existed to regulate contractual relations in China. This absence is understandable because private transactions were limited by the socialist nature of China's economy. The country adopted, however, customary international trade practices in its dealing with foreign enterprises and utilized western forms of contract in its foreign trade.⁷³

When the country decided to open its offshore to foreign exploration, international petroleum exploration and exploitation agreements were almost unheard of in the Chinese oil industry. Nevertheless, drawing on their long commercial experience, the Chinese quickly prepared a standard form contract for the early offshore seismic surveys.⁷⁴

Like many other Chinese contracts, the agreements for geophysical surveys, consisting of only eight pages not including exhibits, were relatively simple and concise when compared with other modern world petroleum agreements.⁷⁵

Under the survey agreements, the participating companies were obliged to "utilize the most advanced equipment and technology to carry out seismic, gravity, and magnetic surveys" at their own expense in the designated blocks.⁷⁶ The participants were required to evaluate all the raw field data independently in their home country and to submit the processed data and interpretations within eight months of their acquisition.⁷⁷ Other important obligations included the payment of a service charge of 3.5 per cent of the total costs of each survey;⁷⁸ specialized training for Chinese personnel regarding the use of survey technology,⁷⁹ and submission of budgets to the Chinese for consultation and approval.⁸⁰ In return for adequate foreign performance, the Chinese obligation was to use its best efforts to divide the survey areas into petroleum blocks and initiate the first round of bidding within one year of its receipt of the data and interpretations collected from all the operators.⁸¹ In addition to this formal obligation, there was an extra-contractual "gentleman's agreement" that participating companies would enjoy preferential treatment when China awarded exploration and development contracts. They would be given the opportunity to match the highest bid submitted in the area where the particular company conducted geophysical surveys and, if willing to do so, the company concerned would be awarded the final contract.⁸² Nonetheless, these verbal promises were never recorded in the legal documents.

While generally following the western format, these early Chinese petroleum agreements are unique in several respects.⁸³ One of the features is the companies' willingness to invest in the absence of contractual guarantee to subsequent exploration and production rights. In this sense, participation in the geophysical work amounts to an entry fee for the right to make bids on future designated blocks for the first bidding round. Such a major concession by the companies represents a kind of departure from customary international oil industry practice. Another noticeable feature is the so-called "gentleman's agreement" which is rare in world petroleum arrangements. In the Chinese legal system, both oral and written contracts are sometimes implicitly recognized.⁸⁴ This is in conformity with traditional Chinese culture based on the Confucian heritage, which stresses good faith more than good law. Thus, oral assurances are occasionally given and relied upon in foreign trade and business.⁸⁵ But such extra-contractual promises are not admissible in many western jurisdictions.

As for their content and nature, suffice it to say that "the Survey Agreements so dramatically favour the Chinese that they rival the one-sidedness of the unequal treaties imposed upon China during the nineteenth century."⁸⁶

2. The selection of forms of contract

With the invitation for bids scheduled to take place upon

the completion of the preliminary survey work, the crucial task for China was to determine and select the form of contractual relationship under which its petroleum resources would be developed by foreign companies.

In the course of developing a contract system, China engaged various organizations for legal and technical advice.⁸⁷ In this respect, Norway perhaps helped China the most on a government-to-government level in regard to economic, legal and negotiation questions. Norwegian Statoil was hired through agreements by the Chinese oil industry as a commercial consultant, whose experience influenced the Chinese contract system in no small degree.⁸⁸ Throughout this period, the oil companies were also eagerly making enormous efforts to educate the Chinese about the intricacies and details of O & G contracts.⁸⁹

After extensive studies of all the existing petroleum agreements, China felt that none of them could effectively and sufficiently safeguard its national sovereignty over petroleum resources, while still being attractive enough to foreign investment. On the other hand, each of these contracts contains useful elements that can meet China's specific needs. It was believed that only a compound contract could combine all the strong points of the existing arrangements and make the best use of their advantages while avoiding their disadvantages.⁹⁰

In China's search for this perceived compound contract,

Norway's joint venture contract, Indonesia's production-sharing contract (PSC) and Brazil's risk service contract (RSC) had enormous influence on Chinese thinking. In the Norwegian system, Statoil has 50 to 80 per cent participation in the exploiting ventures with multinational corporations.⁹¹ Majority participation appears to accommodate China's objective to control the enterprises that were undertaken. Because of its critical dearth of hard currency, China must depend on repayment in kind to finance various economic developments. The Indonesian PSC contemplates just such a payment scheme and helps to overcome China's foreign exchange limitations.⁹² For historical reasons, China is quite concerned with national control over resources development. The Brazilian RSC, by way of production take-over by the state company and joint management with the contractor, seems suited to satisfy China's managerial concern. All these salient features of the existing petroleum arrangements found their places in the Chinese contract.

On May 29, 1980, China signed its first exploration, development and production contracts with Japan National Oil Corporation (JNOC), Société Nationale Elf Aquitaine (Elf) and Compagnie Française des Pétroles (Total). The contracts covered areas ranging from 24 km² to 25,500 km², and provided for an exploration period of four to five years and a production period of 15 years.⁹³ The contractors were required to pay a signature bonus of \$10 million. The

contracts called for a sharing of the cost of investment in exploration and production: 51 per cent to be borne by the Chinese and 49 per cent by the foreign contractors. The investments that China had already made in these contract areas would be counted as the Chinese share in the exploration investment and the contractors were to make up the rest in the agreed ratio.⁹⁴ The most vital part of the contracts dealt with the sharing of oil output as repayment and called for a 15/42.5/42.5 per cent (operation cost/government take/share oil) split of eventual production over 15 years, the so-called "Bohai Formula".⁹⁵ If no commercial oil was found, the contractors would have no claims on China.

The Japanese and French contracts occupied an important place in the evolution of the Chinese petroleum contract. They not only revealed a new, uniquely Chinese approach to oil development contracts, but also shed some light on the directions that the eventual model contract might take.

3. The model contract and its recent developments

(1) The model contract

The process of developing a model contract for the most ambitious commercial enterprise ever undertaken by China was not long, but difficult. The country had to compress into only three years the preliminary studies and work that had taken other developing countries 30 years or more to produce. The

long-awaited model contract was finally presented on May 10, 1982 as the starting point of negotiations in the first bidding round.⁹⁶ It was followed by the 1985, 1989 and 1992 Model Contracts for the second, third and fourth bidding rounds which were simply further modifications of the original model.

The model contract was drafted in accordance with the Offshore Petroleum Regulations by China's own legal staff, albeit external aid. Consisting of a total of 30 articles with four annexes (three in the 1989 Model Contract) in some 100 pages, the contract sets forth specific provisions on the terms and conditions for co-operation between CNOOC and foreign oil companies. Most terms of the model contract are not negotiable; it is open for bidding on only three major points: work programme, the X-factor and other contributions. The X-factor determines the percentage of production a company receives as profit. The main principles of the contract are largely built upon clauses of earlier agreements familiar to lawyers in the international petroleum business, but the contract does develop some features of the existing government-company association. Clearly, therefore, it is not a straight copy or transfer of any contract used elsewhere.

The model contract has no formal legislative standing. There is, therefore, no direct legal obligation to follow it strictly, and this gives CNOOC the broad legal freedom to adjust it as conditions change or deviate from it in some

individual instances.

(2) Recent developments

Like any other petroleum agreement, the Chinese contract system has been adjusted frequently as a result of changing realities. CNOOC made a few moderate revisions in the 1985 Model Contract for the second round of bidding;⁹⁷ the revisions were followed by more substantial changes since 1986 in light of the sinking world oil market that stifled foreign investment interests. The changes generally included the following:⁹⁸

(a) Geological data would be offered for sale to foreign companies more frequently to facilitate their selection of favourable areas for co-operation.

(b) Foreign companies can phase in their exploration expenditure by signing survey or drilling agreements for areas of interest without a major commitment or contract until exploration results are known.

(c) In high risk, deep water areas, companies would be allowed to hold bigger contract areas for a longer exploration period with a flexible relinquishment requirement and less or no Chinese participation.

(d) Fringe fees on contractors would be cut or postponed.

(e) New contracts would be negotiated to allow a reasonable return pegged to oil prices during the contract period.

(f) Flexible measures, such as cutting royalty and improving cost recovery according to field size, would be adopted

(g) The salaries of qualified Chinese personnel were lowered to 30 per cent less than that of comparable labour costs elsewhere in Southeast Asia.

(h) All contract services would be offered for competitive tendering except for a few specifically limited to China.

In the third bidding round, CNOOC further liberalized its terms with a view to making the offering more attractive and reducing the investment risks shouldered by foreign companies. Among the changes made in the 1989 Model Contract terms were: seismic and drilling options, a sliding scale royalty, transfer of drilling obligations, recovery of tax losses, payment of the signature bonus in three instalments, reduction of local preferences, less technology transfer, etc. As far as the latest changes are concerned, it may be said that, while there were some new features, most of the them in fact involved further elaboration of the previous incentives policies.

The detailed legal drafting of the Chinese model contract and its subsequent modifications contain many valuable ideas and novel thinking that warrant an in-depth legal study.

VI. The hybrid contract

1. Definition

The hybrid contract has so far been utilized in only a few producing countries. This type of contract in China was called at times the "risk contract", "shared risk contract", or even "production-sharing contract". It appears that a consensus has been reached recently in the country to term it the "compound contract", which sounds more appropriate to its legal nature of varied incorporation and its comprehensiveness.⁹⁹ Internationally, this type of agreement is more commonly referred to as the "hybrid contract", or sometimes "the comprehensive contract".

No attempt seems to have been made to define the hybrid contract. The term generally refers to various mixes of the prototypes of petroleum agreements. These contracts deliberately combine elements taken from two or more types of existing petroleum arrangements to serve the specific needs and interests of a producing state. They have no fixed pattern and may exist in many different forms.

2. Contract procedure and effectiveness

According to the Offshore Petroleum Regulations, the rights to explore for and produce O & G in the Chinese

offshore sector are granted by CNOOC "by means of calling for bids and signing petroleum contracts".¹⁰⁰ The open bidding system employed in China follows closely the usual international petroleum licensing practice. The two major bidding variables are: work programme, which includes the foreign company's minimum exploration work commitment and the expected minimum exploration expenditures, and the X-factor that will determine the percentage of production the company will receive as profit.¹⁰¹

CNOOC's awards are made on a discretionary evaluation with no reasons given for the selection; this is the usual practice in the world petroleum industry. Successful bidders will be invited to Beijing to conduct substantive negotiations on the basis of their offers and sign a contract with the Chinese contract partner CNOOC.¹⁰²

Apart from the formal procedure, CNOOC has adopted a flexible approach in that foreign oil companies may present at any time their proposals for negotiation for any block within the offshore areas opened for co-operation without waiting for invitation for bids by CNOOC. Contracts so entered are referred to by the Chinese as "bilateral contracts" in order to distinguish them from those "petroleum contracts" signed as a result of competitive bidding. The first such bilateral contract was signed with Amoco on February 18, 1986 during the second bidding round.

All HCs require a standard signature bonus of \$1 million

upon signing of the contract, which must be paid in a lump sum during the first and second rounds of bidding. For the purposes of reducing the front-end costs, the signature fee may now be paid in three instalments during the third bidding round: one-quarter on signing, one-quarter at the time of a decision to drill an exploratory well, and one-half upon approval of the overall development plan.¹⁰⁴

Generally speaking, the substantial signature bonus is a disincentive to foreign investment in petroleum exploration. It has proved to be a burden to many foreign oil companies. In view of this and the increasing competition for risk capital among developing countries, it is feasible for China to reduce the signature bonus requirement or partially replace it with a production bonus, which is more acceptable and constructive to the co-operative relationship.

Contracts signed between CNOOC and foreign contractors require formal approval by the Foreign Investment Commission under the Ministry of Foreign Economic Relations and Trade,¹⁰⁴ which serves in principle as a rubber stamp and normally grants its approval within 30 or so days.¹⁰⁵ The date of such approval is the effective date of the contract.¹⁰⁶ The required approval may be said to have a dual function: a government examination of investment contract, which is a legitimate exercise common to many countries, to ensure that it is signed in conformity with the national law and policy; and a practical guarantee that CNOOC will fulfil its

contractual responsibilities in good faith.

3. Structure and substance

China, like Brazil, considers individual agreements as well as the model contract as strictly confidential, and prohibits publication of any of them. As a result, few details about the Chinese offshore contract system are available to date. Although a rather usual practice, the hinderance it creates has not only made any scholarly discussion of the system difficult, but also detracts from the reputation the contract should enjoy.¹⁰⁷

A. Ownership of the resource and the objective of the contract

The most fundamental feature of a socialist economy is perhaps the form of its property ownership, that is to say, almost everything belongs to the state. The 1982 Chinese Constitution provides that "mineral resources, waters, forests, mountains, grassland, unreclaimed land, beaches and other natural resources are owned by the state, that is, by the whole people..."¹⁰⁸ This principle is, of course, enshrined in all the HCs, which declare at the outset that all petroleum resources under the internal waters, territorial sea, and continental shelf or all sea areas within the national jurisdiction, are owned by the People's Republic of China.¹⁰⁹

CNOOC is entrusted with "the exclusive right to explore for, develop, produce and market petroleum" from the offshore contract areas on behalf of the state. The foreign contractor agrees to provide funds, appropriate and advanced technology and managerial experience to co-operate with CNOOC for the exploitation operations;¹¹⁰ and "may recover its investment and expenses and receive remuneration out of petroleum produced."¹¹¹ Foreign contractors are in no way owners of any title or property rights to the petroleum resources, which are always vested in the People's Republic and exercised by CNOOC on the republic's behalf. In short, the petroleum rights are purely "contractual" in nature.

B. Contract area

Offshore contract areas in China can be classified into two broad categories in terms of their functions: (a) various survey and studies areas, which range from 120 km² to 188,000 km² and, (b) exploration areas, which vary considerably in size from 24 km² to 27,000 km² with an average area of approximately 5,000 km²;¹¹²

There have been no limitations on either the size of the contract area or the number of blocks a contractor may hold.¹¹³

Because of the more flexible terms, the period since 1985 has seen sizable increase in contract areas. While the average area of the 19 contracts concluded in the first round was

2,400 km², the figure increased to 5,000 km² for 12 petroleum and bilateral contracts in the second round. And it went up further to 8,000 km² for nine petroleum and bilateral contracts in the third round.¹¹⁴

Comparatively speaking, the Chinese award of offshore areas is more generous than many other producing countries.

C. Contract term

The HC divides the Sino-foreign petroleum co-operation into three periods—exploration, development and production. Each of these periods carries with it different rights and responsibilities for the parties.

(a) The exploration period

This period consists of two or three phases. Under the first two model contracts, the duration of the exploration period as well as its divisions were dependent on the size of the contract areas awarded to foreign contractors:¹¹⁵

Acreage < 2,000 km ²	Acreage ≥ 2,000 km ²
1st phase: 3 years	1st phase: 3 years
2nd phase: 2 years	2nd phase: 2 years
	3rd phase: 2 years
Total: 5 years	7 years

Due in part to the subsequent increase in the size of contract areas, the 1988 Model Contract changed from the original arrangement of the exploration period to the following alternatives by the contractor regardless of the size of the contract area:¹¹⁶

First Alternative	Second Alternative
First phase: 3 years	First phase: 3 years 1st sub-phase: - years 2nd sub-phase: - years
Second phase: 2 years Third phase: 2 years	Second phase: 2 years Third phase: 2 years
Total: 7 years	7 years

Evidently, the substantive difference is the further division of the first phase of the exploration period into two sub-phases under the second alternative. The years of the two sub-phases are a matter of bid by the contractor and of agreement between the two parties. The importance of the sub-division lies in the intention that the first sub-phase is designed to be a seismic option.¹¹⁷

The maximum length of the exploration period is seven years, but may be extended in the following two cases: first, the appraisal work on a discovery requires additional time;¹¹⁸ and second, contract areas with deep water depth or high risks

may be granted a longer exploration period according to the incentive policies introduced since the second round.¹¹⁹

(b) The development period

This period is from the approval of the development programme to the entire completion of development operations.¹²⁰ It varies from contract to contract, and may take from eight to 12 years.¹²¹

(c) The production period

The production period is 15 years beginning on the commencement of commercial production, which may be extended under some circumstances after approval of the responsible authorities.¹²²

The total duration of the contract shall not exceed 30 years from the effective date.¹²³

D. Relinquishment

The HCs require the contractors to surrender a certain portion of the contract area upon the completion of each phase of the exploration period under a mandatory relinquishment programme which is shown in Table 16:

Table 16: Relinquishment Programmes under the Chinese Hybrid Contract

		Acreage < 2000 km ²		Acreage ≥ 2,000 km ²	
		Phase	Relinq't	Phase	Relinq't
1983 & 1985		1st(3 yrs)	25%	1st(3 yrs)	25%
Model		2nd(2 yrs) or extend- ed period	remaining area	2nd(2 yrs)	25%
contract				3rd(2 yrs) or extend- ed period	remaining area
		First alternative		Second alternative	
		Phase	Relinq't	Phase	Relinq't
1989		1st(3 yrs)	25%	1st(3 yrs) (1st & 2nd sub-phases)	25%
Model		2nd(2 yrs)	25%	2nd(2 Yrs)	25%
Contract		3rd(2 yrs) or Seismic opt. or extended period	remaining area	3rd(2 yrs) or Seismic opt. or extended period	remaining area

Source: Arts. 5 of the 1983 and 1985 Model Contracts, and art. 6 of the 1989 Model Contract.

So far as configuration and procedure are concerned, all HCs require that the areas relinquished "be made up of as few rectangles as possible" so as to facilitate further exploration operations, and be reported to CNOOC within 90

days prior to the relinquishment.¹²⁴

As a consequence of these requirements, the foreign contractor is forced to move quickly to assess the contract area in order to determine which portion of the area is most promising and warrants further exploration, and which portion should be given up. On the other hand, the contractor has the right to withdraw from the agreement after having completed each stage, and thus sustains a loss only in the amount of exploration expenses already incurred.

E. Exploration work programme and expenditure

The minimum exploration work programme and expenditures are a key point in any kind of petroleum agreement since they constitute the real risks and obligations. The HC sets forth extraordinarily detailed provisions on this point, whereby the contractor is obliged in each phase of the exploration period to: (a) complete seismic lines totalling specified kilometres; (b) drill and complete wildcats with depth totalling specified meters; and (c) spend the specified amount of money as its expected minimum exploration expenditures for such exploration operations.¹²⁵

Due to the Chinese insistence on the confidentiality of the contracts, an empirical and quantitative analysis of the minimum exploration work programme and expenditures of the executed HCs is unlikely. But the exploration obligations can be exemplified in the following table:

Table 17: Recent Examples of Exploration Obligations under the Chinese HCs

HC	1st phase	2nd phase	total
A (1983)	(a) seismic lines 2,500 kms	(a) seismic lines 400 kms	2,900 kms
	(b) wildcats 4 12,860 ms	(b) wildcats 2 6,410 ms	wildcats 6 19,270 ms
	(c) \$46,600,000	(c) \$22,275,000	\$68,875,000
B (1985)	(a) Seismic lines 1,400 kms	(a) seismic lines 300 kms	1,700 kms
	(b) wildcats 4 12,500 ms	(b) wildcats 3 7,500 ms	wildcats 7 20,000 ms
	(c) \$15,000,000	(c) \$5,700,000	\$20,700,000

Note: Contract A has an acreage of 1,279 km² and Contract B 2,812 km².

Source: Personal information.

At the expiry of the first or second phases of the exploration period, the contractor may enter the next phase or terminate the contract after fulfilling minimum work and expenditure obligations.¹²⁶

In fulfilling these obligations, the wildcats specified for each exploration phase cannot be substituted by appraisal wells without the consent of CNOOC. The wildcats abandoned for technical reasons without reaching their predetermined geological objective cannot be counted as wildcats fulfilled

without the consent of CNOOC.¹²⁷ At the end of any phase of the exploration period, the unfulfilled balance of the minimum exploration work commitment can be carried forward, with the consent of CNOOC, to the next exploration phase.¹²⁸ The over-expenditure is allowed to be deducted from and credited against the minimum exploration work commitment for the next exploration phase. The contractor is also required to pay CNOOC the unfulfilled balance of the minimum exploration work commitment, if any, when it opts to terminate the contract during the exploration period. However, if the minimum exploration work commitment for the exploration period is fulfilled and its expected corresponding minimum exploration expenditures are not, the contractor may keep the unused portion as a saving.¹²⁹

The net effect of these requirements is an implicit "ring fence" provision, under which the peaks and valleys of exploration work commitments and expenditures in one contract area cannot be transferred to another.

The exploration terms have remained largely unchanged for the third round, except on three important points. Under the first two model contracts, the contractor was required to drill at least one wildcat on each geological trap with potential for commercial petroleum down to the basement or 5,000 metres and, if the first wildcat failed to reach the required depth, another wildcat should be drilled.¹³⁰ This requirement was dropped from the 1988 Model Contract. Another

point is the formal introduction of a seismic option into the 1988 Model Contract.¹³¹ The last point involves a possible transfer of the drilling obligation. In the event that drilling obligations remain in a contract area but there are no drillable prospects on the current geological understanding, CNOOC may agree to incorporate another area into the agreement and transfer the surplus well commitments to the newly incorporated area under agreed terms.¹³²

It is clear that the exploration obligations under the HCs have been considerably liberalized in recent years. These "flexible approaches" are all designed to reduce the risks and the financial burdens of the foreign contractors.

F. Seismic and drilling option

Since 1987, CNOOC has allowed foreign contractors to phase in their exploration commitments. Foreign companies may sign a geographical survey or drilling agreement for areas of interest with limited commitment,¹³³ and then have the option of entering an oil contract based on the results of preliminary exploration. Such assistance to potential partners was formally incorporated in the 1988 Model Contract in the form of a seismic option.¹³⁴

Under the terms of the second alternative, the first phase of exploration period is further divided into two sub-phases. The first sub-phase is a seismic option, whereby the foreign company is required to complete only the specified

seismic lines and no drilling obligation is involved at all. At the expiry of this sub-phase, the company has the option to: (a) enter the second sub-phase and continue exploration on the basis of preliminary seismic surveys; or (b) terminate the contract.¹³⁵

Furthermore, at the expiry of the first or second phases of the exploration period under both alternatives, the contractor is given one more choice to "conduct only appraisal operations and/or development operations" in addition to the two original options of entering the next phase and continuing exploration or withdrawing from the contract.¹³⁶ This additional choice represents, in essence, a drilling option.

As far as contract improvement is concerned, the most important concession ever made by CNOOC is the introduction of a seismic and drilling option. This option not only provides the contractor with more choices upon completion of each exploration stage, but also substantially reduces the amount of exploration cost that must be risked at the front end.

G. Management provision

A joint venture contract is an agreement whereby a state oil company and a foreign firm share equity in a joint operation to explore for, develop and produce petroleum deposits. The partners share the risks, costs, production or profits in proportion to their interests or in accordance with the terms stipulated in the agreement.¹³⁷ As one of the

prototype petroleum arrangements, the joint venture contracts were first entered into in 1957 by the Egyptian and Iranian state oil companies with the Italian state oil corporation.¹³⁸ It was the earliest arrangement employed to give governments formal participation with private companies.¹³⁹ This type of arrangement seems to be more often employed nowadays to overlay the modern concession, the PSC, or even the RSC.

In China, foreign investment in petroleum exploitation can only take the form of "co-operative development" with CNOOC.¹⁴⁰ With respect to the petroleum joint venture, the model contract provides that "all the exploration costs required for Exploration Operations shall be provided solely by the Contractor"; and it must bear the cost and risk of exploration if there is no commercial discovery.¹⁴¹

As under a typical joint venture contract, CNOOC is carried by the contractor throughout the exploration period. Upon a commercial discovery, the state company has the right to participate with 51 per cent working interest after the appraisal work has been completed and the decision on development has been made. The development costs required are to be shared by the partners in proportion to their participation interests, namely, 51 per cent for CNOOC and 49 per cent for the contractor.¹⁴² However, CNOOC has the option of not participating or participating at a level of less than 51 percent. In such a case, the contractor is required to put up all or the remaining part of the development costs.¹⁴³

Needless to say, it is advantageous for CNOOC to finance its share of development costs in view of the fact that the risks in the development period are substantially reduced as opposed to those during the exploration period. Furthermore, although provision of a majority interest for the state oil company is common in joint ventures, the 51 per cent working interest provided in the Chinese model contract has significant political implications. According to CNOOC's legal staff, the two percent equity advantage is viewed as representative of China's permanent sovereignty over its petroleum resources.¹⁴⁴ This local Chinese thinking clearly demonstrates China's sensitivity to the issue of national control.

The joint venture is managed by a board of directors in the form of a Joint Management Committee (JMC), composed of one to three representatives under the 1988 Model Contract (three to five under the 1983 and 1985 Model Contracts) from both CNOOC and the contractor and chaired by the chief representative of CNOOC.¹⁴⁵ In addition to assigning its directors, CNOOC has the right to assign "professional representatives" to the contractor's administrative and technical offices. Such professional representatives are to have access to all activities and information, and they have the right to make proposals and comments to the contractor and to report directly to their members in JMC.¹⁴⁶

JMC holds regular meetings at least once a calendar

quarter. Other meetings, if necessary, may be held at any time at the request of any party to the contract.¹⁴⁷ Decisions of JMC are "made unanimously through consultation"; the parties will convene another meeting in an attempt to find a new solution based on the principle of mutual benefit if they have failed to reach unanimity on a matter.¹⁴⁸

JMC is empowered to, *inter alia*: (a) examine the work programme and budget; (b) determine the commerciality of a discovery; (c) adopt the overall development programme and budget; (d) approve purchase of any item with a unit price exceeding \$500,000 or any single order exceeding \$3,000,000, and approve any lease or sub-contract worth more than \$3,000,000; (e) announce the commencement of commercial production; (f) approve the insurance programme and emergency procedures on safety and environmental protection; (g) approve the personnel training programme; (h) decide and approve any other matters proposed or submitted by either party or the expert groups.¹⁴⁹

It is clear, then, that the organizational structure of the Chinese HC is dominated by a joint venture format which makes day-to-day operational decisions as well as broader planning and budgeting decisions. Such an arrangement allows China a greater control over petroleum operations while the oil company still takes the exploration risks. Foreign companies have several problems with this provision. Among the more significant problems is the arbitrary provision in the

model contract that the Chinese chief representative is the chairman of JMC. It was contested that the provision did not give enough say on matters of importance to the party that made the most contribution to, and assumed the most risks in, the joint enterprises. Even the Chinese themselves later felt that such a provision was rigid and did not conform with the principle of equality and mutual benefit.¹⁵⁰ Commendably, this barrier has now been removed by the recent amendments adopted on April 4, 1990 to the equity joint venture law, whereby the chairman and vice-chairman of the board of directors may be determined by the parties through consultations or elected by the board of directors.¹⁵¹ This revision has been widely recognized as a step forward towards the improvement of the foreign investment environment.

The voting system of the JMC is also of concern to many companies. The effects of the requirement that all decisions of JMC be made unanimously though consultation are twofold. On the one hand, consensus in decision making may be a kind of assurance for foreign investment because the contractor can use it to protect its own interest. On the other hand, it may cause unnecessary delays since either party enjoys a *de facto* veto. Such a decision-making procedure mirrors a tradition of the Chinese culture which prefers consultation and compromise to bidding and voting. In fact, the western ideas of a two-thirds or simple majority vote is unfamiliar to many Chinese. It may be suggested that the voting system be made more

flexible. Consensus can be required for certain significant decisions such as approval of work programmes and budgets, and determination of commerciality. But other less important matters may be approved by JMC members representing more than 50 per cent of the working interest. In the event that unanimity cannot be achieved, the matter should be allowed to be referred to international arbitration.

Another significant change with respect to the JMC under the 1988 Model Contract involves a simplification clause. The contract stipulates that if a contractor has set up a JMC in one sea area, new contracts entered into by it will not require the establishment of another JMC in the same area and the functions of the JMC for the new area will be executed by the existing JMC.¹⁵² This provision undoubtedly increases the efficiency of the JMC and reduces the operating cost of both parties.

H. Obligations of the parties

All HCs impose a number of important obligations on both the contractor and CNOOC which are briefly summarized as follows:¹⁵³

Obligations of contractor

Obligations of CNOOC

- | | |
|---|--|
| a. Apply advanced technology and managerial experience in performing its obligation; | a. Assist the contractor to open accounts with Bank of China; and |
| b. Prepare work programme and budget; | b. Expedite foreign exchange formalities; |
| c. Assume responsibility for procurement and sub contracting; | c. Obtain office space and supplies, accommodation, communications, etc.; |
| d. Prepare training programme and budget; | d. Deal with customs; |
| e. Establish insurance programmes; | e. Obtain visas for foreign employees; |
| f. Inform all subcontractors and expatriate employees to abide by Chinese laws; | f. Obtain permits to export data and samples for analysis or processing; |
| g. Report all aspects of its work to JMC; | g. Contact relevant Chinese departments as required; |
| h. Provide CNOOC with all information and samples pertaining to the operations; | h. Recruit the Chinese personnel; |
| i. Furnish CNOOC promptly with reports on safety, environmental protection and accidents; | i. Arrange purchases of hydrological and other data available from relevant Chinese departments; |
| j. Minimize the damage and destruction to marine environment; | j. Assist the contractor with other matters if possible. |

Obligations of contractor

Obligations of CNOOC

-
- k. Control blowouts and prevent waste of resources;
 - l. Prevent petroleum from flowing into low pressure formations and water into petroleum bearing traps;
 - m. Prevent land, forests and installations from being damaged and destroyed; and
 - n. Minimize the danger to personnel safety and health.
-

In addition to these regular obligations, the HCs impose a further unique obligation on contractors by providing that production operations are to be gradually assumed by CNOOC. Prior to the full recovery of the development costs, transfer to CNOOC of production operations is permissible only with the agreement of the contractor; CNOOC, however, has the unilateral right to take over production operations "at any time" after the development costs have been recovered in full by the contractor. The expenses incurred in the transfer and take-over are charged to the operating costs.¹⁵⁴

With respect to the contractual obligations, one simple comment quickly comes to mind. The contractors are required to

bear all primary responsibilities for carrying out the exploration, development and production operations during the life of the contract, while CNOOC is required only to assist the contractor, "at its request", in the performance of these tasks. In short, CNOOC has hardly any substantive obligation towards foreign companies. All expenses incurred by CNOOC on behalf of the contractor are paid by the latter.¹⁵⁵

I. Work programme and budget

The contractor is obliged under all HCs to submit each year to JMC and CNOOC for their review and approval an annual work programme and budget. The contractor must perform the petroleum operations according to the approved work programme and budget. However, The HCs allow the contractors to incur excess expenditures in the following instances:¹⁵⁶

(a) In carrying out an approved budget for a single item, the contractor has the right to spend up to 10 per cent more than the budgeted amount;

(b) For the efficient performance of the petroleum operations, the contractor is allowed to undertake an individual project which is not included in the work programme and budget up to a maximum expenditure of \$100,000 on it;

(c) In case of emergency, the contractor may incur emergency expenditures for the actual amount needed;

(d) Such expenditures must not exceed 5 per cent of the approved annual budget.

Through such allowances, the HC envisages a set of procedures to deal with unpredicted situations and provides flexibility to facilitate the smooth running of the operations.

J. Appraisal and determination of commerciality

Frequently, world petroleum agreements move directly from exploration to development, omitting a critical intermediate step on which the commerciality of a discovery is determined, that is, the appraisal phase.¹⁵⁷ This phase, during which additional drilling is required to verify the size, shape and nature of the petroleum reserve, is often included in the exploration period. Generally, contracts have no provisions to deal with the situation in which the duration of the exploration period is insufficient for the appraisal work.

It is notable that the Chinese HC incorporates an appraisal clause to address the issue. The provision states that where time is insufficient to complete the appraisal work or the time of the appraisal work needs to extend beyond the exploration period, the exploration period will be extended and the extension be whatever period CNOOC regards as a reasonable time to complete the work.¹⁵⁸ Though very simple, this appraisal clause provides for a minimum mechanism to deal with possible disputes that may arise precisely from this delicate area. It is, therefore, viewed by legal experts as "a sound practice".¹⁵⁹

After the appraisal, the operator is required to submit for decision and approval to JMC and CNOOC a detailed appraisal report, including the Overall Development Programme. If development operations do not commence within 90 days after the approval of the appraisal report or if an intentional delay by the contractor results in a suspension or halt of 90 continuous days in the development operations, "the Contractor shall be deemed to have automatically waived all its rights in the said oil field".¹⁶⁰

However, if JMC cannot reach an agreement on the commerciality of a discovery, then the trap will be dealt with in accordance with the following procedure: (a) if the contractor considers the discovery has no commercial value, then the contractor is deemed to have waived its rights to participate in development of the trap. In the event that CNOOC decides to develop such an oil field on its own, the contractor is allowed to participate within the development period by paying CNOOC, in addition to the 49 per cent of development costs, a unrecoverable penalty triple to its development costs, plus interest; (b) if CNOOC considers the discovery to have no commercial value while the contractor does, the latter may develop it at its sole risk.¹⁶¹

"Sole risk activities" are unusual in modern petroleum agreements since they might be felt to be a violation of the basic idea of state participation.¹⁶² The Chinese HC is outstanding in this connection that it contains sole risk

provisions which give both parties the right to accept risk when agreement cannot be reached on the issue of commerciality. This is a means of avoiding a deadlock on the issue whether to develop a discovery.

K. Cost recovery and production allocation

The 15-year production period begins when a cumulative total of 100,000 tons of oil or 100 million cubic metres of natural gas has been extracted and delivered from the field in accordance with normal procedures.¹⁶³ All costs incurred by both parties in the performance of petroleum operations are recoverable from this point.

For the purposes of cost recovery and revenue sharing, the HC provides for a rather elaborate and complex formula for the allocation of crude oil produced from the field during each year of the production period. Under the formula in the 1983 and 1985 Model Contracts, the annual gross production was divided into three portions. The first 17.5 per cent went to the producing country in the form of 5 per cent of Consolidated Industrial and Commercial Tax (CICT) and 12.5 per cent royalty.¹⁶⁴

The next 50 per cent of production was "cost recovery oil", which went first to recover operating costs incurred by both parties in kind after being converted into crude oil on the basis of the crude oil price. By and large, the operating costs are estimated by some oil executives at about 12.5 per

cent.¹⁶⁵ The remainder of this portion is deemed as "investment recovery oil" which is for recovery of exploration costs "without any interest" and development costs "with deemed interest" that is calculated at an annual fixed compound rate of 9 per cent.¹⁶⁶

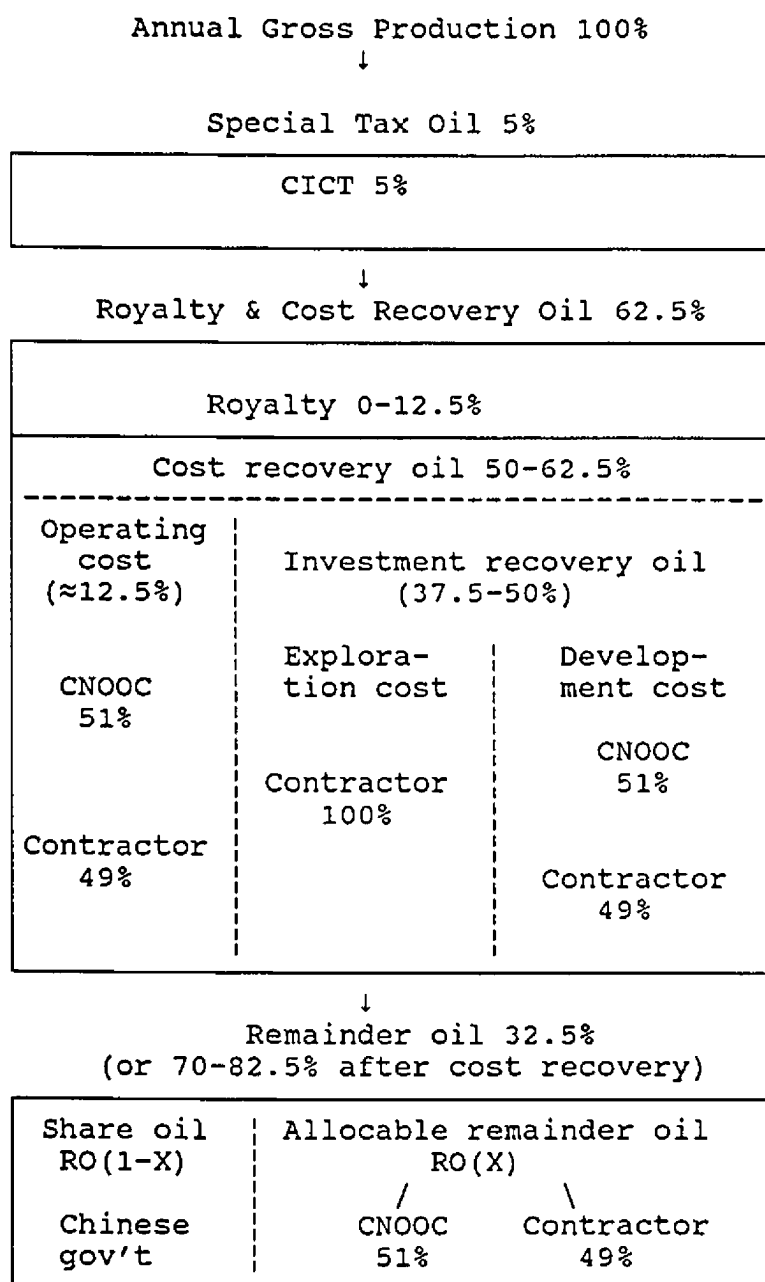
Finally, the remaining production is automatically regarded as "profit oil" which is sub-divided into "share oil" and "allocable profit oil" in accordance with the X-factor bid by the contractor. While the "share oil" went entirely to the Chinese government, the "allocable profit oil" is split 51 per cent to CNOOC and 49 per cent to the contractor.¹⁶⁷ It is to be noted that under the original model contract the profit oil during and after the cost recovery is 32.5 per cent and 70 per cent of the gross annual production respectively.

As happened elsewhere in the developing world, CNOOC eased its terms on cost recovery and production allocation under the 1985 and 1988 Model Contracts in light of the declining oil price. The relief provided included the following: For fields with a peak production below one million tons per year, a royalty concession is made available.¹⁶⁸ Another substantial change is that if the actual annual peak production from an oil field is less than one million tons, or the annual production of an oil field is projected but fails to reach one million tons, the Chinese forfeit their claims to the "share oil" and the total "remainder oil" (formerly the "profit oil") is deemed as "allocable remainder oil" (formerly

the "allocable profit oil".¹⁶⁹ Under the 1988 Model Contract, the cost recovery oil and the remainder oil has been increased due to the deduction of a royalty payment which has been changed from a flat payment into a sliding scale one ranging from zero to 12.5 per cent and to the inclusion of the royalty into the second portion of the cost recovery oil.¹⁷⁰ The attraction of this arrangement is that the lower a royalty payment is, a larger portion of cost recovery oil is available to the contractor as well as CNOOC. The production sharing between CNOOC and foreign oil companies under the 1988 Model Contract is shown in Table 18.¹⁷¹

The unrecovered amount of the exploration and development expenses are allowed to be carried forward to the succeeding year until fully recovered.¹⁷² However, if any development costs have not been fully recovered by the expiry of the production period, such unrecovered costs are then regarded as a loss.¹⁷³ For cost recovery purposes, there is a ring fence around each contract area. The cost recovery provisions also apply by analogy to a gas field.¹⁷⁴

**Table 18: Illustration of Production Allocation
under the Chinese Hybrid Contract system**



Note: RO = Remainder oil
Source: Compiled by the author

The "Chinese offshore formula" constitutes the heart and soul of the Chinese compound contract, which divides the gross production into three portions of 5/62.5/32.5 per cent and calls for: (a) 5 per cent to go to the Chinese Government as special tax oil; (b) 62.5 per cent to pay: first, royalty; and second, compensation to both the Chinese and foreign partners for their investment in exploration and development; (c) the final 32.5 per cent to be shared as profit in accordance with the X factor: the first part to go to the government; and the second part to be split by the two contracting parties. This formula represents a special feature second to none in world petroleum arrangements. It sets aside at least 50 per cent of the gross production for cost recovery, highest among the production-sharing countries. The formula also has the advantage of placing the state oil company CNOOC on an equal footing with foreign contractors to share the royalty responsibility. Such a practice is unusual in government-company petroleum relationships.

Under a special crude oil purchase provision, the contractor has, in addition to the aggregate amount of the three categories of production allocated to it, the option to purchase a portion or all of the oil obtained by CNOOC from the "investment recovery oil" within a contract area.¹⁷⁵ The foreign company is free to repatriate and sell its portion of oil on international markets. CNOOC's right to limit the destination of crude oil which may infringe on the political

interest of China has been effectively dropped in the 1988 Model Contract.¹⁷⁶

In sum, the HC offers a more lenient cost recovery treatment, allocating 50 per cent of initial production prior to 1988 and 62.5 per cent after royalty afterwards to cover the costs of exploration and development. In the words of one well-known western expert on Chinese energy: "China's offshore petroleum contracts in fact have relatively liberal cost-recovery provisions... the typical cost-recovery period will be less than five years."¹⁷⁷ Accordingly, the rate of return (ROR) under the Chinese HC is relatively high, ranging from a low of 17.7 per cent for a 50-million barrel field to a high of 31.5 per cent for a 200-million barrel field.¹⁷⁸ Under most circumstances, foreign contractors can recover their cost with in a short period of time ranging from four to six years if there is a commercial discovery.¹⁷⁹

L. The X factor

What is known as the X factor has remained a unique and very interesting device in the HC for determining the ratio of the "remainder oil" between the Chinese side and foreign companies. The X factor is defined as:

a multiplying decimal ranging from 1 to 0.1 of the profit oil, which increases China's allocable share by the reciprocal of the factor. Each contractor bids for a set of X factor which vary according to specified increments of additional daily production.¹⁸⁰

In accordance with this factor, the contractor receives the X

factor times its working interest percentage of the remainder oil, and the Chinese the remainder oil times $(1-X)$ plus profit oil times X factor times China's working interest percentage. So the factor represents in essence the amount of crude oil the contractor eventually gets to keep or, alternatively, the amount of oil it is willing to hand over to the Chinese.

It is extremely difficult to obtain information on the X factor because "Each contract's X factor is a *closely guarded secret*" (emphasis added).¹⁸¹ The table below shows two typical X factors bid by foreign companies on each of the eight specified tiers of annual production in recent agreements. They are not standard scenarios but are used here for illustrative purposes only.

Table 19: Examples of the X Factor in China's HCs

Annual gross production from each field (million MTs)	Factors applicable to each production tier	Examples	
		A	B
Up to 0.5	$X_1 =$	70%	80%
0.5 - 1	$X_2 =$	65%	70%
1 - 2	$X_3 =$	60%	60%
2 - 3	$X_4 =$	55%	50%
3 - 5	$X_5 =$	50%	40%
5 - 7.5	$X_6 =$	44%	30%
7.5 - 10	$X_7 =$	32%	22.5%
10 and over	$X_8 =$	15%	12.5%

Note: Mts = metric tons.

Source: Personal information.

The application of the X factor is somewhat complex. Some companies have asked CNOOC for clarification as to how the X factor would be applied in practice. Let's assume that there are two producing fields A and B within the contract area and the annual gross production from Field A is 6.5 million metric tons and that from Field B 3.5 million metric tons, and that the X factor bid by the contractor is Example A in the above table, the X factor of Field A in that year is:

$$53.6\% = \frac{50 \times 70\% + 50 \times 65\% + 100 \times 60\% + 100 \times 55\% + 200 \times 50\% + 150 \times 44\%}{650} \times 100\%$$

and the X factor for Field B is:

$$59.3\% = \frac{50 \times 70\% + 50 \times 65\% + 100 \times 60\% + 100 \times 55\% + 50 \times 50\%}{350} \times 100\%$$

As far as application of the X factor is concerned, three remarks can be made. As shown in the above table and calculation, the X factor operates in inverse proportion to output level, namely, the percentage of allocable remainder oil shrinks as production increases. So the net effect of the X factor is that the more oil produced, a lesser proportion goes to the contractor. Another point is that each field is

discrete. Production of one field cannot be transferred to another in the same contract area in order to escape a lower percentage of profit oil. The above illustration also reveals that approximately three-quarters of the remainder oil goes to the Chinese side. The share oil is about 75/25 when production is below 1,000 b/d and 72.5/27.5 when production is above 10,000 b/d.¹⁸² Generally speaking, "foreign companies have no problems with this formula *per se*. It would allow a foreign participant a fair share provided a reasonable bid is accepted."¹⁸³

In the final analysis, the production allocation provision has several advantages for the Chinese. First, it can assure the Chinese government a certain percentage of production under any circumstances because of the share oil. Second, it can provide an incentive to both parties to reduce as much as possible the costs incurred in the petroleum operations in order to have more remainder oil available for allocation. Third, a sliding scale allocation of production is conducive to encouraging the development of marginal or small oil fields on the one hand, and will also play a role of limiting the windfall profit which might be retained by foreign contractors in case of giant oil field on the other hand.¹⁸⁴

M. Royalty

Since the opening of its offshore, China did not

promulgate any legislation on royalty payments until 1989. Before then, the issue was left to the model contracts. Such a situation is described by Chinese as "having royalty but no regulations". The flat royalty of 12.5 per cent as provided in the 1983 Model Contract has undergone some evolution. Initially it was first not payable under the 1985 Model Contract until production reached 100 million metric tons.¹⁸⁵ It was further liberalized into a progressive royalty by "Regulations on Payment of Royalty for the Exploitation of Offshore Petroleum Resources" (the Offshore Royalty Regulations) on January 1, 1989 which is shown in the following table.¹⁸⁶

Table 20: Offshore Oil and Gas Royalties
in China

	Production	Royalty(%)
Oil (million tons/ year)	up to 1.0	0.0
	1.0 - 1.5	4.0
	1.5 - 2.0	6.0
	2.0 - 3.0	8.0
	3.0 - 4.0	10.0
	over 4.0	12.5
Gas (billion m ³ /y)	up to 2.0	0.0
	2.0 - 3.5	1.0
	3.5 - 5.0	2.0
	over 5.0	3.0

Source: Based on "Regulations on Payment of Royalty for

the Exploitation of Offshore Petroleum Resources" promulgated by the Ministry of Finance of the People's Republic of China on January 1, 1989.

This statutory royalty is characterized by the drastic alleviation of payment by foreign companies for small and medium fields. It is estimated that, under the new system, the actual payment for fields with recoverable reserves less than 5 million tons will be zero; fields with recoverable reserves between 5 million and 20 million tons, approximately 2 per cent; fields between 30 million and 50 million tons, 4 per cent to 6 per cent; and fields around 100 million tons, 8 per cent.¹⁸⁷ It is to be noted that China promulgated the Provisional Regulations Concerning Royalty for Onshore Petroleum Exploitation in Co-operation with Foreign Enterprises (the Onshore Royalty Regulations) in 1990 which provides for a separate rate of royalty for onshore oil and gas development.¹⁸⁸ Compared with that in other countries, the rate of actual royalty payment in China ranks below the medium.

The royalty is assessed on an annual basis, prepaid in quarterly instalments and finally settled at the end of each year. Those companies that had entered contracts prior to the coming into force of the Offshore Royalty Regulations are given an opportunity to select which royalty, the flat or the sliding scale, is to be used.¹⁸⁹

The transformation of a contractually fixed royalty into a statutory sliding scale one is in line with the current trend in modern petroleum agreements. The incorporation of a royalty payment into the Chinese offshore contracts adds some colour of concession agreements to this hybrid system.

N. Taxes

Both the Offshore Petroleum Regulations and HCs provide in principle that the contractor pay taxes in accordance with the Chinese tax law and regulations.¹⁹⁰ The principal tax laws and the taxes they impose on foreign oil companies operating in China are as follows:¹⁹¹

(a) CICT

CICT was established by the Consolidated Industrial and Commercial Tax Regulations promulgated in 1958.¹⁹² It is basically a turnover tax assessed on gross receipts from the sale of goods and services. Tax liability arises at each level of the transaction or production. In the case of petroleum production, the tax is imposed on the contractor upon annual gross production at a rate of 5 per cent, and on the sub-contractor upon completion of services at a rate of 3 per cent.¹⁹³ As already pointed out, the CICT is to be paid in kind before any cost recovery and profit split.

(b) Income Tax

Petroleum tax is something new to China since the country has no history of foreign investment in general and experience

in dealing with foreign oil companies in particular. But the country has quickly picked up the intricacies of petroleum taxation, thanks to the willingness of China to listen and learn on the one hand, and of foreign companies to teach and assist on the other hand.¹⁹⁴

In addition to royalty and CICT, the contractor's net revenue from its sale of production is further subject to an income tax of approximately 50 per cent under the 1982 income tax law.¹⁹⁵ After paying these taxes, the foreign partner was left with a 15-20 per cent share of production.¹⁹⁶ This rate has, however, been repealed and replaced by the 1991 Income Tax Law, which provides for a flat 30 per cent income tax, with a 3 per cent local income tax, together making a combined rate of 33 per cent.¹⁹⁷ This tax, in accordance with a 1982 ruling of the U.S. Internal Revenue Service, qualifies for the foreign tax credit in the United States.¹⁹⁸

The contractor is deemed to have received income at the time that the crude oil is divided. The amount of income is computed on the basis of a price that is adjusted periodically with reference to the international market price for crude oil of similar quality (market price).¹⁹⁹

In order to maximize income taxes, producing countries often utilize a ring fence provision to confine the amortization within a specific field or contract area where the expenditures or losses have been incurred. China has, however, gradually introduced a more lenient amortization

policy. The Ministry of Finance ruled in 1982 that there would be no ring fence against consolidation of losses and profits, and amortization of exploration and development expenditures around each contract area.²⁰⁰ It further announced in 1985 that where a foreign company has concluded a petroleum contract in both the first and second bidding round, it may consolidate its tax liability in the contract areas in calculating the income tax to be paid.²⁰¹ This loss carry-forward policy was subsequently reiterated and expanded in 1988 and 1991 to permit tax losses in oil exploration to be credited against other income or carried forward to a new exploration venture signed within 10 years of the relinquishment or termination of the unsuccessful venture. The tax incentive policies are applicable retrospectively to contracts terminated prior to April 1, 1988.²⁰²

The Chinese tax law is silent on the matter of offshore and onshore tax consolidation. But a 1986 ruling by the tax authority allows oil companies to consolidate their expenditures incurred in their offshore and onshore operations, provided that the two contracts are held by the same company.²⁰³

With respect to the Chinese petroleum income tax, the following observations can be made. First, the ring fence is absent for each contract area and also every bidding round in the sense that all offshore operations can be consolidated by the same company for a maximum period of 10 years. Second,

these tax incentives introduced piecemeal represent a continuing attempt by China to woo back those companies that have poured large amounts of money into offshore China without a return on their investment. Third, the Chinese income tax rate is moderate among the tax regimes for O & G development around the world which normally range from 20 per cent to 85 per cent nowadays.²⁰⁴ Fourth, the removal of ring fencing would encourage further exploration since the expenditures can be used to offset tax liability and postpone payment of taxes in another contract area. Fifth, a foreign contractor would have to bear the full costs incurred in a terminating unsuccessful venture if it is not allowed to amortize its losses in an unproductive contract area. By allowing the losses to be amortized against income from another contract area through the removal of the ring fence, the Chinese government, in effect, bears part of the exploration risk through receiving a lower tax revenue in the producing contract area. This may be viewed as another significant concession by China in terms of risk sharing in addition to the seismic option provision.

In the final analysis, "The economic distortions brought about are not as great as in some other countries because the take at high levels of profitability is not very high."²⁰⁵ The government take ranges from only 40 per cent to 44 per cent of the annual production.²⁰⁶ "Oil companies are generally satisfied with progress in China's tax

regulations."²⁰⁷

O. Customs duties

Customs duties are held to be a separate matter which is not even referred to in the model contract, except the brief provision in the Offshore Petroleum Regulations that equipment and materials imported for carrying out the petroleum contract shall be subject to tax at a reduced rate, or exempted from tax, or given other preferential tax treatment.²⁰⁸ In practice, customs duties and CICT are generally exempted on goods imported for direct use in the cooperative exploitation of offshore petroleum resources.²⁰⁹ The Chinese practice in this respect is by and large in line with petroleum arrangements in other producing countries.

P. Crude oil pricing

The setting of the value of crude oil is of particular importance due to its direct influence on the offtake, income tax and the general problem of determining a real international oil market price as sales will often be made to affiliated companies.

The price of crude oil for each calendar quarter under the HCs shall, as a rule, be the FOB price at delivery point in China based on the prevailing price in an arm's length transaction of the long-term-contract sales of similar quality crude on the main world oil markets.²¹⁰ If the initial price

is not acceptable, and no agreement is reached after further negotiations "in an amicable manner", the HC provides that the price is to be the weighted average FOB price sold by CNOOC and/or the contractor to third parties in the same calendar quarter. If there are no such sales, the price of the preceding calendar quarter adjusted by the differences in the individual arithmetic average of the daily weighted average of the international oil market price mutually agreed upon by both parties will prevail.²¹¹

It needs to be pointed out that there is a discrepancy between the pricing mechanism, *i.e.*, "contract price", provided in the model contract and the Income Tax Law Implementing Regulations of 1991 which stipulates a "market price".²¹² In practice, oil companies are permitted to use the pricing method provided in the model contract, *i.e.*, the long term contract price.²¹³

While the pricing system might not ensure a perfect price, it provides, however, for an automatic solution so as to avoid any unilateral determination, in the apparent hope for a fair price for both parties that reflects the international oil market price.

The system is largely based on negotiation regarding prices. This again reflects the traditional Chinese approach based on conciliation and compromise. The idea of compromise embodied herein not only declines to give either party the final say on pricing but also imposes on both parties an

obligation to negotiate in good faith towards a mutually acceptable price. So negotiation and compromise may be said to constitute the most notable features of the Chinese pricing system. It is, however, held that a legal corrective could be built in so that the pricing issue would be the subject of arbitration in case consultation is exhausted.

Q. Preference clauses

As noted earlier, foreign companies have by and large no objections to the fiscal regime; most of their fears stem from other conditions in the contract, namely, the spin-off provisions such as the preference clauses and training and technology transfer.²¹⁴

CNOOC contractually requires all contractors to give preference to the employment of Chinese personnel in the performance of petroleum operation and to Chinese equipment, materials and services, provided that price and quality are competitive.²¹⁵ Many companies have feared that this Chinese content stipulation could lead to long delays if the Chinese personnel, supplies and services prove to be unqualified and unreliable. Any delays in return could put the contractor in violation of the contract.

These concerns are not groundless. For instance, the western notion of employment, involving job descriptions, interviews, pre-testing, setting qualification and competition, is foreign to China. Foreign companies have to

obtain their employees from the designated Chinese organizations and many personnel provided lack experience in the oil industry. The unfamiliarity with equipment and procedure not only reduces productivity but also creates severe safety and maintenance problems.²¹⁶ Besides, CNOOC used to insist on high wage rates for Chinese personnel. Standard day rates for Chinese crew members were in the \$50-60 range, or three times the average (\$15-18) rate for Asian drilling operations in the industry. The Chinese employed by foreign contractors received only about 10 per cent of the total wages paid with the remainder as CNOOC's front-end profits to finance its own exploration.²¹⁷ Many expatriate supervisors were shocked to discover that they have almost no influence over the status of their employees who still maintained a direct affiliation with their "work unit", which was responsible for compensation, housing and promotion. Dismissal of an employee for lack of productivity or wrongdoing proved to be virtually impossible.²¹⁸

In response to the foreign concern and criticism, CNOOC has made an effort to reduce these local preference requirements. Although the preference clauses have remained the same in the 1988 Model Contract as they stood before, international tendering has been allowed by CNOOC for procurement of goods and services except for a very few items under the relevant rules of the Chinese government, which sufficiently reduces the pressure on foreign contractors to

buy supplies and support services from the Chinese sources. In respect of employment, the cost of the Chinese personnel has been reduced significantly, 30 per cent lower than their counterparts in other Southeast Asian countries.²¹⁹

R. Training and technology transfer

One important objective of the Chinese offshore petroleum policy is to develop the industry rapidly through substantial training and technology transfer. In pursuit of this goal, all HCs prior to the third bidding round had elaborate provisions in this respect, whereby foreign companies had the obligation to train Chinese personnel and transfer all their "appropriate advanced technology and management expertise, including proprietary technology, e.g., patented technology, know-how and other technologies and all their knowledge, data, materials, etc. for China to master them".²²⁰ The details of personnel training and transfer of technology had to be proposed by the contractor and determined through consultation with CNOOC prior to the signature of the contract and a training programme and budget for the exploration period and the development and production period be submitted to JMC for review and approval before the commencement of the operations.²²¹

The costs for the training and technology transfer is a huge burden for foreign companies because the amount is virtually, in the words of the Chinese, "unlimited and

unforeseeable" in the contract,²²² though they would be treated as exploration, development and operating costs accordingly.²²³

The magnitude and depth of these training and technology transfer requirements are perhaps unprecedented in world petroleum agreements.²²⁴ China has taken training and technology transfer more seriously than other developing countries with whom oil transnationals have dealt in the past, where technology transfer has been simply a spinoff activity with on-the-job-training being the primary transferring mode. Oil company executives have lamented openly that "the Chinese have too many diverse goals and that, at times, finding oil seems secondary."²²⁵ The training and technology transfer requirements had caused many companies, if not all, a lot of misgivings. As a result, the experience of training and transferring during the first two bidding rounds "has been disappointing for CNOOC and frustrating for the companies".²²⁶

A number of factors were attributable to the disappointment and frustrations experienced by both sides. CNOOC did, and still does, not have any coherent strategy for acquiring technology and training. In consequence, CNOOC failed to define its needs and priorities for training and technology acquisition. By insisting on transfer of all technologies throughout the life of the contract, it appeared that CNOOC wanted to be able to do everything immediately. Such a "strategy" was understandable, but hardly practical.

Without an idea of its needs and priorities it was difficult for the foreign companies to initiate the technology transfer and training programmes that could meet CNOOC's "requirements".²²⁷

Several deficiencies inherent in the contract represented another source of the frustrations. For instance, the contract provisions on training and technology transfer were vague and imprecise about the goals to be achieved. How could oil companies that arrived in China be expected to implement or quantify such contract phrases as "working together", "most appropriate advanced technology", "industry standards"? "The technology transfer clauses in the Chinese contracts are so open-ended that if interpreted literally they would be impossible to fulfil", as one oil company representative pointed out.²²⁸ In addition, there was not a clear definition in the contract as to what was meant by the term "training and technology transfer", and none of the companies had a legal definition for it, either. Some companies admitted that they had signed the contracts without fully understanding what was required.²²⁹ In the absence of a legal definition, the term was interpreted differently by the contracting parties.²³⁰ While the foreign companies tended to interpret that technology transfer was synonymous with training, CNOOC believed that, while training was a vital mechanism for transferring technology, the provision of software, data and materials also played an important role.

The Chinese and foreign oil companies had very different interpretations of the training clause. The former regarded training as an issue of great importance on which they pinned their hope to develop their own Exxon, while foreign companies attached less importance to the issue and provided only marginal efforts to meet their training commitments. The on-the-job training that had served the industry so well in the past in other developing countries did not work well in China, because CNOOC contended that little concern was given to the ability of the Chinese national to digest the information and not much technology was eventually transferred. CNOOC thus exerted a great deal of pressure during contract implementation to obtain both apprenticeships for high-level positions and advanced training abroad for Chinese nationals.

The cultural and bureaucratic barriers also made it difficult to implement the training provision. Selection of trainees with technical aptitude was difficult under the Chinese system because the "work unit" responsible for providing the contractor with candidates often hid their best personnel so that they would not lose them. When the "work unit" did co-operate, they normally provided only one or two candidates for selection by the contractor.²³¹

In addition to the problems with the contract clauses, there were different views towards proprietary technology and its mastery. Unlike many other developing countries, China was not satisfied with technology transfer through training,

principally in operational skills. Particularly in the early years, CNOOC expended disproportionate amount of effort to gain access to "proprietary technology, e.g., patent, know-how or other confidential technology, etc."²³² As a matter of fact, proprietary exploration technology forms only a small part of a company's total knowledge, being estimated at around 2 to 5 per cent. Most companies are totally unwilling to share this technology because it provides them, for a limited time of six months to two years, with a competitive advantage over their international rivals.²³³ The HCs have consistently emphasized technological mastery. The offshore oil industry generally draws on a vast range of different technologies for carrying out exploration, development and production. Furthermore, the technology is constantly changing and being innovative. "No single oil company, nor even a single country with a deep-water offshore oil industry, has fully 'mastered' the complete range of technologies involved. It has not made economic sense to do so."²³⁴ In view of these facts, it may be said that the Chinese quest for proprietary technology and mastery is too ambitious or even unrealistic.

Furthermore, a number of external factors had implications on training and technology transfer. These include cultural and educational differences, political and institutional barriers, language problem and management styles as well as the great divergence between Chinese and western expectations.²³⁵ They combined to limit severely the

effectiveness of training and technology transfer. In addition, the home countries of some oil companies had limitations on technology transfer.²³⁶

The training and technology transfer article has proved to be the most problematic area in the Chinese HCs. Because of the problems examined above, CNOOC admits that the contractual commitments and objectives have seldom been met. After years of frustration and retrospection, CNOOC began to adopt a more realistic attitude towards the issue. The 1988 Model Contract introduces more lenient provisions on training and technology. First, the contractor is exempted from having to provide training and to transfer technology during the exploration period. It is only after a commercial discovery that the contractor is required to submit to JMC for review and approval training and technology transfer programmes for the development and production periods respectively.²³⁷ Second, though it is still included in the contract clauses, the transfer of proprietary technology has been lessened to some extent. The contractor is asked only, "to the extent reasonably possible, [to] endeavour to obtain permission for the transfer of such restricted technology."²³⁸ Moreover, given the fact that proprietary technologies are all involved in oil exploration and an exemption has been extended during this period, it may be said that foreign companies are, by implication, under no obligation to transfer their proprietary technology. Third, the model contract has dropped the annex

that deals with training and technology transfer. Instead, all the details of the obligation will "be determined through consultation by the parties".²³⁹

The recent alterations by CNOOC in training and technology transfer have removed in part the problems most commonly occurring in its relations with foreign companies. But there is still room for improvement. A clearer contractual definition of the term "technology transfer" should be hammered out and built into the contract. It will help to remove some of the ambiguities, false expectations and frustrations.²⁴⁰ A financial limit on the annual effort to be made by the contractor on training and technology transfer might help to remove the issue of open-endedness. So it would be an advantage to both parties if the future contracts can specify a financial obligation for training and technology transfer. This could be set as a fixed, negotiated amount or as a percentage of the total expenditures.²⁴¹

In respect of the spinoff provisions, it may be observed that China is much more demanding for training and technology transfer than are other producing countries. A second observation is that the localization clauses in modern petroleum agreements are often broad and imprecise; they lack goals to be achieved and have no objective measures of contract fulfilment. The Chinese HC seems to suffer in this respect, too.

S. Ownership of assets and data

All assets purchased for petroleum operations become the property of CNOOC when the costs have been fully recovered by the contractor or when the production period expires even if the costs have not been fully recovered. During the life of the contract, the contractor may use CNOOC-owned assets free of charge. Rental equipment provided by any third party or temporarily brought into China is released from CNOOC's ownership.²⁴²

The ownership of all data obtained in the course of petroleum operations vests in CNOOC.²⁴³ Their use is subject to certain limitation and confidentiality requirements.

The Chinese provision on ownership of assets is more reasonable than those agreements under which equipment becomes the state oil company's property upon entry into the host country. Foreign contractors are generally happy with this arrangement because of its fairness.²⁴⁴

T. Natural gas

Unlike many agreements in other developing countries, the HC in China has since its advent contained adequate provisions on natural gas which fall into two categories: associated natural gas and non-associated natural gas.

Associated natural gas will be primarily used for operations and production enhancement. Should there be any excess associated natural gas, the contractor is supposed to

carry out a feasibility study. The following procedures are set regarding the utilization of such excess gas: (a) if either party considers unilaterally that the excess has commercial value, such gas may be utilized by that party at its own expense without affecting the production allocation; (b) if the parties agree that the surplus is of commercial value, further investment will be made in its utilization; and (c) if the parties disagree on the commercial utilization and fail to reach agreement through negotiation guided by "the principle of mutual benefit", CNOOC retains the right to dispose of such excess gas unilaterally.²⁴⁵

Non-associated natural gas, namely a gas discovery, is more complex. When a gas field is discovered in the contract area, the parties shall carry out "friendly negotiations" to reach an agreement in principle on the development and production of the discovery, which should include the following elements: (a) the price will be determined on the basis of "general pricing principles prevailing internationally"; (b) the contract term will be separately determined; and (d) the general allocation principles for oil will be used for sharing the gas, with percentage adjusted through negotiations by the actual conditions of the discovery so as to give the contractor a reasonable economic benefit.²⁴⁶

If there is a lack of market, or if there are other factors, the period for an undeveloped gas field to be retained in the contract area may be duly extended at the

request of either party, subject to a maximum term of three consecutive years after the expiry of the exploration period. A further extension requires the approval of the Chinese government. If the contractor considers a discovery to be non-commercial, he is then deemed to have waived his rights. If an agreement cannot be reached through negotiations within three years on the development of a gas discovery mutually considered to be commercial, CNOOC is given the unilateral right to put up the field for bidding and the contractor is still entitled to participate in it.²⁴⁷

The natural gas provisions elaborated on in the Chinese HC are rarely seen in modern petroleum agreements. They perhaps warrant attention on several points. Most importantly, they provide for some fundamental principles and a set of useful procedures to approach the issue of natural gas when it occurs. A second advantage is that the foreign companies are assured of a similar reward in case of a gas discovery. A third major aspect of the contract is that CNOOC is given the final say in some difficult situations. While this may not be very reasonable, it serves as an automatic mechanism to avoid any stalemate. It should be pointed out that this is the only area in the HC where CNOOC enjoys a unilateral right. It would appear that arbitration could perhaps serve the same purpose better.

U. Insurance and confidentiality

The contractor is required under a HC to take up insurance programmes for the exploration, development and production operations with the People's Insurance Company of China, which should cover, *inter alia*: damages and expenses to all equipment; liability to third parties and for pollution; expenses for killing blowouts. Sub-contractors are also required to insure their risks. The premiums will be charged respectively to exploration, development and operating costs.²⁴⁸ In 1992, the insurance costs for each offshore well were generally around \$100 million: \$50 million for pollution responsibilities and killing blowouts; and \$50 million for liability to third parties and other damages and expenses.²⁴⁹ The insurance requirement is another spinoff for China.

The HC provides that the contract and all documents shall be kept confidential and no party shall transfer, present, sell or publish them in any way within the confidentiality period; CNOOC shall not disclose any patent or proprietary technology transferred from the contractor without the latter's written consent. But the contract fails to specify a period for the required confidentiality.²⁵⁰ It is recommended that a time frame needs to be established in order to avoid the open-endedness. Such a frame could be set, according to the nature and characteristics of the documents/information, at, e.g., two or five years, after their submission or after termination of the contract.

V. Assignment

Transfer of part or all of the contractual rights and obligations is permitted and divided into two situations under the HC. Assignment to affiliates requires the prior consent of CNOOC and the contractor must guarantee the performance of the assigned obligations. Assignment to any third party must be approved by CNOOC in advance and the latter has the right of first refusal as long as the conditions offered by it are comparable.²⁵¹

W. Environmental protection and safety

The Chinese HCs have elaborate provisions on environmental protection and safety, which will be examined in Section VII of this chapter.

X. *Force majeure*

Traditionally, the concept of *force majeure* has scarcely found its way into Chinese law and practice. It was not until very recently that *force majeure* provisions were incorporated into relevant laws and contracts. But the language employed has varied both in degree of specificity and in content.²⁵²

Instead of defining *force majeure* by reference to the laws governing contracts, the HC takes the form of original definition of the concept. The contract stipulates that any failure or delay in performing obligations will be excused if: (a) the performance is prevented, hindered or delayed because

of "any event or combination of events which could not be foreseen and/or which is beyond the control of such party"; (b) such events are the direct cause of the non-performance; (c) the invoking party has taken all reasonable actions to overcome any such cause. Notice of *force majeure* shall be given by the party claiming *force majeure* and the parties shall immediately consult to find an equitable solution and use all reasonable endeavours to minimize the consequences.²⁹³

The text here seems to be three-pronged: unforeseeability and/or insurmountability, direct link and reasonable reactions. But the latter two are more in the nature of burden of proof and means of mitigating the impact than the meaning of *force majeure*. The real criteria are unforeseeability and/or insurmountability.

It cannot be said that the provisions are well drafted. Rather, they contain several areas of ambiguity. Most notably, the provisions as a whole are general principles which provide a broad ground for invoking a defence based on *force majeure*. A second major problem is that the concept of *force majeure* is not precisely defined. The scope of events qualifying as *force majeure* and the dimensions of unforeseeability are uncertain. Third, the procedure for invoking *force majeure* is incomplete, particularly in terms of the means and time of the notice. Finally, what can or should be done if there is disagreement regarding the validity of a claim of *force majeure*? All these issues need to be addressed in order to make the *force majeure*

provisions sophisticated.

Y. Consultation and arbitration

For historical and philosophical reasons, China holds an unfavourable attitude towards international arbitration or compulsory jurisdiction, but prefers to settle disputes by means of "friendly consultation and conciliation". As the Chinese proverb suggests, it is better to be in the jaws of a tiger than in a court of law.²⁵⁴ The arbitration system in China has been traditionally rigid and its usage very limited. If arbitration was agreed, the locus of the arbitration tribunal was usually Beijing. It was not until recently that China has agreed to arbitration beyond the jurisdiction of China, particularly in Sweden.

In the spirit of traditional Chinese values, disputes should always be first settled by friendly negotiation or conciliation. Arbitration or judicial settlement is the last resort. This Chinese tradition and practice is also reflected in the offshore HC. Its dispute settlement mechanism consists of, first, consultation and, then, two types of arbitration which are in the following sequence:²⁵⁵

(a) Any dispute in connection with the contract shall be "settled amicably through consultation" by the parties with their best efforts;

(b) Unsettled disputes may be referred to arbitration at the request of either party. If agreed upon by the parties,

the arbitration shall be conducted by the China International Economic and Trade Arbitration Commission in accordance with its arbitration rules;²⁵⁶

(c) Failing agreement of the parties, the dispute will be submitted to an *ad hoc* arbitration tribunal of three arbitrators, following the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL) of 1976. Any vacancy in the arbitration panel will be filled by the Arbitration Institute of the Stockholm Chamber of Commerce, Sweden.

Customarily, the Chinese arbitration commission will first serve as a conciliator to assist friendly negotiations between the parties or to provide non-binding recommendations to them. Formal arbitration will not be conducted unless the first efforts fail.

It is clear that this dispute settlement mechanism is based on the traditional Chinese concept of compromise and consensus. The contract emphasizes the need to settle disputes amicably through consultation. Arbitration is considered as only a measure of last resort, with preference being given to domestic institutional arbitration in China.²⁵⁷ Even the *ad hoc* arbitration is not truly international in the sense that the arbitrator appointed by CNOOC may be its "advocate" and the third arbitrator is a neutral party.

It needs to be understood by the Chinese that resort to international arbitration is by no means an unfriendly act,

but one that is occasionally essential to the clarification of parties' economic rights and duties under the contract.

Z. Applicable law and stabilization clauses

Two questions raised frequently by foreign companies in contract negotiations are: what is the applicable law for petroleum contracts in China, and what are other principles that should be applied failing relevant provisions in the Chinese law? The answer to these questions is very clear in the Chinese law and the model contract itself. The 1985 Foreign Economic Contract Law explicitly provides that petroleum contracts that are performed in China

should be governed by the law of the People's Republic of China. The international practice may apply in case no relevant provision is stipulated in the law of the People's Republic of China.²⁵⁸

This provision is further elaborated in the HC, in that the validity, interpretation and implementation of the contract is governed by the laws of the People's Republic of China.²⁵⁹

It is of importance to note, however, that the contract does not stop here, but goes on to provide that, failing such laws, "the principles of the applicable laws widely used in petroleum resource countries acceptable to the parties shall be applicable".²⁶⁰ This provision is in fact an internationalization clause which removes the contractual relationship in the absence of municipal law to the rule of international law.

The Chinese internationalization clause is considered

more modern and effective than some other earlier types which either made general reference to principles of international law or resorted to a combination of alternatives involving the possible application of municipal law to the extent that they did not conflict with international norms. The clause in the HC has the advantage of avoiding the abstract formulation of earlier clauses and of relating to the rules applicable to those of the industry. Besides, it narrows down the scope of the rules to only the field of petroleum industry. The reference to the laws of petroleum resources countries, though not specified, presumably includes both the developed countries, such as the United Kingdom and Norway, and the developing world, such as Asia, and Latin America. The chances of identifying these common rules and principles are much greater than those of reaching a consensus on the general principles applicable throughout the world to all kinds of relationships between resources countries and transnational corporations.²⁶¹ Thirdly, the municipal laws are predominant over international rules in the sense that the latter only come into play in the absence of the former.

In addition to the internationalization clause, the HC further provides that if a material change occurs to the contractor's economic benefits due to promulgation of new laws or changes in the current laws, "the Parties shall consult promptly and make necessary revisions and adjustments to the relevant provisions of the Contract in order to maintain the

Contractor's normal economic benefits hereunder".²⁶² The provision represents a good example of a different approach to stabilizing the contract.²⁶³ Instead of the common practice of freezing the law or the contract stipulations, this stabilization clause envisages a legitimate mechanism to adjust the terms of the contract in case of a change in the law to achieve the goal of preserving a modicum of original commercial expectation by the contractor and a reasonable equilibrium of the original relationship. The strategy employed here is to "use change to counteract change", which is presumably more appropriate for the purposes of stabilization in a changing world.²⁶⁴ If no agreement can be reached by the parties on the necessary revisions or adjustments, the obligations "may still be performed according to the stipulations of the original contracts".²⁶⁵

VII. The hybrid contract and environmental protection/ sustainable development

Following the pattern of previous national case studies, this section is devoted to an examination of the HC from an environmental protection and sustainable development perspective, beginning with a general review of the environmental regulation in China.

1. Environmental policy and practice in China

For many years environment was not a concern in China. This was partly due to its isolation and its preoccupation with endless political campaigns. During the 1960s, the environmental movement gained increasing momentum around the world in general and in the industrialized countries in particular. China was not particularly involved as the country was overwhelmed by the Great Cultural Revolution, which did not come to an end until 1976. More importantly, the country has always placed first priority on economic development, as does any other developing country. Insufficient attention was paid to environmental problems.²⁶⁶

Environmental protection was not listed on the country's political agenda until the early 1970s when the country decided to participate in the 1972 Stockholm Conference.²⁶⁷ Classical Marxist theory gave thought to environmental issues but assigned the blame to shortsighted profit-seeking capitalists. China took a similar official position at the conference. While acknowledging that environmental protection was needed, it placed the primary responsibility for pollution on the major developed countries. It also argued that developing countries had the right to exploit and utilize their own natural resources in accordance with the needs of their economic development without outside interference.²⁶⁸ Such a position has remained unchanged in principle in the

past two decades.²⁶⁹

The significance of the Stockholm Conference for China is that it forced the country to consider and address its environmental problems in a more serious and systematic way. China has since then slowly awakened to its environmental problems. It has gradually conceded that no system, regardless of capitalism or socialism, is immune to such problems as "environmental pollution", "resource exhaustion". In fact, the environmental problems are more severe in China than elsewhere. For instance, China is ranked fourth after the United States, the former Soviet Union and Brazil in contributing to greenhouse gases.²⁷⁰ In recent years, Beijing has suffered air pollution nine times worse than Toronto in terms of dust particulates in the air.²⁷¹

Environmental protection has now been made a fundamental national policy in China. In contrast with its position in the early 1970s, China has realized that "economic construction and environmental protection must advance together in tandem",²⁷² and the four modernizations cannot be achieved at the expenses of environment and natural resources. Consequently, environmental management and legislation have ranked high on the priority list of the country.

Environmental protection has been among the most heavily legislated sectors of public policy and administration. Provisions on environmental protection and natural resources management are included in the 1982 Constitution, which

stipulated that the state protect the environment and natural resources and prevent and remedy pollution and other public hazards.²⁷³ Some 20 specialized laws and regulations as regards environmental management have been drafted, including several important ones on marine environmental protection.²⁷⁴

Despite these commitments and activities, however, environmental conditions in China have continued to deteriorate. Among factors contributing to the worsening situation, the major ones include weak enforcement of the environmental legislation and the lack of funding. For a long time, environmental laws have rarely been implemented in real earnest. "Compliance (is) a matter of convenience rather than a legal obligation".²⁷⁵ As for the environmental budget, it is frankly acknowledged that:

China is a developing country whose major task at present remains developing the economy... China is not yet economically strong, and in the long run will be unable to devote substantial funds to environmental protection.²⁷⁶

The expenditures on direct environmental control accounts for only 0.7 per cent of the Gross National Product (GNP), or RMB ¥10 billion (US\$2 billion), which is much lower than the 1-2 per cent other comparable developing countries spend on environmental protection.²⁷⁷ More importantly, as elsewhere in the developing world, there are political and ideological concerns that the objectives of protecting the environment should not be pursued to such a degree that it interferes with the pursuit of economic development.

At the 1992 United Nations Conference on the Environment and Development (UNCED), commonly referred to as the "Earth Summit", held in Rio de Janeiro, Brazil, China not only reaffirmed its position first voiced 20 years ago at the Stockholm Conference that each state had the right to decide its own environmental protection and development strategies and that resolution of the environmental and development problems must be based on a respect for national independence and sovereignty, but also contended that the world environmental problems had been caused mainly by developed countries in the course of more than a century of industrialization and they, therefore, had to play a major role in correcting the problem by paying developing countries more than \$125 billion out of the total estimated \$600 billion cleanup cost.²⁷⁸

2. The hybrid contract and environmental protection

China clearly recognizes that the offshore petroleum industry has raised the potential for marine environmental pollution and, therefore, has taken preventive measures where possible. Chinese legislation and the HC have developed a substantial body of provisions on environmental protection.

The HC contains several environmental stipulations whereby the contractor is obliged to: (a) arrange insurance programme including "liability for pollution and expenses for

cleaning up ... [and] expenses for killing blowouts";²⁷⁹ (b) prepare and submit to the JMC for review and approval the "emergency procedures on safety and environmental protection" before petroleum operations commence;²⁸⁰ (c) "furnish CNOOC in a timely manner with reports on safety, environmental protection and accidents" in the course of petroleum operations;²⁸¹ (d) avoid any disturbance to fishery resources; and (e) provide the Chinese environmental inspectors with all necessary facilities and assistance in carrying out their functions smoothly.²⁸² Finally, the article on Environmental Protection and Safety requires in a comprehensive fashion all the contractors to:

make its best efforts to prevent pollution and damage to the atmosphere, oceans, rivers, lakes, harbours and land... (and) use all reasonable endeavour to eliminate promptly any pollution occurring in the performance of the Petroleum Operations and minimize its consequences.²⁸³

In addition to the above contractual provisions, both the Offshore Petroleum Regulations and the contract contain reference clauses requiring the petroleum operations be carried out in strict compliance with China's environmental protection laws and regulations.²⁸⁴ The most important of these laws concerning offshore oil development are the Marine Environmental Protection Law of the People's Republic of China (MEPL) and the Regulations of the People's Republic of China concerning Environmental Protection in Offshore Oil Exploration and Exploitation (the Offshore Environmental Regulations).²⁸⁵ The law and its supplementary regulations

contain the following requirements: first, all enterprises engaged in offshore oil activities must prepare and submit to the competent authorities an "Environmental Impact Statement" for review and approval, which should include, *inter alia*: (a) the condition of the natural marine environment and resources in the area surrounding the oil field; (b) the probable types of pollutants and their quantity; (c) the environmental impact on waterways, fishery resource, scenery in the surrounding area; (d) the ultimately unavoidable effects and their extent; and (e) measures to prevent and mitigate adverse effects.²⁸⁶

Second, all operators are required to have "emergency plans" and antipollution equipment such as oil-water separators, discharge monitoring devices, recovery facilities and garbage-smashing machines.²⁸⁷

Third, all discharges are strictly regulated: (a) oily water shall not be discharged, either directly or in diluted form; (b) waste oil, oil-based mud and other noxious liquid or residues must be recovered for land disposal after treatment; (c) domestic refuse must be lacerated into grains with diameter less than 25 mm when it is to be disposed of within 12 nautical miles of the coastline; (d) all discharge or disposal after treatment must meet the state standards; (e) the oil and gas must be thoroughly burned when testing a discovery.²⁸⁸

Fourth, measures must be taken to protect fishery resources when using explosives. Explosive operations are

banned during the fishing or spawning seasons, or in spawning grounds.²⁸⁹

Fifth, prompt measures must be taken to prevent, control, mitigate, and eliminate pollution in case of accident. Any massive oil spill or blowout must be reported immediately.²⁹⁰

Sixth, an Anti-pollution Record Book shall be maintained on the platforms; a comprehensive report on the anti-pollution situation and pollution accident must be filed each quarter.²⁹¹

Seventh, a fine up to RMB ¥100,000 (approximately \$20,000) may be imposed on any "wrongful acts", "unlawful acts" or operations causing marine environmental pollution.²⁹² Criminal liabilities may be assessed against serious violations that cause pollution damage to the marine environment or heavy losses to public and private property or casualties.²⁹³

It is clear from the preceding discussion that the HC has introduced a legal framework for marine environmental protection in offshore oil exploration and exploitation which uses a strict liability approach. This system adopts both performance- and technology-based controls, preventive and reactive measures, civil and criminal liabilities.²⁹⁴ All the legal requirements are clearly spelled out in measurable terms. It may be said that the Chinese HC has the best comprehensive environmental protection system among contractual arrangements in the developing world.

As noted, the general intent and specific requirements of many environmental laws are ignored in China under a weak court system.²⁹⁵ Not surprisingly, this is also the case with respect to offshore environmental regulation. In the words of one observer, "The foreign companies involved have had little, if anything, to say about environmental regulation of their activities."²⁹⁶ As we all know, the key to environmental protection lies in the area of enforcement. Without effective implementation and enforcement, even the most complete and sound stipulations on environmental protection become meaningless. Foreign oil companies, meanwhile, do not welcome these regulations. From their perspective, the offshore environmental regulations may substantially affect and constrain offshore oil exploration and development.²⁹⁷

3. The hybrid contract and sustainable development

Resource and environmental problems are interconnected to a greater degree in China than in many other countries, partly because the greatest population in the world aggravates the effects of resource and environment constraints. Intensified agriculture and industry in general and mining and energy development in particular have harmed natural systems. Increasing exploitation and conversion of both living and non-living natural resources and the proliferation of rural industries threaten the regenerative capacity of all

ecosystems.

In recent years, China's increasing emphasis on market-oriented development and its sudden shift from a centrally planned economy to a so called "socialist market economy" has seriously threatened the country's resource base as it opens its doors wider to foreign investment. Foreign enterprises, including transnational oil companies, have gushed into the country to take advantage of, among other things, the cheap raw materials and natural resources.

The Chinese petroleum industry perhaps represents the largest part of this gloomy picture. Driven by the rapidly growing domestic demand and need to generate the huge foreign exchange earnings required by the modernization process, the industry has to date been almost preoccupied with maximization of the tangible oil output. "...Thus, the overall social objective of petroleum resource protection, rational development, and efficient utilization of the resource has been set aside", as some Chinese oil experts have rightly pointed out.²⁹⁸ Petroleum resources have been over-exploited to fulfil the politically determined quotas set by the central planning agency, with little attention being given to maintaining the normal production rate.²⁹⁹ As observed by International Labour Office in a recent study focused on petroleum development in China:

Given intense demand-side pressures, the country is simply not in a position at this time to consider checking the rate of resource development and extraction. The situation is quite the reverse, in

fact.... There are clear signs, therefore, that the Chinese petroleum industry is geared to a rapid resource development and depletion policy. (emphasis added)³⁰⁰

The Chinese depletion policy can be exemplified by the following case. The country discovered the Renqu oil field in central China in 1975, which went on stream with an annual production of over 10 million tons in 1976. This field was giant in the sense that each of its 14 wells amounted to a medium sized oil field with a reserve of one million tons. Unfortunately, Renqu oil field went quickly through its peak production period in a mere 10 years. Its production dropped to eight million tons in 1987, and further to less than one million tons in 1992. It is predicted that Renqu's production will fall to below 500,000 tons in 1995. It really is startling to see such a drastic decline in a giant field of over 100 million tons reserve in such a short period of time.³⁰¹

In the past 29 years, China has extracted from the ground 2.2 billion tons of oil. After two to three decades of production, many oil fields have entered the postmature stage of production, or shown signs of premature exhaustion. Oil production has become increasingly difficult. The average rate of water content in oil production has jumped from 67 per cent in the past to over 81 per cent at the present, which means that extraction of each ton oil will bring up two to four tons of water. What China is facing today is an excessive fall in oil production not in hundreds, but in thousands of wells

across the country at the same time.³⁰²

The growth of oil production in the past six years has sharply lagged behind that of 1981-1985, when China's oil flow jumped by an average 118,400 b/d every year. The rate of growth slowed to 38,000 b/d each year during 1986-1990 and 12,000 b/d in 1991.³⁰³ The total crude oil production in 1991 was 132 million tons, an increase by only 60,000 tons, or 0.4 per cent over the previous year.³⁰⁴ To summarize, "the remaining onshore fields mostly continue to decline, and the overall rate of annual oil production increases falls far short of the rate of growth in domestic oil demand."³⁰⁵

This depletion policy is not without its risks. Faced with rising domestic demand for oil and a declining rate of oil production replacement, China is now paying the penalty for over-emphasizing production at the expense of exploration over the past. The country is likely to become a net importer of energy by the middle of this decade if substantial oil replacement is not discovered and developed quickly.³⁰⁶ Such a major crisis would have devastating implications for the country's social and economic development. In addition to the depletion problem, use of energy in the country is wasteful although efforts are being made to improve the energy intensity of the economy.

It seems that the HC follows by and large in the footsteps of China's depletion practice. The preceding examination of the HC terms reveals that the system, like

other types of petroleum agreements, is aimed primarily at quick discovery and rapid development and production. The HC has failed to recognize the principle of sustainable development. Protection and preservation of the petroleum resources for future generations has not been taken into account at all.

In conclusion, it appears that financial return criteria for foreign investments in offshore exploration and exploitation in China have little in common with the needs of sustainable development.

VIII. Appraisal of the Chinese hybrid contract

Chronologically, the hybrid/comprehensive contract is the latest type of petroleum agreement to appear on the scene after modern petroleum arrangements in developing countries have been developed over a period of 20 or 30 years. As is apparent from this case study, while the structure of the Chinese hybrid contract is innovative, none of the fundamental elements are new. The Chinese contract is an amalgam of all approaches that have been taken by other developing countries. In this sense, China is the beneficiary of the developments in modern world petroleum agreements.

The Chinese HC, however, is unique when compared with other contractual arrangements. The most striking feature is

its "four-in-one" nature. The HC incorporates aspects of almost all the prototypic arrangements. It not only contains elements of the service, joint venture and production-sharing contracts employed respectively by Brazil, Norway and Indonesia, but also has incorporated a royalty payment which is the concessionary type of element that is found in use in Thailand. So the HC is neither a slightly changed production-sharing type nor a modified joint venture contract, but has a mixed legal nature of concession, risk service, joint venture and production sharing.

In spite of its mixed legal nature, the dominant structure of the contract is, in essence, joint venture. Under this arrangement co-operation is governed throughout the life of the contract by the JMC, which controls every facet of the petroleum operations. The state oil company CNOOC has a majority vote in the management organization; the two per cent equity advantage has profound implications. Politically, it implies China's sovereignty over the resource and the enterprise undertaken. Practically, it gives China a majority vote in the management organization.

The provision of alternative clauses constitutes an outstanding technical feature of the HC. Under the articles dealing with the term of the contract, relinquishment, minimum exploration commitment and expenditures, termination and cancellation of the contract, two alternative stipulations are spelled out for election by foreign companies. These

alternatives not only provide the contractor with more choices but also represent further flexibility in contractual obligations. To this author's knowledge, China is the only country to employ such an attractive device.

Another feature is that the HC is far more serious in the demands for managerial and technology transfer than agreements in many other producing countries. As a consequence, much of the contention between CNOOC and foreign contractors has been concentrated in the areas of training, employment and technology transfer. The confrontations reflect China's desire to expand its own technological base rather than build a dependence on foreign technology. It seems that the traditional areas of dispute in petroleum agreements have begun to be superseded by these localization clauses in the HCs. This may be expected to happen in other forms of contracts since many developing countries share with China the same desire to develop a capacity to operate their own petroleum industry.

The Chinese culture which is based on Confucianism has a strong influence on the HC system. The HCs are based to a large degree on the traditional Chinese concepts of conciliation and compromise when there are differences of opinion regarding elements of joint operations, such as determination of commerciality, pricing, decision making, subsequent modification of contract terms, etc. Under many circumstances, the principle of consensus and compromise will

thus replace the western ideas of formal voting and arbitration. The requirement that unanimity be achieved through consultation on key contract matters is a fundamental legal principle of the HCs.

Equally important is the "principle of equality and mutual benefit" emphasized in the HCs, which is consistently stressed by Chinese to be the fundamental basis for all Chinese foreign business dealings. The spirit embodied in this principle can be found in many articles of the contract. Although not interpreted in either the contract law or the HC itself, the term "equality and mutual benefit" presumably implies a guarantee of the legitimate rights and interests of both sides as well as an equitable share of returns between the parties. The consistent Chinese emphasis on this principle reflects what may be said to be a major trend in the evolving government-company relationships, that is, building a partnership on the basis of a mutuality of interest.³⁰⁷

For the purposes of this study, the most striking feature of the Chinese HC is beyond doubt its introduction of a sophisticated environmental protection system. In theory, it constitutes a substantive improvement over many, if not all, existing agreements in developing countries. In practice, however, its legal significance has been offset by its poor implementation and enforcement. In addition, the contract has not taken into consideration the protection and preservation of the petroleum resource for the future generations. For

these reasons, the HC cannot be said to be an environmentally sound and responsible arrangement which can meet the challenge of sustainable development facing the world as a whole today.

The HC system is particularly welcomed by foreign companies in one aspect, that is, its explicit provision that China will protect the legitimate rights and interests of foreign enterprises participating in the co-operative exploitation of offshore petroleum resources.³⁰⁸ Subsequent law regarding foreign investment goes one step further by elaborating that:

The State will not nationalize or expropriate enterprises with sole foreign investment but in special circumstances, where it is necessary to the public interest, an enterprise... may be expropriated in accordance with legal procedures, and appropriate compensation paid.³⁰⁹

It is the first time that China, as a socialist state with a planned economy, has promulgated such specific provisions on foreign investment protection. These new developments indicate that a firm commitment has been made for China to complete its political and legal systems and to incorporate into its legislation the legal principles generally accepted in the international community. As a matter of fact, not to nationalize or expropriate foreign property has been a consistent national policy. Historically, China confiscated only the enemy assets of Japan after the Second World War. But investments by such countries as Britain, the United States, France and Portugal were all mutually discharged and paid off upon establishment of

diplomatic relations.³¹⁰ Since China needs a peaceful political-economic environment for 50 to 70 years to realize its modernization programme, it would not make sense to nationalize foreign investments, which is politically shortsighted and would be more of an economic loss than a gain. Given the historical context and the current policies,³¹¹ foreign investment in China's petroleum sector is politically safe, at least for the foreseeable future.

As far as the marketability of the HCs is concerned, the following points are relevant. Despite their sporadic complaints and criticisms, foreign oil companies are generally satisfied with the HC. The contract is considered by some commentators "as a fairly well drafted and rather comprehensive document";³¹² and "while tough, will be workable—provided certain provisions are negotiated satisfactorily."³¹³ Its terms are somewhat comparable to those contracts with other countries such as Norway, Algeria, and Indonesia.³¹⁴ The economics of operating offshore China are competitive. The typical cost recovery period can be as short as three years; and the government take is only around 40 per cent of the production.³¹⁵ In the final analysis, we may safely arrive at an overall assessment that the HCs "look as good or better than those from several other production-sharing countries".³¹⁶ The Chinese HC offers one of the most favourable terms among energy-producing countries.

Before closing this chapter, it needs to be pointed out

that it is difficult to generalize about the characteristics of hybrid contracts, because the combination may differ from country to country and exist in endless forms. One comment that can be made about this type of contract is that it is extremely flexible. It can be tailored in accordance with specific situations by incorporating the needed aspects of previous agreements to meet the best interests of a producing country. Such a combination is usually sophisticated. However, as the amalgam becomes more complex, it will become more difficult to make generalizations and to evaluate quantitatively and compare the various hybrid options, and also to make comparisons with other forms of petroleum agreements.

As a final note, it is recognized that there are inadequacies in the HC. The shortcomings are largely due to an acknowledged lack of experience in foreign investment.³¹⁷ Nonetheless, CNOOC has gradually developed a more realistic attitude towards co-operation with oil multinationals. There is also a deeper understanding on the Chinese side of the competitive aspect of foreign investment in oil business in the developing world. This new realism may be the harbinger of a more co-operative spirit between the Chinese and foreign partners. In fact, the concessions offered by CNOOC in recent years have significantly improved the contractual framework for offshore operations in China. The country has gradually earned the reputation that "everything can be negotiated in

China, and they are reasonable people," as remarked one oil executive.³¹⁸

IX. Summary

China appears to have succeeded in both developing a viable domestic petroleum industry and maintaining complete independence and control of its resources under a policy of self-reliance in the early days. But such a development strategy was not without its cost, as subsequent development has shown. It is fortunate that the country was able to walk out of the shadow of autarchy and re-enter an international system based on competitive self-interest in the late 1970s by allowing foreign participation under a hybrid contract regime.

This Chinese hybrid contract system has been developed with an eye first to establishing an offshore industry and, second to building the capacity to run it. It seems that the country has managed to strike a degree of balance in the system, which enables China to pursue its goals while still being flexible enough to accommodate foreign companies' profit-seeking interest.

China's environmental experience is of special interest because it perhaps represents the world's best case study of whether an ancient, huge agricultural society can make the transition to an industrialized economy without damaging its

natural productive capacity. To date its environmental record in the offshore petroleum industry is mixed because environmental protection provisions are not vigorously implemented, and the exploration arrangements do not take into account the sustainable development concept. In the 1990s and beyond, it remains an open question whether China will be able to find a workable balance between conservation and development.

In conclusion, China seems to have successfully developed a workable contract system in the past decade. The system warrants more attention by lawyers and multinational oil corporations not only because its applicability was formally expanded in February 1993 to onshore petroleum exploration,³¹⁹ and will in all the likelihood be extended to other energy and mineral resources development in the future, but also because it contains many novel ideas and unique devices that can be shared by other producing countries.

Notes:

1. Van Meurs, A.P., "Economic Analysis of Selected Offshore Petroleum Arrangements", 10 Nat. Res. F. 107-09 (1986). The words "hybrid", "compound", and "comprehensive" are used interchangeably in this study.
2. Among the countries using the comprehensive contracts are: China, India, Jamaica, Liberia and Tanzania, etc.
3. See generally International Labour Office (ILO), China and Malaysia: Social and Economic Effects of Petroleum Development by Hills, P. and Bowie, P. (Geneva: ILO, 1987) (hereinafter China: Petroleum Development); Fridley, D., China's Petroleum Industry: International and Domestic Policy Imperatives (Honolulu, HI: East-West Centre, 1987); Chu-yuan Cheng, China's Petroleum Industry: Output Growth and Export Potential (New York: Praeger Publishers, 1976).
4. Cheng, China's Petroleum Industry, *ibid.*, p.1.
5. "Country Profile: China", 13 OPEC BULL. 26 (1982).
6. "China's Oil and Energy Industries", Petroleum Economist, November 1981, pp. 476-97; and Cheng, China's Petroleum Industry, *supra* note 3, p.2.
7. Bartke, W., Oil in the People's Republic of China: Industry Structure, Production, Exports (Montreal: McGill-Queen's University Press, 1977), p.12; T'ien Chih-ch'un, "The New and Old China as Seen from the Angle of Petroleum", Chung Kuo Hsin Wen, September 2, 1965, pp.12-13, cited in Woodard, K., The International Energy Policies of the People's Republic of China, Ph.D. thesis, Stanford University, 1976, p.85.
8. ILO, China: Petroleum Development, *supra* note 3, p.16; Park, C.H., "Energy Policies of the World: China", in Park, C.H., East Asia and the Law of the Sea (Seoul: Seoul National University Press, 1983), p.311.
9. Fairbank, J., The United States and China, 3rd ed. (Cambridge: Mass: Harvard University Press, 1971), pp.142-49.
10. ILO, China: Petroleum Development, *supra* note 3, p.16.
11. Cf. Barnett, A., China's Economy in Global Perspective 2 (Washington, D.C.: Brookings Institution, 1981), pp.3-4; "China: Energy Policy and Development", Petroleum Economist, November 1983, pp.415-22.

12. Fridley, D. and Christoffersen G., "Self-Reliant Petroleum Development", in Khan, K.I.F., Petroleum Resources Development (London: Belhaven Press, 1988), p.261; Woodard, Energy Policies of China, supra note 7, pp.84-88.
13. The National Council for U.S.-China Trade (National Council), China's Petroleum Industry, Special Report No. 16 (Washington, D.C.: The National Council for U.S.-China Trade, June 1976), p.13; ILO, China: Petroleum Development, supra note 3, p.17.
14. *Ibid.*, p.13; O & G J., December 13, 1982. p.61.
15. National Council, China's Petroleum Industry, supra note 13 p.13; and Petroleum News, December 1979, p.10.
16. Li, P., "Steady Growth for China's Oil Industry", Beijing Rev., November 5-11, 1990, p.18; Chen, X.H. and Li, Y.Z., *infra* note 298, p.14.
17. National Council, China's Petroleum Industry, supra note 13, p.24.
18. "China Stressing Onshore E & D to Spur Crude Output", O & G J., July 29, 1991, p.25.
19. People's Daily (overseas ed.), December 31, 1991, p.1 (in Chinese).
20. Vernor, B., "China's Sinking Surplus", China Bus. Rev., March/April, 1990, pp.6-12; "Foreign Firms to Get Expanded Role in China's Accelerated E & D Effort", O & G J., January 14, 1991, p.17.
21. China's refining capacity reached 144 million tons in 1992. People's Daily (overseas ed.), September, 26, 1992. p.2.
22. Following Canada, Indonesia, Australia, the U.S.A., the former U.S.S.R. and Argentina, Gamble, jr., J.K., Global Marine Attributes (Cambridge, Mass: Bollinger, 1974), p.62.
23. CHOP/ECAFE, "Geological Structure and Some Water Characteristics of the East China Sea and the Yellow Sea", 2 Technical Bull. 39-40 (1969).
24. Harrison, S.S., China, Oil and Asia: Conflict Ahead? (New York: Columbia University Press, 1977), p.42; Int'l Petroleum Encyclopedia, Vol. 17, 1984, p.241.
25. Please note that both the mainland China and Taiwan claim: there is only one China and Taiwan is part of it.
For background information of the dispute, see Ma, Y.J.,

Legal Problems of Seabed Boundary Delimitation in the East China Sea, Occasional Paper No. 3, School of Law, University of Maryland, 1984; Park, C.H., "Oil under Troubled Waters: the Northeast Asia Sea-Bed Controversy"; in Park, East Asia, supra note 8, pp.1-52.

26. Petroleum Concessions between Taiwan and international oil companies:

Block No.	Company	Contract date		Subsequent status of contract
		Signature Approval	Expiration	
1	Amoco	27/07/1970 21/09/1970 /09/1978		Terminated Sept.1978
2	Conoco	27/03/1971 23/07/1971 /09/1978		Same as above
3	Gulf	28/07/1970 21/09/1970 /03/1980		Suspended under force majeure clause
4	Oceanic	13/08/1970 21/09/1970 /03/1979		Same as above
5	Clinton	22/09/1970 26/09/1970 /03/1978		Same as above
6	Texfel	17/06/1972 29/08/1972 /08/1980		Same as above

For details, see Ma, Y.J., "Foreign Investment in the Troubled Waters of the East China Sea", 1 Chinese YB Int'l L. & A. 69 (1981).

27. Concession contracts signed by Korea with foreign companies:

Block No.	Company	Date of signature
2,4	Gulf	15/04 1969
3,6	Shell	28/01/1970
1,5	Texaco	27/02/1970
7	Phillips	24/09/1970

See New York Times, March 16, 1970. For an example of these contracts, see the Korean concession contract with Phillips, in Barrows Company, Asia and Australasia: Basic Oil Laws and Concession Contracts, Supp. 23 (New York: The Petroleum Legislations Co., 1972), pp. A0-37 (hereinafter Asia Contracts).

28. Park, East Asia, *supra* note 8, p.2.

29. People's Daily, December 29, 1970, p.1 (in Chinese).

30. The joint development zone was divided up into nine sub-zones and were contracted out to private companies. Concessionaires nominated by Japan and South Korea are as follows:

Block No.	<u>Company</u>	
	Japan	South Korea
(1)	Nishinohon-Sekyukaihatsu	Hamilton Brothers and Weeks
(2)	Same as above	Shell
(3)	Same as above	Shell, Texaco and Lucky
(4)	Nihonsekyu-Kaihatsu	Caltex
(5)	Nihonsekyu-Kaihatsu and Caltex	Caltex
(6)	Same as above	Gulf
(7)	NA	NA
(8)	Teikokusekyu	Hamilton Brothers and Weeks
(9)	Nishinohon-Sekyukaihatsu	Same as above

See Park, C.H., "Joint Development of Mineral Resources in Disputed Waters: the Case of Japan and South Korea in the East China Sea", in Park, East Asia, *supra* note 8, pp.127-40.

31. *E.g.*, Peking Rev., April 12, 1974, p.7 .

32. Leach, J.B., "Offshore: the Petroleum Industry in the People's Republic of China, 1969-1978", 13 (1-2) Chinese Economic Studies 105-51 (1979-80); Woodard, K., The International Energy Relations of China (Stanford; Stanford University Press, 1980); Marine Affairs of Modern China (Beijing: China Social Science Press, 1985), p.206-09 (in Chinese).

33. In 1974 the then trade minister, Li Qiang, categorically ruled out the possibility of foreign participation in the exploitation of natural resources in China when he said in 1974 that China "will never try to attract foreign capital or

exploit domestic or foreign natural resources in conjunction with other countries". Cited in Fountain, K., "The Development of China's Offshore Oil", China Bus. Rev., July-August 1982, p.36.

34. The Country had a capacity to operate only within depth of 500 feet. Fountain, K., "The Development of China's Offshore Oil", China Bus. Rev., January-February 1980, p.31.

35. Economist Intelligence Unit (EIU), Country Report: China No. 3 (London: Business International Ltd., 1991), p.26.

36. Chu, B.T. and Dong W.Y., Legal Issues of Foreign Investments in China (Beijing: Business Administration Press, 1988), p. 298 (in Chinese). Another standard comparison is that China produced approximately 3 million b/d in 1990, the United States over 8 million b/d and the former Soviet Union over 12 million b/d in the same year. See Woodard, K., China's Changing Petroleum Industry (Washington, D.C.: The Washington Institute for Value and Public Policy, 1988), p.6.

37. For a map of these seismic survey blocks, see Int'l Petroleum Encyclopedia, Vol. 15, 1982, p.204, 208; Barrows Company, ed., Offshore Petroleum Industry, Supps. 42 and 44 (New York: The Petroleum Legislation, Inc., 1980 and 1981), p. 56; 55.

38. See generally, You, D.H. (Vice-president of CNOOC), "China's Offshore Oil Development and Policies in Co-operation with Foreign Companies", a paper presented at an international conference held in Singapore in September 1987, p.2; Rich, L.D., *infra* note 75, pp.119-40; CNOOC, Annual Report 1989, pp.58-59. For a list of the participating companies, see Barrows Company, Offshore Petroleum Industry, *supra* note 37, Supp. 49, 1982, p.45.

39. Marine Affairs of Modern China, *supra* note 32, p.27.

40. Jones, D., "China's Offshore Oil Development: Japanese and French Contracts Offer Some Insights, Some Confusion", China Bus. Rev., July-August 1980, pp.52-56; Bentham, R.W., "People's Republic of China: Petroleum Agreements and Bilateral Treaties", 4 J.E. & Nat. Res. L. 39-43 (1986).

41. China Economic News, August 23, 1982, p.12; Green, "Offshore Business", China Bus. Rev., May-June 1982, p.17.

42. For a complete list of offshore contracts signed between 1979-1983, see "Summary List of E & D Contracts and Agreements for Sino-foreign Cooperation: Geophysical Reconnaissance/Geochemical Survey Agreements", in CNOOC, Annual Rapport 1989, pp.58-69; also "Offshore China Contracts 1979-1983", Petroleum

News, January 1984, p.16.

43. You, *supra* note 38, p.3. For a summary of drilling results in the first round, see "U.S. Firms Express Caution on China Play", Asian Wall St. J., May 31-June 1, 1985, p.1.

44. For the terms and blocks offered in the second round of bidding, see CNOOC, Annual Report, 1984; "China Announces Terms for Oil Bidding", Asian Wall St. J., January 31, 1985, p.3; "China Launches Second Round Offshore Awards", O & G J., November 25, 1985, p.40.

As in the first round, the bidding was conducted in two stages: Notification No. 1 was announced on November 22, 1984 offering 4 blocks covering approximately 13,300 km²; Notification No. 2 came out in February 1985 offering 12 blocks with an area of 52,000 km² in the Pearl River Mouth and six blocks totalling 43,000 km² in the south Yellow Sea.

45. For a complete list of contracts and agreements signed in the second bidding round, CNOOC, "Contract Statistics, December 1991" (document on the author's file), pp.2-3; cf. also Woodard, K. and Vernor, B., "Petroleum Exploration Update: China's Strategy into the '90s", EAER, April 1989, p.12.

46. "China Opens Third Round of Offshore Bidding", O & G J., January 16, 1989, pp.18-19; Int'l Petroleum Encyclopedia, Vol. 23, 1990, p.207.

47. CNOOC, "Contract Statistics", *supra* note 45.

48. CNOOC, "Notification of the Fourth Round of Bidding", July 1, 1992 (document on the author's file); People's Daily (overseas ed.), July 2, 1992, p.1; O & G J., July 6, 1992, p. newsletter.

49. For particulars of the Sino-foreign cooperation in offshore development, see CNOOC, Annual Report 1991, pp.6-10.

50. CNOOC, "Press Release on CNOOC's Tenth Anniversary", February 1992, p.2.

51. *Ibid.*; People's Daily (overseas ed.), February 15, 1992, p.3. RMB ¥ is the unit of Chinese currency. The exchange rate in 1993 is about: US\$1 = RMB ¥5.70.

52. *Ibid.*

53. Zhong, Y.M., President of CNOOC, "President's Address", in CNOOC, Annual Report 1990, p.2, 6.

54. Gamble, Global Marine Attributes, *supra* note 22, p.54, 62.
55. Gao, Z., "China and LOC Convention", 15 Marine Policy 199-209 (1991).
56. Peking Review, September 9, 1958, p.21.
57. *E.g.*, People's Daily, December 29, 1970, p.1; Peking Rev., June 17, 1977, pp.16-17.
58. UN Doc. A/AC 138/SC II/L 34, 1973.
59. For instance, art. 2 of the Marine Environmental Protection Law of China provides that "this law is applicable to the inland waters and territorial sea of the People's Republic of China and all other sea areas under the jurisdiction of the People's Republic of China." *infra* note 285.
60. Gao, *supra* note 55, p.203.
61. Two wars were fought between China and Vietnam in the South China Sea in 1974 and 1989 respectively.
62. *E.g.*, when the Sino-foreign agreements in the South China Sea were announced in 1979, Vietnam who also laid sovereign claim over the same area protested the proposed surveys as "a brazen violation of the territorial integrity of Vietnam and its sovereignty over its natural resources", and further issued a warning to foreign oil companies involved that they must "bear the consequences" of their actions. For general information, see Harrison, S.S., "Conflicting Offshore Boundary Claims", China Bus. Rev., May-June 1983, pp.51-53.
- The Vietnamese Government issued another statement on May 16, 1992 when CNOOC and the U.S. Crestone Energy Company signed an offshore contract covering an area of over 25,000 km² in the southwestern part of the South China Sea on May 8 1992, pointing out that:
- It is clear that the agreement between the Chinese and U.S. company has seriously violated Vietnam's Sovereign Rights over its continental shelf and exclusive economic zone... the Socialist Republic of Vietnam demands that the Chinese side stop immediately the illegal exploration and exploitation arrangements with the Crestone company in the area of Vietnam's continental shelf.
- See "Statement of the Ministry of Foreign Affairs of the Socialist Republic of Vietnam on the Agreement between Chinese and U.S. Oil Companies for the Exploration and Exploitation of

Oil and Gas on the Continental Shelf of Vietnam", Hanoi, May 16, 1992.

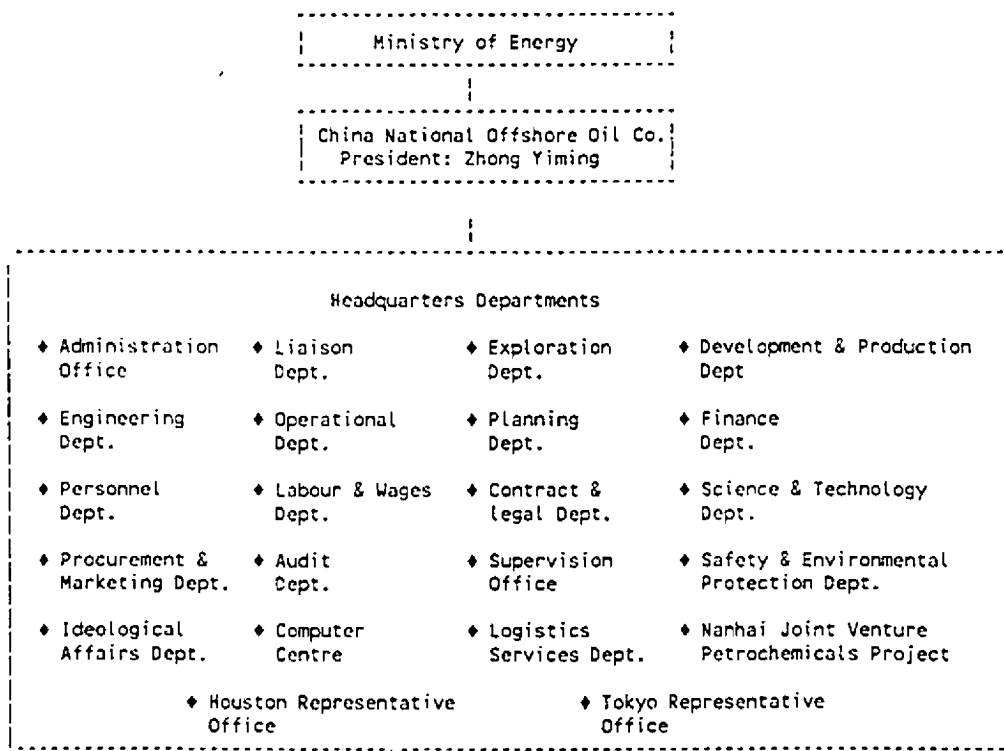
63. Cf., Yu, S.K., The Law of Maritime Boundary Delimitation and its Application to the South China Sea, Ph. D. thesis, University of Cambridge, 1989; and Ma, Y.J., Legal Problems of Seabed Boundary Delimitation in the East China Sea, *supra* note 25.

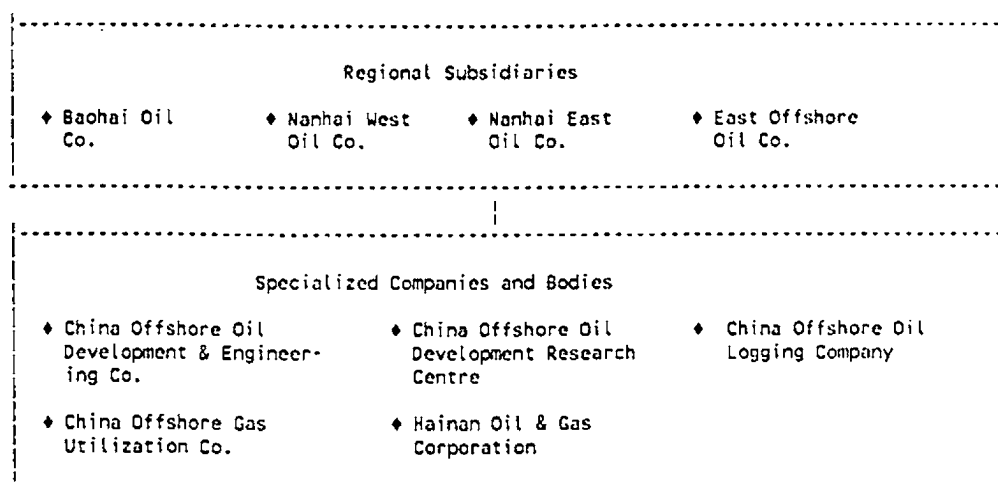
64. Reprinted in 21 I.L.M. 132-36 (1982), and Beijing Rev. (formerly Peking Rev.), February 22, 1982, p.14-17. For a summary of the regulations, see Barrows Company, ed., Petroleum legislation, Supp. 45 (New York: The Barrows Company Inc., 1982), pp.8-12.

65. *Ibid.*, art. 5 of the Offshore Petroleum Regulations.

66. *Ibid.*, arts. 5 and 6.

67. Organization Chart of CNOOC





Source: Chart prepared by the author with information from CNOOC, Annual Report 1991.

68. "CNOOC Directory" and "Corporate Briefing", in CNOOC, Annual Report 1990, pp.46-48.

69. Yang, B.C., Deputy Director of Contracts and Laws of CNOOC, "The Legal Framework for the Sino-Foreign Co-operation in the Offshore Petroleum Exploitation", unpublished paper, July, 1991, p.1; an updated version of this paper under the same title was delivered at the Law Asia Conference, Jakarta, Malaysia, September 1992, pp.1-25.

70. Zhong, Y.M., "President's Address", in CNOOC, Annual Report 1991, p.5.

71. The recent legislation concerning foreign investment include, *inter alia*:

(1) The Law of People's Republic of China on Joint Ventures Using Chinese and Foreign Investment, promulgated on July 1, 1979;

(2) The Foreign Enterprise Tax Law, promulgated on January 1, 1982 (appealed);

(3) The Law of the People's Republic of China on Economic Contracts Involving Foreign Interests, promulgated March 20, 1985;

(4) The Law of the People's Republic of China Concerning Enterprises with Sole Foreign Investment, adopted on April 11, 1986;

(5) The Mineral Resources Law of the People's Republic of China, promulgated on March 19, 1986;

(6) The Income Tax Law of the People's Republic of China Concerning Foreign Investment Enterprises and Foreign

Enterprises, promulgated April 9, 1991.

72. Goodwin, jr., R.C., "Offshore Oil Explorations: An Overview of the Legal and Organizational Aspects", EAER, May 1984, p.9.

73. Smith, A.H., "Standard Form Contracts in the International Commercial Transactions of the People's Republic of China", 21 Int'l & Comp. L. Q. 133-50 (1972); see also The National Council for U.S.-China Trade (National Council), Standard Form Contracts of the People's Republic of China (Washington, D.C.: National Council for United States-China Trade, June 1975); Chiu, T.C.W., China Trade Agreements, 2nd ed. (New York: Taylor & Francis, 1988); Beijing Rev., April 27, 1979, pp.19-20.

74. Document on the author's file. Due to the Chinese confidentiality requirements, the contract has not been publicized.

75. Capener, C.P., "Legal Aspects of Sino American Oil Exploration in the South China Sea", 14 J. Int'l L. & Econ. 443-84 (1979-80) (retitled as Geo. Wash. J. Int'l L. & Econ.); see also Rich, L.D., "American Oil Interests in China", 6 Loy. L.A. Int'l & Comp. L.J. 46 (1983).

76. Art. 3 of the Agreement of the Geophysical Survey, *supra* note 74; see also World Bus. Weekly, September 3, 1979, p.20.

77. *Ibid.*, art. 8.

78. *Ibid.*, art. 14.

79. *Ibid.*, art. 12.

80. *Ibid.*, art. 11.

81. *Ibid.*, art. 10.

82. Petroleum News (Supp.), June 1979, p.2.

83. Capener, *supra* note 75, p.453-54.

84. Gao, Y.F., "Economic Contract Laws in China", in Folsom, R.H. and Minan, J.H., ed., Law in the People's Republic of China (Dordrecht: Martinus Nijhoff Publishers, 1989), p.562.

85. Cf. Scott, "China's Trade Policy and Practice", 13 J. Int'l L. & Econ. 611 (1979); Theroux, E.A., "Technology Sales to China: New Laws and Old Problems", 14 J. Int'l L. & Econ. 225 (1980).

86. Capener, *supra* note 75, p.459.

87. The country sent its oil industrial officials to several oil-producing countries to learn from their experiences. Meanwhile, it invited experts from the United Nations Centre on Transnational Corporations to conduct workshops for the Chinese on a wide range of issues with respect to foreign investment. The last two of these workshops focused specifically on the different forms of exploration and development agreements, including concessions, joint ventures, PSCs and RSCs. A number of private consulting firms, e.g., Gustovson Associates Inc., were hired to help develop contract terms. Cf. Int'l Petroleum Encyclopedia, Vol. 20, 1987, p.143

88. Petroleum News (Supp.), November 1980, pp.39-43.

89. Green, "The Offshore-Oil Race", China Bus. Rev., July-August 1981, pp.55-56.

90. Zhang, Z.K., "The Contract Form for the Exploitation of Offshore Petroleum Resources in Cooperation with Foreign Enterprises and its Legal Characteristics", in China Institute for Marine Development Strategy, Maritime Law and Policy, Vol. 1 (Beijing: Ocean Press, 1990), p.187 (in Chinese).

91. "The Norwegian Experience and China's Oil Policy", Petroleum News, Special Supp., November 1980, p.39; For a summary of Norway's standard joint venture agreement, see Barrows Company, Petroleum Legislation, *supra* note 64, Supp. 66, 1987, pp.66-73; Bull, H.J., "Norwegian Offshore Petroleum: the Legal and Administrative Response", 25 Scandinavian Studies of L. 31 (1981).

92. As a matter of fact, China had utilized foreign investment in the form of compensation trade agreements, which was in essence a different form of production sharing. Under a compensation trade agreement, China would purchase capital equipment and pay for the equipment with what it produced. Like production sharing, the compensation trade agreement involves the import of foreign capital and technology without an outflow of foreign exchange. For instance, the then Minister of Foreign Trade Li Qiang, told a group of foreign investors in 1978: "You help us mine coal and we shall give you coal. You help us with oil and we shall give you oil. You supply us with equipment and we shall compensate you with what it produces..." Ta Kung Pao, December 21, 1978, p.20. Cf. also Torber and Thomson, "China's Joint Venture Law: A Preliminary Analysis", 12 Vand. J. Transnat'l L. 822 (1980).

93. Jones, *supra* note 40, pp.52-56; For a brief summary of the Japanese contract, see Barrows Company, Offshore Petroleum Industry, *supra* note 37, Supp. 42, 1980, p.57.

94. *Ibid.*

95. The formula derives its name from the fact that it was first utilized in the Japanese contract for the Bohai Gulf. The formula calls for: (a) 15 per cent to go to the operator to cover the day-to-day expenses of operations; (b) 42.5 per cent to be retained by the Chinese government; and (c) the final 42.5 per cent to be split: the first part to remunerate the foreign contractor for the risks of exploration; the second part to compensate both Chinese and foreign parties for their investment in exploration and development. If any oil remains from this third part, the foreign firms have the right to purchase it at international market price.

96. An advanced draft of the model contract was presented in 1980. The revised draft dated May 10, 1982 was included in the bidding package. The 1982 draft was further amended and adjusted as a result of comments made under contract negotiations, and the resulting model contract of 1983 was used for the first bidding round. For a summary of the 1982 Model Contract, see Barrows Company, Petroleum Legislation, *supra* note 64, Supp. 45, 1982, pp.13-20.

97. Findings by the author from a comparison of the two model contract. Cf. also "Petroleum Update", China Market Intelligence, December 1985, p.4 .

98. You, *supra* note 38, pp.7-8; Yang, *supra* note 69; Zhou, F.Q., "The Status and Prospects of Energy in China to 2005", 8 Energy Exploration and Exploitation 316 (1990); "Petroleum Investment Incentives of 1987", in Barrows Company, Petroleum Legislation, *supra* note 64, Supp. 70, 1988, pp.12-13.

99. For a general discussion of the Chinese offshore contract system, see Moser, M.J., "Legal Aspects of Offshore Oil and Gas Exploration and Development in China", in Moser, M.J., ed., Foreign Trade, Investment, and the Law in the People's Republic of China, 2nd ed. (Hong Kong: Oxford University Press, 1987), pp.270-303; Bevan, P.B., "Current Development in Oil and Gas Law, Exploration in China: What is Next?", in Energy Law 1981, Vol. 1, Proceedings of Seminar organized by the Committee on Energy and Natural Resources Section and Business law, IBA, April 26-May 2, 1981, Banff, Alberta, Canada, pp.191-200; Barrows, G., "Chinese Oil Regulations and Proposed Petroleum Contracts", in *ibid.*, pp.171-90; Zhang, *supra* note 90; and Yang, *supra* note 69; Peng, D.D., "China's Offshore Oil Policy and Legislation", 11 J.E. & Nat. Res. L. 36-47 (1993).

100. Art. 5 of the Offshore Petroleum Regulations, *supra* note 64.

101. Paras. 2 and 3 of the Bid Proposal Form (A) and Bid Proposal Form B of CNOOC (documents on the author's file). The bidding package of CNOOC usually includes the Offshore Petroleum Regulations, the model contract, bid proposal forms, and the tax laws.

102. For information of contract negotiation and approval in China, see UNCTC, Foreign Direct Investment in the People's Republic of China, UN Doc. ST/CTC/73, 1988, pp.85-87.

103. Art. 30 (30.5) of the Model Contracts, *infra* note 107.

104. *Ibid.*, art. 27; and art. 6 of the Offshore Petroleum Regulations, *supra* note 64.

105. The shortest and longest time it took the Foreign Investment Commission to approve the contracts concluded prior to 1991 are four days and 128 days respectively. The average time is approximately 29 days. Information derived from CNOOC, "Contract Statistics", *supra* note 45, pp.1-4.

106. Before the third bidding round, the effective date of the contract was the first day of the following month after the contractor received the approval from CNOOC. Art. 27 of the 1983 and 1985 Model Contracts, *infra* note 107.

107. Contract references in this chapter are to the following:

(1) Model Contract for Offshore Operations (Beijing, China: China National Offshore Oil Corporation, 1983), 85p.;

(2) Model Contract for the Second Round of Bidding (Beijing, China: China National Offshore Oil Corporation, March 1985), 83p.;

(3) Model Contract for the Third Round of Bidding (Beijing, China: China National Offshore Oil Corporation, September 1988), 114p.;

(4) Offshore Contract Dated December 1, 1983 between CNOOC and Pearl River Operating Company, Getty Oil International (Orient), Inc., Japex Hanhai Ltd., SunOrient Exploration Company, Texas Eastern Orient, Inc. and Hunan Oil Development Company, Ltd. (Pearl River contract);

(5) Petroleum Contract dated May 28, 1985 between Hai Nan Petroleum Development Corporation and CSR/BHP/Basin/Base Resources (onshore);

The three model contracts are on file in the author's office; the 1983 and 1985 Model Contracts are also reprinted in Barrows Company, Asia Contracts, *supra* note 27, Supp. 78, 1983, pp. China 1-85 and Supp. 88, 1986, pp.1-63 (hereinafter the "Model Contracts").

The two individual contracts are reprinted in Barrows Company, Asia Contracts, *ibid.*, Supp. 98, 1988, pp.1-40 and Supp. 97, 1988, pp.1-83.

The above contracts are hereinafter collectively referred

to as the "Model and Individual HCs" unless otherwise specified.

108. Art 9 of the Constitution of the People's Republic of China (1982), Folsom and Minan, Law of China, *supra* note 84, p.948.

109. Witnesseth of the Model and Individual HCs, *supra* note 107. Like the Offshore Petroleum Regulations, all the Model Contracts fail to make clear, however, the precise extent of such jurisdictions.

110. *Ibid.*

111. Art. 7 of the Offshore Petroleum Regulations, *supra* note 64.

112. Figures based on CNOOC, "Contract Statistics", *supra* note 45.

113. As a matter of fact, BP has thus far signed, both alone and together with other companies, 15 various contracts with a total contract area amounting to 275,000 km².

114. *Supra* note 112.

115. Art. 4 of the 1983 and 1985 Model Contracts, *supra* note 107.

116. Art. 4 of the 1988 Model Contract, *supra* note 107.

117. Yang, *supra* note 69, p.12; see the text and its accompanying notes 133-36 in this chapter.

118. *Supra* note 116, art. 4 (4.3).

119. It is, however, to be noted that CNOOC has never spelled out the specific criteria regarding the "deep water depth" and "high risks", which seem to be at the discretion of the state oil company.

120. *Supra* note 116, art. 4 (4.4).

121. Zhou, *supra* note 98, p.315.

122. *Supra* note 116, art. 4 (4.5).

123. *Ibid.*, (4.7). This provision has a proviso whereby a longer duration may be extended under some special circumstances.

124. Art. 5 (5.2 & 5.3) of the Model Contracts, *supra* note 107.
125. Art. 6 of the Model and Individual HCs, *supra* note 107.
126. *Supra* note 124, art. 6 (6.3 & 6.4).
127. Art. 6 (6.2.4 & 5) of the 1983 and 1985 Model Contracts; art. 6 (6.1.4 & 5) of the 1988 Model Contract, *supra* note 107.
128. *Ibid.*, art. 6 (6.5) of the 1983 and 1985 Model Contracts; and art. 6 (6.4) of the 1988 Model Contract.
129. *Ibid.*, art. 6 (6.6 - 8) of the 1983 and 1985 Model Contracts, and art. 6 (6.5 - 7) of the 1988 Model Contract.
130. Art. 6 (6.3) of the 1983 and 1985 Model Contracts, *supra* note 107.
131. See the text and its accompanying notes 133-36 in this chapter.
132. Yang, *supra* note 69, p.13.
133. Approximately 20 of such agreements have thus far been signed with CNOOC.
134. Art. 6 (6.1.1 & 6.2): Second Alternative of the 1988 Model Contract, *supra* note 107.
135. *Ibid.*
136. *Ibid.*, art. 6 (6.3): the First and Second Alternatives.
137. For a description of the joint venture contract, see UNCTC, Alternative Arrangements, UN Doc. ST/CTC/43, 1982, pp.48-52.
138. Hossain, K., Law and Policy in Petroleum Development (New York: Nichols Publishing, 1979), p.121.
139. Mikesell, R.F., Petroleum Agreements in Developing Countries (Washington, D.C.: Resources for the Future, Inc., 1984), p.27.
140. See art. 7 of the Offshore Petroleum Regulations, *supra* note 64.
141. Art. 12 (12.1.1 & 2.2) of the Model Contracts, *supra* note 107.
142. *Ibid.*, art. 12 (12.1.2).

143. *Ibid.* Some companies are concerned with CNOOC's short notice of the degree of its participation because there might not be enough time for them to arrange financing for the development stage. Brown, C. "Tough Terms for Offshore Oil", China Bus. Rev., July-Aug. 1982, p.37.
144. Conversation with CNOOC's legal staff (April 30, 1989).
145. *Supra* note 141, art. 7 (7.1).
146. *Ibid.*, art.7 (7.5). The contractor has the same right when CNOOC acts as the operator.
147. *Ibid.*, art. 7 (7.1.2).
148. *Ibid.*, (7.3).
149. *Ibid.*, (7.2.4).
150. People's Daily (overseas ed.), March 21, 1990, p.5 and March 31, 1990, p.3.
151. Art. 6 (1) of the Law of the People's Republic of China for Equity Joint Ventures Using Chinese and Foreign Investment, reprinted in People's Daily (overseas ed.), April 5, 1990, p. 2; for more information of the amendments, see Zhou, L., "People's Republic of China: Legislation— Equity Joint Venture Law—Amendments", 8 J.E. & Nat. Res. L. 305 (1990).
152. Art. 7 (para. 1) of the 1988 Model Contract, *supra* note 107.
153. Arts. 8 and 9 of the Model Contracts, *supra* note 107.
154. *Ibid.*, art. 8 (8.7).
155. *Ibid.*, art. 9 (9.5).
156. *Ibid.*, art. 10 (10.2 - 2.3) of the Model and Individual HCs, *supra* note 107.
157. Blinn, K.W. et al., International Petroleum Agreements (London: Euromoney Publications, 1986), pp.134-35.
158. *Supra* note 153, art. 4 (4.3).
159. Blinn, International Petroleum Agreements, *supra* note 157.
160. *Supra* note 156, art. 11 (11.1 - 11.4).

161. *Ibid.*, (11.6-11.6.2).
162. For instance, there has never been any sole risk development in any of the North Sea sectors. See Frihagen, A., "The Chinese and Some Developing Nations' License Regimes—What can We Learn from Them?", a paper delivered at the Seventh Solstand Oil and Gas Law Conference, Bergen, Norway, 1984, p.21.
163. *Supra* note 156, art. 1 (1.17).
164. *Ibid.*, art. 13 (13.2.1) .
165. Int'l Petroleum Encyclopedia, Vol. 17, 1984, p. 238.
166. *Supra* note 156, arts. 13 (13.2.2) and 12.
167. *Ibid.*, art. 13 (13.2.3 & 4).
168. Art. 13 (13.2.) of the 1985 and 1988 Model Contracts, *supra* note 107.
169. *Ibid.* The "profit oil" and "allocable profit oil" in the first two Model Contracts are renamed "remainder oil" and "allocable remainder oil" in the 1988 Model Contract.
170. See the text and its accompanying notes 186-87 in this chapter.
171. For an illustrative figure of allocation of gross production under the 1983 and 1985 Model Contracts, see Barrows Company, Offshore Petroleum Industry, *supra* note 37, Supp. 66, 1986, p. 65, 66; and ———, Petroleum Legislation, *supra* note 64, Supp. 70, 1988, p.16; and Int'l Petroleum Encyclopedia, Vol. 17, 1984, p.239.
172. Arts. 12 (12.2.1) and 13 (13.2.2.2 & 3) of the Model Contracts, *supra* note 107.
173. *Ibid.*, art. 13 (13.2.2.2.d).
174. Art. 12 (12.2 - 3) of the Model and Individual HCs, *supra* note 107.
175. *Ibid.*, art. 14 (14.1).
176. Art. 14 (14.6) of the 1983 and 1985 Model Contracts and art. 14 of the 1988 Model Contract, *supra* note 107.
177. Woodard, China's Changing Petroleum Industry, *supra* note 36, p.13.

178. "Exhibit: Economic Comparison: Far East-Pacific Rim Countries", in Yang's updated paper, *supra* note 69, pp.23-25.
179. Correspondence with CNOOC's legal staff (April 8, 1992).
180. Int'l Petroleum Encyclopedia, Vol. 17, 1984, p.238.
181. "The X Factor: Is Chinese Oil Worth China's Price?", Bus. Week, March 19, 1984, p.98.
182. Jones, G.C.L. and Jacobs, F.A., "The Economics of Marginal Offshore Oil Discoveries in China", O & G J., March 12, 1984, pp.79-84.
183. Brown, *supra* note 143, p.36; see also Rich, *supra* note 75, p.133.
184. Yang, *supra* note 69, pp.10-11.
185. Art. 13 (13.2.1) of the 1983 Model Contract and art. 13 (13.2.1.b) of the 1985 Model Contract, *supra* note 107.
186. Document on the author's file.
187. People's Daily, January 3, 1989, p.2.
188. The Onshore Petroleum Regulation provides for a different rate of royalty based on nine tiers of incremental annual gross production ranging from 0 per cent for the portion of annual gross production of not exceeding 50,000 metric tons to 12.5 per cent for the portion in excess of one million metric tons. For a gas field, the royalty rate is also based on nine tiers ranging from 0 per cent for the portion not exceeding 100 million standard cubic metres to 12.5 per cent for the portion in excess of two billion standard cubic metres. The regulations came into effect on January 1, 1990 (document on the author's file).
189. Conversation with officials of the Ministry of Finance of P.R. China (July 20, 1989).
190. Art. 9 of the Offshore Petroleum Regulations, *supra* note 64; and art. 20 of the Model and Individual HCs, *supra* note 107.
191. Peck, J. and Clarke, B., "Taxing the Oil Industry", China Bus. Rev., March/April 1990, pp.20-26; Ho, M.S., "Income Tax on Foreign Oil Companies in the People's Republic of China", 5 O & G Finance and Accounting 195-212 (1990).

192. For an English translation of the law, see Chu, F., Moser, M. and Nee, O., ed., Commercial, Business and Trade Laws: People's Republic of China (Dobbs Ferry, N.Y.: Oceana Publications, Inc., 1982), pt. 13. Please note that various adjustments of the industrial and commercial tax rates have been made over the years, including a major adjustment in July 1982. See State Council Gazette of the People's Republic of China, 1982, p.552 (in Chinese).

193. For a detailed discussion of the CICT, see Gelatt, T. A. and Pomp, R.D., "China's Tax System: an Overview and Transactional Analysis", in Moser, ed., Foreign Trade, Investment, and the Law in China, *supra* note 99, pp.47-48.

194. For details, see Peck and Clarke, *supra* note 191.

195. Art. 3 of the Income Tax Law of the People's Republic of China Concerning Foreign Enterprises provides that the tax rate for foreign companies with establishments in China range from 20 per cent on the portion of annual income up to RMB ¥250,000 to 40 per cent on income over RMB ¥1 million, with a local tax of 10 per cent on the same taxable income. Consequently, the provisions make a total tax rate ranging from 30 to 50 per cent. For the text of the law, see Chu, Morse and Nee, ed., Commercial, Business and Trade Laws, *supra* note 192, pt.13.

196. Vernor, B., "Offshore Oil Contracts", China Bus. Rev., March/April 1990, p.24.

197. Art. 5 of the Income Tax Law of the People's Republic of China Concerning Foreign Investment Enterprises and Foreign Enterprises. The law was adopted on April 9, 1991 and entered into force on July 1 of the same year. reprinted in People's Daily (overseas ed.), April 17, 1991, p.3. For a discussion of the new tax law, see Parnell, A., "The New Foreign Corporate Income Tax Law of the People's Republic of China", 9 OCLTR 19-24 (1991).

198. Int'l Petroleum Encyclopedia, Vol. 17, 1984, p. 239. It was reported that the U.S. Treasury Department quietly advised China's Ministry of Finance on the creation of a corporate tax structure that would achieve creditability against the United States taxes for petroleum taxes paid to China by the American oil companies.

199. Art. 12 of the Implementing Regulations on Income Tax Law of the People's Republic of China Concerning Foreign Investment Enterprises and Foreign Enterprises, reprinted in People's Daily (overseas ed.), July 2-3, 1991, p.3; 3.

200. Paras. 4 & 5 of Document of the Ministry of Finance No. (82) CaiShuiZi 98, dated March 20, 1982, read in part:
If a foreign enterprise, which is engaged in the co-operative exploitation of offshore petroleum resources, holds two contract areas the loss incurred in one contract area, owing to the termination of operation or other causes, will be allowed to be offset from the proceeds of the other contract area. The taxable income shall be computed on the basis of two contract areas put together.
... the reasonable exploration expenses incurred in any contract area within which commercial production has not yet commenced may be amortized from revenues of oil/gas fields within a contract area that has gone into commercial production...

Cited in Ho, *supra* note 191, p.203.

201. Document of the Offshore Oil Taxation Bureau of the Ministry of Finance No. 85 Cai shui You Zheng Zi 21 issued on September 20, 1985. Cited in *ibid.*, p.204.

202. The Provisions on Amortization of Expenses by Foreign Oil Companies, issued by the Ministry of Finance on April 1, 1988 (document on the author's file); and art. 48 (para.2) the Implementing Regulations on the Income Tax Law, *supra* note 199, p.3.

203. Peck and Clarke, *supra* note 191, pp.24-25.

204. For instance, the income tax is 22 per cent in Lebanon, 25 per cent in Brazil, 47 per cent in Canada, 50 per cent in Gambia, Germany, Thailand and Zaire, 70 per cent in the Netherlands, 85 per cent in Abu Dhabi, Iran, Kuwait. For more information, see Barrows Company, World Petroleum Arrangements (New York: The Barrows Company, Inc., 1985), pp.473-94.

205. Kemp, A., Petroleum Rent Collection around the World (Halifax: The Institute for Research and Public Policy, 1987), pp.184-85.

206. Yang, *supra* note 69, pp.10-11.

207. Peck and Clark, *supra* note 191, p.26.

208. Art. 10 of the Offshore Petroleum Regulations, *supra* note 64.

209. Yang, *supra* note 69, pp.9-10.

210. Art. 14 (14.4.1) of the Model and Individual HCs, *supra* note 107.

211. Art. 14 (14.4.4.5) of the 1988 Model Contract, *supra* note 107. Please note that this provision is different from that of the 1983 Model Contract which stipulates that the final determination of the price will be the arithmetic average of the prices finally proposed by the parties respectively.
212. See the text and its accompanying note 199 in this chapter.
213. Ho, *supra* note 191, pp.198-99.
214. Brown, *supra* note 143, p.36.
215. *Supra* note 210, art. 15.
216. Ondrik, R.S., "Rig Leasing", China Bus. Rev., May-June 1983, p.42; ———, "Training Chinese Oilfield Workers", *ibid.*, July-August 1984, pp.7-11.
217. Ondrik, *ibid.*, p. 42.
218. For more information, see Ondrik, *ibid.*, pp.7-11; Gorman, T.W., "Chinese Legal Inducements for the Development of a Domestic Petroleum Industry", 20 Texas Int'l L.J. 192-97 (1985).
219. Yang, *supra* note 69, pp.13-14.
220. Art. 16 and Annex IV: Training of Chinese Personnel and Transfer of Technology of the Model and Individual HCs prior to 1988, *supra* note 107.
221. *Ibid.*, art. 16 (16.1-3).
222. Correspondence with CNOOC's legal staff (April 8, 1992).
223. *Supra* note 220, art. 16 (16.4).
224. For an excellent study on training and technology transfer in the Chinese offshore contract, see Oldham, G. et al., Technology Transfer to the Chinese Offshore Oil Industry, SPRU Occasional Paper Series No. 27, Science Policy Research Unit, University of Sussex, November 1987 (hereinafter Offshore Technology Transfer); see generally, Goossen, R.J., Technology Transfer in the People's Republic of China: Law and Practice (Dordrecht: Martinus Nijhoff Publishers, 1987). See also Gorman, *supra* note 218, pp.197-99.
225. Denny, D.L., "The Quest for Control", China Bus. Rev., May-June 1983, p.25.

226. Oldham, Offshore Technology Transfer, *supra* note 224, p.48.
227. *Ibid.*, pp.34-35, 48.
228. Cited in *ibid.*, p.30.
229. *Ibid.*, p.27.
230. *Ibid.*, pp.27-31.
231. For more information, see Ondrik, *supra* note 216, pp.7-11; and Gorman, *supra* note 218, p.192-95.
232. Annex IV of the 1983 and 1985 Model Contracts, and art. 16 (16.1) of the 1988 Model Contract, *supra* note 107.
233. Oldham, Offshore Technology Transfer, *supra* note 224, pp.22-23, 34 and 51. One oil company's general manager said: "There is very little technology that we won't be willing to transfer to the Chinese. It would only be 1 to 5 per cent of our exploration technology which we would not want available to our competitors", *ibid.*, p. 34.
234. *Ibid.*, p.21.
235. For instance, the Chinese education system is known to be strong on theory but relatively weak on practice. The management system provides fewer rewards for success but too many penalties for mistakes.
236. The U.S. government had objections to the training and technology transfer provision in the Chinese contract, fearing the transfer of confidential defence-applicable technology to China. For more information, see Wall St. J., October 12, 1982, p.32; Capener, *supra* note 75, pp.462-64; and Rich, *supra* note 75, pp.133-34.
237. Art. 16 (16.2) of the 1988 Model Contract, *supra* note 107.
238. *Ibid.*, art. 16 (16.1).
239. *Ibid.*, (16.3).
240. Oldham, Offshore Technology Transfer, *supra* note 224, p.48.
241. *Ibid.*, p.33. For instance, a recent offshore contract signed by Namibia with Ranger Oil Ltd., Calgary, Canada, requires the contractor to spend \$800,000 training Namibians during the first 4 years of the agreement. See O & G J., June

22, 1992, p.34.

242. Art. 17 (17.1 & 2) of the Model and Individual HCs, *supra* note 107. See also art. 22 of the Offshore Petroleum Regulations, *supra* note 64.

243. *Ibid.*, (17.3) of the Model and Individual HCs; and art. 23 of the Offshore Petroleum Regulations.

244. Rich, *supra* note 75, p. 136.

245. Art. 18 (18.1) of the Model and Individual HCs, *supra* note 107.

246. *Ibid.*, (18.2.1).

247. *Ibid.*, (18.2.2).

248. *Ibid.*, art. 21.

249. People's Daily (overseas ed.), April 10, 1992, p.6.

250. The contract provides only that "CNOOC shall, in conformity with applicable laws and regulations of the government of the People's Republic of China on confidentiality and by taking into account the international practice, determine the confidentiality periods..." *Supra* note 245, art. 22.

251. *Ibid.*, art. 23.

252. For a discussion of *force majeure* in China, see Ross, L., "Force Majeure and Related Doctrines of Excuse in Contract Law of the People's Republic of China", 5 J. of Chinese law 58-106 (1991).

253. *Supra* note 245, art. 25.

254. Boyle, P., "Commercial Dispute Resolution in the People's Republic of China", 4 OGLTR 247-54 (1985/86); Chan, J., "Settlement of Foreign Trade Disputes in the People's Republic of China", 49 Arbitration 282-87 (1984). China has not accepted the compulsory jurisdiction of the International Court of Justice and has never submitted itself to any third party arbitration.

255. Art. 26 of the Model and Individual HCs, *supra* note 107.

256. For a discussion of the Chinese arbitration, see Moon-chul Chang, The Autonomy of International Commercial and Maritime Arbitration: International, Canadian and Far Eastern Perspectives, J.S.D. thesis, Dalhousie University, 1988,

Halifax, Canada, ch. 4, pp.254-350.

257. The China International Economic and Trade Arbitration Commission perhaps handles more cases every year than any other arbitration panels anywhere in the world. But its decisions are in many cases unenforceable because the Chinese courts are reluctant to issue orders against the national defendants. This tradition must change if China hopes to get the best from foreign investments.

258. Art. 5 of the Foreign Economic Contract Law of 1985, reprinted in Folsom and Minan, Law in China, *supra* note 84, p.687.

259. *Supra* note 255, art. 28.

260. *Ibid.*

261. Blinn, International Petroleum Agreements, *supra* note 157, pp.308-09.

262. *Supra* note 255, art. 28 (28.2).

263. Blinn, International Petroleum Agreements, *supra* note 261.

264. Sometimes a stabilization clause can cause serious disputes between the contracting parties. see Award of Aminoil-Kuwait Arbitration, March 24, 1982, 21 I.L.M. 976 (1982). For a discussion of the award, see Mann, F.A., "The Aminoil Arbitration", British YB Int'l L. 213-21 (1983).

265. Art. 40 of the Foreign Economic Contract Law of 1985, *supra* note 258, p.693.

266. Ross, L., Environmental Policy in China (Indiana: Indiana University Press, 1988); and Ross, L. and Silk, M. A., Environmental Law and Policy in the People's Republic of China (Connecticut: Greenwood Press, Inc., 1987); and Glaeser, E., ed., Learning From China: Development and Environment in Third World Countries (London: Allen & Unwin, 1987).

267. The Stockholm Conference was the first international forum the People's Republic ever participated in after its re-entry into the world community through admission to the United Nations in 1971. The country began to play an increasing role in international affairs by actively participating the Stockholm Conference and the Third United Nations Conference on the Law of the Sea.

268. "Chinese Delegation Makes Statement on 'Declaration on Human Environment' ", "China's Ten Cardinal Principles on Amending 'Declaration on Human Environment' ", Peking Review, June 23, 1972, pp.8-11. See also Ross, Environmental Policy in China, *supra* note 266, p.137. Greenfield, J. China and the Law of the Sea, Air, and Environment (Germantown, Md.: Sijthoff and Noordhoff, 1979), pp.219-21.
269. People's Daily (overseas ed.), April 30, 1992, p. 6 and May 5, 1992, p.2; Qu Geping, Director of State Environmental Protection Agency, "China's Environmental Policy and World Environmental Problems", 2 Int'l Env. Aff. 104 (1990).
270. Nadelson, R., "The Ruined Earth", Far E. Econ. Rev., 19 September 1991, p.39. "The East is Black", Time (Canadian Ed.), April 29, 1991, pp.44-51.
271. "Beijing Wants Rich to Help Pay for Cleanup", The Globe and Mail, June 2, 1992, p.A1.
272. Li, P. (the Chinese Premier), "Protecting the Environment is a Major Task Facing China", speech at the 2nd National Environmental Protection Work Conference, December 1983, reprinted in Ross and Silk, Environmental Law and Policy in China, *supra* note 266, pp.35-43.
273. Art. 26 of 1982 Constitution, reprinted in Folsom and Minan, Law in China, *supra* note 84, pp.951. This article is by and large a reproduction of Article 11 of the 1978 Constitution.
274. For a list and texts of the major legislation, see Ross and Silk, Environmental Law and Policy in China, *supra* note 266, pp. VIII-X, 285-424.
275. Silk, M.A., "Investing and Doing Business in China: the Environmental Implications", in Moser, Foreign Trade, Investment, and the Law, *supra* note 193, p.407; see also Yuan, P.C., "China's Offshore Petroleum Resources Law—A Critical and Interpretative Analysis", 16 Int'l L. 660-664 (1982).
276. Qu Geping, *supra* note 269, p.104.
277. Nadelson, *supra* note 270, p.39.
278. "Address at the United Nations Conference on Development and Environment" by the Chinese Premier Li Peng, reprinted in People's Daily (overseas ed.), June 6, 1992, p.1; see also Globe and Mail, June 2, 1992, p. A1.
279. Art. 21 (21.3) of the Model and Individual HCs, *supra* note 107.

280. Art. 7 (7.2.9) of the 1985 and 1989 Model Contracts. Please note this requirement was missing in the 1983 Model Contract, *supra* note 107.
281. *Supra* note 279, art. 8 (8.5.2).
282. *Ibid.*, art. 24 (24.2 & 3).
283. *Ibid.*, art. 24.
284. *Ibid.*, art. 24 (24.1); art. 24 of the Offshore Petroleum Regulations, *supra* note 64.
285. The Marine Environmental Protection Law of the People's Republic of China (Beijing: Ocean Press, 1982) (hereinafter MEPL); and Regulations of the People's Republic of China Concerning Environmental Protection in Offshore Oil Exploration and Exploitation (Beijing: State Oceanic Administration, 1983) (hereinafter the Offshore Environmental Regulations), reprinted in Ross and Silk, Environmental law and Policy in China, *supra* note 266, pp.313-19, 330-35.
286. *Ibid.*, art. 10 of MEPL, and art. 5 of the Offshore Environmental Regulations.
287. *Ibid.*, art. 17 of MEPL, arts. 6 and 7 of the Offshore Environmental Regulations.
288. *Ibid.*, arts. 13-15 of MEPL, and arts. 11, 12 and 15 of the Offshore Environmental Regulations.
289. *Ibid.*, art. 11 of MEPL, and art. 13 of the Offshore Environmental Regulations.
290. *Ibid.*, art. 17 of MEPL; art. 16 of the Offshore Environmental Regulations.
291. *Ibid.*, arts. 10 and 19 of the Offshore Environmental Regulations.
292. *Ibid.*, art. 27.
293. *Supra* note 285, art. 44 of MEPL.
294. The liability ceiling in the Chinese Offshore Environmental Regulations is far from sufficient when compared with that of the Offshore Pollution Liability Agreement (OPOL) which set the limit at \$25 million per incident. For the text of the agreement, see 13 I.L.M. 1409 (1974).
295. Boxer, B., "China's Environmental Prospects", 29 Asian Survey 683 (1989).

296. ILO, China: Petroleum Development, *supra* note 3, p.52. See also Peng, *supra* note 99, pp.44-45.
297. Goodwin, jr., R.C., "New Marine Environmental Protection Law will Affect Oil Exploration and Development", 5 EAER 9-11 (1983).
298. Chen, X.H. and Li, Y.Z., "Warning Bells to the Big Oil Producer: Part I", Outlook Weekly, Vol. 35, August 31, 1992, p.14 (the author's translation).
299. O & G J., December 30, 1985, p.162.
300. ILO, China: Petroleum Development, *supra* note 3, p.39.
301. Chen and Li, *supra* note 298, pp.13-14.
302. For details, see Chen and Li, "Warning Bells to the Big Oil Producer: Parts II", *supra* note 298, No. 36, September 7, 1992, pp.14-15; and "Discussions and Prospects of the Chinese Oil Industry", *ibid.*, No. 41, October 12, 1992, pp.11-13.
303. O & G J., September 28, 1992, p.23.
304. Chen and Li, *supra* note 298, p.13.
305. O & G J., September 28, 1992, p.23.
306. Brown, *supra* note 143, p.35.
307. Boulos, A.J., "Mutuality of Interests", in IBA, Energy Law '90 (London: Graham & Trotman, 1990), pp.4-31.
308. Art. 3 of the Offshore Petroleum Regulations, *supra* note 64.
309. Art. 5 of the Law of the People's Republic of China Concerning Enterprises with Sole Foreign Investment adopted on April 11, 1986, *supra* note 71.
310. People's Daily (overseas ed.), March 31, 1990, p.3.
311. Recently, a bold decision has been adopted by the Chinese leadership that the reform and open-door policies will be firmly upheld for 100 years.
312. Frihagen, *supra* note 162, p.5.
313. Brown, *supra* note 143, p.35.

314. Int'l Petroleum Encyclopedia, Vol. 17, 1984, p.238.

315. Correspondence with CNOOC legal staff (April 8, 1992); cf. also Woodard, China's Changing Petroleum Industry, *supra* note 36, p.13; For detailed cash flow assumptions under the 1982 Model Contract, see Barrows Company, Petroleum Legislation, *supra* note 64, Supp. 70, 1988, pp.17-24.

316. Mr. David, S. Holland, senior Vice-president of Pennzoil Exploration and Production Co., cited in Int'l Petroleum Encyclopedia, *supra* note 314.

317. People's Daily (overseas ed.), March 31, 1990, p.3; and UNCTC, Foreign Direct Investment in China, *supra* note 102, p.11.

318. Mr. Philippe Ma of Total China, cited in Ondrik, *supra* note 216, p.11.

319. China announced on February 18, 1993, the opening of 10 more provinces and autonomous regions for international exploration, including the Tarim Basin, the second largest and the least explored in the world. The new acreages, totalling 417,900 km² with an estimated oil reserves of 8.2 billion tons and gas potentials of 2,500 billion m³, will be offered through 2 rounds of international bidding, with the first round scheduled in March 1993. See People's Daily (overseas ed.), February 18, 1993, p.1. For a map of the blocks, see Notification for Bid on the Exploitation of Petroleum Resources in Co-operation with Foreign Enterprises by China National Oil and Gas Corporation, February 17, 1993, reprinted in People's Daily (overseas ed.), February 24, 1993, p.8. The country has so far opened 21 of its 30 provinces, autonomous regions and municipalities for foreign participation, and signed at least six onshore petroleum contracts since the first onshore offering in the 11 provinces in southern China in 1985.

For a brief discussion of the onshore contract terms, see Kirkwood, C., "The Chinese Onshore Exploration Agreements", O & G J., December 30, 1985, pp.162-67.

Chapter Seven

A Comparative Analysis of Modern Offshore

Petroleum Arrangements

I. Introduction

We have now completed a vertical examination of the principal forms of modern offshore petroleum contracts used in developing countries. Changing direction once more, this chapter is devoted to a horizontal comparative analysis of these agreements. This analysis will not only highlight the main features and trends, the legal nature and basic functions of modern petroleum agreements, but will also help to identify the major problematic areas in these arrangements.

As illustrated in the national case studies, the issue of environmental protection and sustainable development of petroleum resource has largely been ignored in the four representative petroleum systems. In fact, it is a common problem shared by many other developing countries in their petroleum arrangements with international oil companies. This problem will be further examined in this chapter in a comprehensive manner with a view to offering more critical analysis and legal insight into the question.

Moreover, the issue of sustainable development in international petroleum exploration and exploitation

agreements raised in this study will be addressed more specifically in the subsequent chapter in order to examine the cause of the problem, study the likely impacts and consequences, and explore for a prescription for it. It is hoped that these comparative and theoretical analyses will enable us to identify the new direction that the evolving contractual relationships between governments and companies should take in the future.

II. Comparison of modern petroleum contracts

The following table contains a comparative analysis of the structure and substance of modern petroleum agreements. Used as examples are the modern concession contract in Thailand, the production-sharing contract in Indonesia, the risk service contract in Brazil and the hybrid or compound contract in China. Since the details of these O & G contracts have already been examined at length in each of the individual case studies, their contents and characters will, therefore, be set forth only to the extent that such a discussion will allow a comprehensive comparison to be reasonably carried out.

Table 21: Comparison of Modern Petroleum Contracts

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
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1. Contractual authority

Dept. of Mineral Resources is empowered by the 1971 Petroleum Act to implement concessionary development	Pertamina is granted exclusive "authority to mine" for oil and gas by Law No. 44 of 1960	Law No. 2004 of 1953 and the 1988 Constitution provide the petroleum industry to be a "monopoly of the Union" which is exercised by Petrobrás as the executive agency. Petrobrás is permitted, by Gov't decision in 1976, to engage foreign companies in domestic exploration under terms of RSCs. No further formality is involved on part of Brazilian Gov't in terms of approval.	CNOOC is exclusively authorized by the Petroleum Regulations of 1982 to develop offshore petroleum in co-operation with foreign enterprises.
DNR has the exclusive right to sign and award concession contracts with concessionaires	Pertamina has the authority to negotiate and execute contracts with foreign contractors		Petroleum rights are presented by CNOOC by means of signing contracts
Concession contracts require the approval of the Council of Ministers	PSCs must be approved by the Cabinet and the President		HCS negotiated by CNOOC must be approved by the Foreign Investment Commission

2. Relationship of the parties

DMR is a gov't agency that is responsible for administering petroleum legislation and concession agreements	Pertamina is a corporation owned by the Indonesian Gov't	Petrobrás is a corporation whose majority share is owned by the state	CNOOC is a state corporation with overall responsibility for offshore petroleum development
Legally only DMR rather than the Gov't of Thailand becomes a party to and is bound by the concession awarded to a private company	Foreign companies are engaged as general contractors to carry out petroleum operations for Pertamina	Foreign and private companies are hired with the sole right to perform the services required by Petrobrás	International oil companies can acquire petroleum rights only in the form of joint enterprises with CNOOC
The relationship is one of concession	The relationship is one of "contractorship"	The relationship is a hired risk service	The relationship is cooperative in nature

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
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3. Ownership of resources

Petroleum resources belong to the State, and the title to petroleum passes to the concessionaire at the wellhead

All mineral oil and gas are national riches controlled by the state, title to the contractor's share passes at the point of export

All subsoil and mineral rights are retained by the state, and the service contractor has no legal title to any production developed by him

All natural resources are owned by the People's Republic, the contractor receives its share when production is divided

4. Object of the contract and rights granted

The concessionaire is granted exclusive rights to petroleum operations, except refinery, including auxiliary rights to use land both within and outside the concession area

Pertamina is the public performer of the state in carrying out petroleum operations and the contractor executes, in the name and on behalf of it, all operation activities

The objective of RSC is the rendering by the contractor of the technical and financial services for exploration and development operations

Provision by the foreign partner of fund, technology, and managerial experience to cooperate with CNOC for offshore exploration is the objective of the HC

5. Risks

All risks are implicitly assumed by the concessionaire

Contractor executes petroleum operations "at its sole cost and risk"

Exploration and development services are carried out at the sole cost and risk of contractor

Exploration risk is contractor's responsibility

6. Contract area

Applicants can now hold up to five blocks, with a

Contract areas may range from 200 to 30,000 km², but usually

Contract areas are generally around 3,000 km²

Contract areas vary in size from 24 to 27,000 km², but

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
total area not exceeding 20,000 km ²	over 10,000 km ²		averaging at about 5,000 km ²
7. Contract duration			
The concession term is 26 years: 6 years for exploration and 20 years for production. One renewal of 3 years for exploration and 10 years for production is permissible	PSC has a duration of 30 years: six to ten years for exploration and the rest for production. The exploration period is extendable for another four years	RSC provides for an exploration period of 3 years (five for on-shore); a development period which is not specified; and a remuneration period as bid by contractor	HC has a 7-year exploration period which provides two alternatives, with different division, for choosing by contractor, an unspecified development period, and a 15-year production period
	The total duration can be extended through mutual agreements under unusual circumstances	The total duration varies from contract to contract	The total duration shall not exceed 30 years
8. Relinquishment			
50% (35% for deep water block) of the licensed area must be relinquished before end of the fourth year; the remaining area at end of the exploration period. Final area must not exceed 12.5% of the original area	The areas to be surrendered are negotiable. The area retained at end of the exploration period shall not be in excess of 20% of original area	Contractor must relinquish 50% of the service area at the end of the initial exploration period if it selects to continue the exploration	The following areas must be relinquished: 25% at the end of 3 years or the two sub-phases selected by contractor, 25% at the end of 5 years and remaining area at the end of 7 years.
Optional relinquishment at any time of the whole or part of the block is acceptable	Optional surrender is permitted at end of the 2nd or 3rd contract year and prior to the end of any subsequent year	Voluntary relinquishment is not provided for in the contract	Contractor has the right to withdraw from the agreement after having completed each stage

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
9. Exploration			
<p>Exploration obligation is required in the form of minimum expenditure and physical work which are proposed by concessionaire and agreed upon in individual contracts</p> <p>Gov't manager is authorized to approve necessary changes proposed by concessionaire in its work obligation</p>	<p>Work expenditure is a matter of bid by contractor and specified in the contract, which commonly range from \$15 to \$100 million</p>	<p>Exploration obligation in the form of expenditure and physical work is negotiated and set in the contract. The minimum expenditure must be guaranteed by a bank letter</p> <p>Contractor may exceed 10% of each budget item, providing the overall budget will not exceed more than 5%</p> <p>Contractor has drilling option</p>	<p>Exploration obligations in the forms of seismic lines, wildcats, and minimum expenditures are negotiated by the parties and set forth in contract</p> <p>Contractor has the right to incur limited excess expenditures under several circumstances, the aggregate of which can not exceed 5% of the annual budget</p> <p>Seismic option is available</p>
<p>"Ring fence" is provided</p>	<p>"Ring fence" is provided</p>	<p>"Ring fence" is provided</p>	<p>"Ring fence" is provided</p>
10. Exploitation			
<p>Commercial discovery is a matter of decision by concessionaire</p>	<p>A discovery is jointly declared by both parties</p>	<p>A discovery is: commercial if production produces an income greater than 110% of the total costs; marginal if less than 110% but greater than 100%; and noncommercial if less than 100%</p> <p>Contractor has final decision on commerciality</p>	<p>Decision of commerciality is made in Joint Management Committee</p> <p>Either party can develop on sole risk</p>

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
Exploitation operations are controlled and conducted by concessionaire	All development and production operations are carried out by contractor	Contractor is responsible for carrying out development operations at its own cost	Development operations are jointly carried out by CNOC and contractor at 51:49 shared costs respectively
The Gov't is entitled to produce at its sole risk if the concessionaire fails its request		Petrobrás will fully take over and conduct all production operations	CNOC takes over production after contractor fully recovers its costs
Management is primarily in the hands of concessionaire	Management responsibility is vested with Pertamina throughout the contract life	Contractor prepares exploration and development work programs and budgets and consults with Petrobrás	The joint enterprise and its operations are managed throughout the contract term by JHC
Progress reports and summary statements on expenditures are required	Contractor prepares and submits work program and budget for approval by Pertamina, which may suggest revisions but its approval will not be unreasonably withheld	JSC is set up at the start of commercial production. It supervises production operations but Petrobrás retains control of operations	Decisions of JHC are "made unanimously through consultation"
Obligations and duties for	Progress reports on petroleum operations are required	Progress reports on exploration and development operations are required	Reports to JHC on all aspects of the petroleum operations are required
Rights and obligations of the	Rights and obligations of the	Contractor's obligations	Obligations of the contractor

11. Management

12. Rights and obligations of the parties

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
the concessionaire are pre- scribed in the concession	parties are prescribed in the contract	and rights are prescribed in the contract	and CNOC are prescribed in the contract
13. Bonuses and other payments			
Concessionaire is to pay an agreed amount of signature bonus, e.g., \$40,000	Example of bonus payments are: compensation(signature) bonus: \$1 million to 5 million	A participation fee for a set of geological data is payable: \$250,000 to 500,000	HC requires a standard signa- ture bonus of \$1 million pay- able in three instalments
Annual bonus is charged from 0% at production level up to 10,000 b/d to 43.5% at over 30,000 b/d	Production bonus: \$1 million to \$40 million at production level ranging from 10,000 to 150,000 b/d		
Payment of an amount equiva- lent to the excess is re- quired as an annual benefit if concessionaire claims ex- penses exceeding 19% of pro- duction sold			
14. Royalty and other fees			
Surface reservation fee is Baht 100,000 per km ²			
A sliding scale royalty of 3.5% (5% for onshore) at less than 60,000 b/m to 12.5% (15.0% for onshore) at over to 600,000 b/m is payable	Royalty is not formally em- ployed in the PSC	Royalty is not employed un- der RSC	A sliding scale royalty from zero up to 1 million t/y to 10.5% over 4 million t/y for oil, and zero up to 2,000 million cm/y to 3% over 5,000

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
Royalty reduction not exceeding 30% for a period of 3 years is possible			million cm/y for gas is provided in Offshore Royalty Regulations
Royalty may be taken in cash or in kind by the State			Royalty is not payable before production reaches 1 million tons in any given year
			Royalty must be paid in kind
15. Gas clause			
The concession is silent on a gas discovery	The PSC has no gas provisions	A gas discovery is allowed to enjoy the same treatment as a petroleum one	General principles are set forth in the contract to deal with a gas discovery
16. Cost recovery			
Cost recovery is not provided for because all production is retained by the concessionaire	Non-capital cost is recovered directly in the current year as soon as income permits. capital cost is depreciated by using an accelerated checking balance method	Exploration costs are reimbursed with no interest and development expenses with interest	50 to 62.5% of production, after deduction of CICI and royalty, is set aside as cost recovery oil for recovering operation costs, exploration costs without any interest, and development costs with deemed interest
Concessionaires can amor-	Contractor recovers its costs from the remaining 80% of production after deduction of FIP	Reimbursement is effected by Petrobrás upon commencement of commercial Production	Costs are recovered by CNOC and contractor at the ratio of 51:49 respectively
	Capital cost recovery gener-	The rate of risk capital re-	Contractors can recover

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
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tise their capital costs
over 5 to 10 years

ally takes some 14 years

turn averages about 13
years

their costs within 4 to 6
years

Production is owned by
the concessionaire at
the wellhead

Profit oil is split between
Pertamina and contractor at
a ratio of 75:25 to 90:10
depending on the nature of
fields production levels up
to 50,000 b/d, through
150,000 b/d and over 150,000
b/d

Remuneration of risk services
will be made by Petrobrás in
accordance with a specific
formula and with a variable
bid by contractor for a
period between 10 to 20 years
as agreed in the contract

The Remainder Oil of 32.5 to
45% during, or 70 to 83.5%
after, after deduction of
CICI, royalty and costs, cost
recovery is subdivided in
accordance with the X factor
bid by contractor into "share
oil" for the State and "allo-
cable remainder oil" to be
split 51% to CNOOC and 49% to
contractor

Gas split is always 70:30 in
Pertamina's favour

The payment of remuneration
is made quarterly

China forfeits its claim to
"share oil" if annual peak pro-
duction fails to reach 1
million tons

Contractor may buy back
within the value of its re-
muneration a quantity of oil

Contractor has the option to
purchase a portion or all of
CNOOC's investment recovery oil

Price is set by concession-
aire in accordance with the
Petroleum Act

Oil price is set by Gov't on
the basis of monthly average
spot prices for a basket of
5 sales

FOB price with reference to
the long-term-contract-sales
price on the main world oil
market is used

17. Profit sharing or production allocation

18. Pricing

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
<p>Petroleum Income tax is 50% of net income</p> <p>A SRB (windfall profit tax) of 1% of specified Baht increments is payable if balance still exists after recovery of costs for the year</p>	<p>Income tax consists of 35% of taxable income and a further dividend tax of 20% on the balance, together making a total tax rate of 48%</p>	<p>Income tax is 25% of the net income</p>	<p>A Consolidated Industrial & Commercial tax of 5% is payable before any cost recovery and production split</p> <p>Income tax includes a flat 30% income tax with a 3% Local income tax, together making a combined rate of 33% of taxable income</p>
<p>Customs and other duties are exempted, but transfer of duty free goods is subject to the Gov't approval</p>	<p>Pertamina discharges all import duties on behalf of the contractor</p>		<p>Customs duties are generally exempted on goods imported for uses in the co-operative exploration</p>
<p>Equipment owned by concessionaire becomes gov't property free of charge upon expiration of the concession</p> <p>Properties that are not usable</p>	<p>Pertamina has title to all original data and contractor must submit copies of such data</p> <p>All equipment purchased by</p>	<p>The contractor is to furnish to Petrobras all information, data and interpretation of the same</p> <p>Title to movables and immo-</p>	<p>The ownership of all data vests in CNOOC</p> <p>All assets will be owned by</p>

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
at the end of concession are to be removed by concessionaire within three months	contractor becomes Pertamina's property when landed at an Indonesian port	ables is transferred to Petróbrás at end of the exploration period	CN00C when costs are fully recovered or the production period expires
22. Domestic supply			
Domestic supply is mandatory on first priority basis	Contractor must supply proportionate share of domestic needs at 10% of the export price	Contractor's right to buy-back may be suspended in case of crisis in national oil supply	
23. Goods and services, training and technology transfer			
Concessionaire is required in principle to give preference for domestic materials, services, and employment	Procurement between Rp 1 to 3 million and beyond requires approval by the Gov't	Local preference is not required	Preference shall be given to local employment, goods, and services provided price and quality are competitive
	Imports of goods and services available on local market needs prior approval but contractor is free at exploration stage to purchase its equipment		Int'l tendering is allowed by CN00C for procurement of most goods and services (cost of Chinese personnel is 30% lower than in other Southeast Asian states)
Concessionaire is to train and employ Thai nationals in its operations	Contractor is to prepare and carry out training programs and to employ qualified Indonesians		Contractor shall prepare and carry out training programs upon a commercial discovery
			Contractor must transfer all their advanced technology for China to master

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
14.50	19.80	NA	31.50
10.00	11.80	NA	21.10
9.80	9.40	NA	17.70
0.75	1.15	NA	3.60
0.69	0.83	NA	2.70
0.60	0.50	NA	1.60
(5.7)	60.00	NA	176.00
(53)	35.00	NA	52.00
(35)	37.00	NA	12.70
88.60	82.00	100	44.00
85.00	82.00	100	40.00
79.00	81.00	100	40.00
80/100	E. Contractor's working interest, %		
	90/100	0	49.00

24. Contract economics

(Hypo cases for 200, 100 and 50 MM BBL fields)¹

A. Discount cash flow/rate of return, %

19.80	NA
11.80	NA
9.40	NA

B. Profit to investment ratio, \$/\$

1.15	NA
0.83	NA
0.50	NA

C. Net present value @ 15%, \$MM

(5.7)	60.00	NA	176.00
(53)	35.00	NA	52.00
(35)	37.00	NA	12.70

D. Government take, %

88.60	82.00	100	44.00
85.00	82.00	100	40.00
79.00	81.00	100	40.00

E. Contractor's working interest, %

80/100	90/100	0	49.00
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Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
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25. Insurance and confidentiality

Concessionaire shall secure insurance coverage for damages caused by its operations on terms agreed by the Gov't	PSC is silent on these issues	Contractor must take out insurance on materials, damages to third parties, and other policies as required by Brazilian laws	Contractor must take up insurance programs for all operations with the People's Insurance Company of China
		All information about RSC shall be treated as strictly confidential and the obligation remains in force at all times	Contract and all documents must be kept confidential within a confidential period which is not specified at all

26. Participation

The Gov't has option to participate for a maximum of 20% working interest after a discovery	Pertamina has the right to demand for a 10% undivided interest	The enterprise is wholly owned by Petrobrás	CHOC has the option to participate for up to 51% of interest in the cooperative venture
The Gov't is carried throughout the exploration period but will bear all past, present and future costs	Participation is carried during exploration period and a proportionate share of all past operation costs must be paid	All expenses incurred and services rendered by contractor will be reimbursed and remunerated by Petrobrás	CHOC is carried through the exploration period and will pay its share of development, production and operation costs

27. Assignment

Written notification is re-	Assignment to affiliates re-	Contractor can under no	Assignment to affiliates requi-
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Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
<p>quired for transfer between affiliates; all other transfers require prior prior or permission from the Gov't</p>	<p>quires prior notice; assignments to non-affiliates requires Pertamina's and the Gov't's written consent and approval</p>	<p>circumstances assign or transfer the contract</p>	<p>res the prior consent of CMOOC; assignment to any third party must be approved in advance and CMOOC has the right of first refusal as long as the conditions offered by it are comparable</p>
28. Dispute settlement			
<p>Mutual settlement shall be attempted for resolving disputes. Failing which will result in ad hoc arbitration. The President of the World Bank will fill any vacancy in the arbitration committee. The arbitration procedure is governed by the Rules of ICJ of 1946 and the arbitration will take place in Bangkok</p>	<p>Efforts shall be made to settle problems amicably. Ad hoc arbitration is provided for and the President of the Int'l Chamber of Commerce is selected to fill a vacancy in the arbitration committee. The arbitration will be conducted in accordance with the rules of the said Chamber</p>	<p>Disputes shall be settled by mutual agreement. Ad hoc arbitration is provided for and the President of the Court of Justice of the State of Rio de Janeiro will select the deciding arbitrator. The arbitration shall be governed by the Brazilian Code of Civil Procedure and take place in Rio de Janeiro</p>	<p>Disputes shall be settled amicably through consultation. Unsettled disputes may be referred to: national arbitration upon agreement by the parties; or ad hoc arbitration in accordance with UNCITRAL of 1976. Any vacancy in the arbitration panel will be filled by the Arbitration Institute of the Stockholm Chamber of Commerce, Sweden</p>
<p>The applicable law is the law of Thailand and general international law</p>	<p>The dispute shall be referred to Indonesian courts of law if the arbitration fails</p> <p>The applicable law is the law of Indonesia</p>	<p>The Calvo Clause precludes the contractor from seeking diplomatic protection of home state</p> <p>The applicable law is the law of Brazil</p>	<p>The applicable law is the law of China and will be supplemented by principles of laws widely used in petroleum resource countries</p>

Table 21: (continued)

Modern Concession (Thailand)	Production Sharing (Indonesia)	Risk Service (Brazil)	Hybrid Contract (China)
<p>The model and individual concessions before 1989 were silent on the issue except for a general reference in the 1971 Petroleum Act</p>	<p>The PSC does not have any separate article dealing with the issue of environmental protection</p>	<p>The 1976 model contract has no provision on environmental protection</p>	<p>The HC has comprehensive and sophisticated stipulations on environmental protection</p>
<p>The Petroleum Act No. 4 of 1989 provides in broad terms for compulsory insurance coverage for possible pollution damages</p>	<p>The contractor is generally required to protect navigation and fishing and to prevent extensive pollution of the seas and rivers</p>	<p>The model and individual contracts thereafter requires in principle clean-up operations by contractor in case of pollution</p>	<p>In addition the contractor is explicitly referred to domestic environmental laws which requires environmental impact assessment by the contractor</p>
<p>29. Environmental protection</p>			
<p>30. Sustainable development</p>			
<p>Sustainable development is not considered at all</p>	<p>Sustainable development is not considered at all</p>	<p>Sustainable development is not considered at all</p>	<p>Sustainable development is not considered at all</p>

Note: 1. Based on exhibits in B. C. Yang 's paper, see supra ch.6, note 69.
Source: Compiled by the author.

III. The main features of modern petroleum contracts

The case studies and comparative analysis being completed, it is now feasible to outline briefly the main characterizations and common themes of the agreements that emerge from this study.

1. The characterization of modern concession contracts

Of the four types of petroleum agreements studied, it would appear that the modern concession contract as used in Thailand is a relatively simple arrangement in terms of form content and administration. It grants foreign investors a number of rights and privileges similar to those of the early concessions. The concessionaire acquires ownership rights over its concession area, enjoys full managerial control of the oil operations, and expropriates most of the production. The state interferes little with the concessionaire and its operations, and is essentially a royalty and tax collector. In purely legal terms, the concession is a more favourable arrangement than others for oil companies.¹ Under this system, the concessionaire basically works for itself.

Being a small producer without a lengthy history of foreign investment in petroleum development, Thailand may be cited as an example of a country which has managed to sustain exploration activities through offering generous terms in its

concession contracts. So it has not come into obvious conflict with foreign companies on the contractual matters. The case of Thailand illustrates the weak bargaining position of governments with unproven reserves on the periphery of the world petroleum system.

Despite these apparent shortcomings, the MCC is still useful in some cases. For example, it may meet the immediate needs of those developing countries with unproven petroleum potential, geographically isolated exploration areas, and little local capital, technology, and administrative expertise. In all these cases, the MCC may serve as a useful device, like an open registry, for attracting foreign oil companies to undertake exploration.²

2. The attributes of production-sharing contracts

The PSC that originated in Indonesia is distinguishable from the MCC in a number of important political and legal points, such as:³ (a) the foreign oil company is merely a contractor under a PSC but a property right holder under a concession; (b) the rights under a PSC are rights *in personam* as opposed to rights *in rem* under a concession; (c) the right of management under a PSC belongs to the state oil company while the concessionaire has the exclusive right to manage the enterprise undertaken under a concession; (d) title to production under a PSC transfers at the point of export versus

at the wellhead under a concession; (e) title to all equipment under the PSC passes to the government at the point of landing while it passes only at the expiry of the concession under the concession system; (f) the PSC is no longer based on profit sharing as the concession is, but on a production-sharing scheme; and (g) a PSC with its profit oil split set forth in the contract is definitely more flexible than a concession whose royalty and tax payments are determined by legislation. These are reasons to explain the success of this type of contract in the last two decades. There has been a marked trend in developing countries to prefer the PSC to the concession agreements. Indeed, the PSC is one of the most developed contractual agreements of a modern nature.

In considering the experience of Indonesia, it may be seen that this country sought explicitly to create a contractual framework for foreign operations under which the government partner could build up negotiating skills and supervisory abilities. Despite difficulties with foreign companies over some contractual matters, particularly managerial control, the Government of Indonesia has not been deterred from increasingly attempting to assert more autonomous policies in petroleum exploration. Though its inability to develop an effective indigenous capacity in the overall management of its petroleum industry has, in the end, *constrained de facto* its regulation of oil companies' operations, any government effort and ability to exercise real

control will eventually find opportunities opening up for it to assert itself and achieve practical effects.⁴ The case of Indonesia can be regarded as an example of a mature producing country which has been persistent in actively pursuing a policy aimed at strengthening its bargaining powers towards the foreign oil companies. The PSC perhaps represents the mainstream of the petroleum systems in the developing world.

3. The features of risk service contracts

The RSC as employed in Brazil appears similar to the PSC, but differs in certain important matters, *inter alia*: (a) it gives the contractor even fewer rights in the service area that is explored; (b) it gives the state the possibility of asserting direct control over development and production strategies; (c) most basically, it reimburses the contractor in cash, not in crude oil, although it may have provisions permitting the contractor to buy back a certain amount of production. The RSC is the arrangement that can finally ensure the host country's full ownership of its oil, direct control of its exploitation, and complete expropriation of the production. On the other hand, this form is the "least attractive" of the options open to oil transnationals, since despite assuming all the exploration and development risks, the remuneration to the company does not include access to crude oil.⁵

The shift in bargaining power from the foreign company to the government of the producing state is most evident in the RSC. The case of Brazil is a good example. As an oil producer dominated by "oil nationalism" and with most of its sedimentary basins unexplored, the country has been strict with foreign investment in oil exploration and tough with its risk service conditions. Brazil may be said to represent another minority of established producing countries which managed to have foreign companies carry out high risk exploration operations through offering supposedly oil-rich acreages. It illustrates the relatively strong bargaining position of governments with promising petroleum potentials on the other extreme of the world petroleum system.

4. The peculiarities of hybrid/compound contracts

The hybrid contract as seen in China has only been in force in a few producing countries for about a decade. It often combines the major useful elements of existing agreements to meet the specific expectations and special needs of a producing country. Because of its hybrid/compound nature, it is difficult to make generalization about the characteristics of this type of contract and to compare it easily with other petroleum agreements. As for its basic distinctive feature, suffice it to say that it is very flexible in incorporating various basic elements of existing

agreements. There is no uniformity as to the way in which the combinations are made up. As a result, it is usually more complex and sophisticated than its prototypes.

China presents another example of a country which has a fairly developed indigenous petroleum industry but wants to bring it up-to-date through co-operation with foreign oil enterprises. As an important producer with little experience in dealing with international oil companies, China's conflict with its partners appears to be concentrated in such new areas as training and technology transfer. The case of China illustrates the moderate bargaining position of governments with good development prospects on a new front of the world petroleum system.

In short, the government's control over its resources development and foreign operations increases from the modernized concession to the RSC, or alternatively, the foreign company's autonomy decreases from the modernized concession to the RSC. So the concession and the RSC may be said to represent the two extremes of the world petroleum system respectively in favour of international oil companies and petroleum-producing countries. The PSC falls between the two extremes, for it offers some satisfaction in management control and production sharing to both parties in the relationship. The HC can locate itself anywhere between the MCC, the PSC, and the RSC depending on the elements it incorporates from the various established systems.

Accordingly, there are now diverse forms of participation by the governments of producing countries in the area of oil exploration and exploitation. In some cases, the state assumes the passive role of revenue-collector, turning over the exploration and development and its full control to foreign companies in exchange for a share of profit from sale of the oil. In another instance, it may take a production-sharing role on the basis that the company puts up the funds for exploration and the production is shared on a predetermined basis between the two parties. In still another instance, the state may opt to retain full ownership and control of petroleum operations, and receives 100 per cent of any oil found. This is the state control role. Finally, there are cases where the state carries out development operations in co-operation with foreign companies upon a commercial discovery by the latter, and the cost and profit/production is shared in proportion with their equity interests. This last approach is the partnership role. Developing countries make use of all these roles, with the tax-collecting and direct control states making up the smallest number, the production-sharing states the largest. The number of partnership states is steadily increasing.⁶

These government-company relationships can also be summarized as follows. Under the modern concession contract, the concessionaire works essentially for itself. Under the production-sharing contract and the risk service contract, the

contractors work primarily for the government. Under the hybrid contract or a joint venture contract, the foreign companies work virtually in association with the state oil companies.

IV. The basic functions of modern petroleum contracts

Whatever descriptive label may be given to these prototypes and hybrids, modern petroleum contracts have two essential elements in common. First, title to resources and the right to exploit them are always retained by the host government; the foreign company assumes exploration risks and expenses and receives its return either in cash or in kind.⁷ Second, the contracts all provide for increasing control and management by the producing state of the petroleum enterprise. It is, however, to be noted that this trend has been reversing in the last few years due to the deregulation and privatisation in many states. On the other hand, these contractual arrangements differ essentially on two matters or in two "D's": the degree of control that the country wishes to maintain over its natural resources, and the division of production/profit between the government and the company.⁸

In any event, the substantive content of all petroleum arrangements may be summarized into three points: risk, control, and profit sharing,⁹ which are the three most basic

functions of all types of petroleum agreements. These are not only the areas wherein lie the fundamental differences between one form of contract to another, but also the factors which make a comparative study of the alternative agreements practically meaningful and theoretically necessary. For instance, the four principal forms of contracts examined in this study all assign the responsibility of exploration risks to the private investors, but provide for different levels of state control and different levels of government take, which can be summarized in the following table.

Table 22: Basic Functions of Modern Petroleum Agreements

	Risk assignment	Managerial control	Profit sharing
MCC	Concessionaire	Concessionaire	Tax & royalty payment to gov't
PSC	Contractor	Gov't (in theory)	75:25-90:10 in gov't's favour
RSC	Contractor	Gov't	100% gov't take
HC	Contractor	Joint	51% gov't take

Source: Compiled by the author.

Modern petroleum contracts are also noticeable for the extensive responsibilities and obligations to be assumed by the foreign contractor, which involve not only petroleum operations but also social and economic development. The minimum exploration commitment and expenditure are the "hard" aspects of the contracts, while other contributions such as employment and training of nationals, transfer of technology, and use of local goods and services may be regarded as the "soft" aspects of the contracts.

In examining the advantages and disadvantages of modern petroleum contracts, it is difficult to make claims as to their superiority and preference. There is probably no best but only a relatively better contract form. The ideal contract is one that provides a rational commercial foundation for the relationship, and effectively meets the legitimate aspirations and objectives of both parties. As a precursor to identification of an ideal contract form, it is necessary to look at the aims of the contracting parties. Though the objectives of the governments of various producing states and different types of international companies may vary from one another, they can still be generalized in Table 23:¹⁰

Table 23: Government and Company Objectives

	Objectives
G o v e r n m e n t	<ul style="list-style-type: none"> a. maintaining control over resources; b. securing rapid exploration & exploitation; c. attracting risk investments; d. meeting domestic consumption requires; e. maximizing national revenue from petroleum; f. developing national technology & expertise;
C o m p a n y	<ul style="list-style-type: none"> a. seeking O & G discoveries; b. obtaining a reasonable rate of return; c. securing crude oil supply; d. ensuring sufficient security on investment; e. retaining as much flexibility & control of the operation as possible.

Source: Compiled by the author.

It is apparent from the above comparison that both parties to the hydrocarbon relationship have their respective objectives as well as an overall common goal: to make possible the exploitation of the country's petroleum resources and maximize its economic development. Beyond this there is almost direct conflict in their respective interests and objectives, such as risk assignment, management control, split of production. It is also to be noted that the goal and objectives of governments are much broader than those of international oil companies. While the former often have a wide range of objectives ranging from political control to

economic development, the latter is strictly profit-oriented.

In any event, the ultimate criteria for judging an arrangement will be its ability to accommodate the common as well as divergent objectives of the contracting parties. Whichever form of arrangement can meet as many interests of, and provide as much fairness to, the parties as possible, it can be said to be the suitable contract. Judging from these criteria, we may arrive at the conclusion, based on the national case studies and comparative analysis, that PSC is the more attractive contract of the possible arrangements, simply because it is able to reconcile the primary aspirations and objectives of both parties to the maximum extent possible. This system offers the necessary adaptability and flexibility for petroleum operations in developing countries. Under this arrangement, the state legally retains overall management, but in practice the oil company exercises day-to-day control. Its flexibility enables the state to structure the division of production on the basis of a theoretical model that incorporates a fair rate of return for the contractor and a fair share of increased revenue from rising prices for the state.¹¹ Most importantly, both parties to the relationship have certain access to crude oil. In the final analysis, the PSC can produce a greater mutuality of interests. Both states and companies can find advantages and satisfaction in this arrangement. It is "a complex but elegant system", as one oil expert characterized it.¹²

V. The legal nature of petroleum contracts

A few remarks on the legal characterization of world petroleum agreements are necessary. As for the question concerning the legal position of foreign investment agreements, no unanimity of views exists among judicial awards and scholarly writings.¹³ Broadly speaking, there have traditionally been two opposing views. Some jurists, particularly from western countries, contend that these agreements acquire the status of an international agreement and thus are subject to such well-established international legal principles as *pacta sunt servanda*.¹⁴ Other writers, mainly representing the producing countries, have asserted that such agreements should be governed by the law of the host state on well-settled principles of private international law and that the contract can be amended by the government in the public interest.¹⁵ The controversy between the two schools is likely to continue as long as there are two conflicting interests on the stage.

In spite of the differences of view on the issue in question, many writers on this subject would agree that sanctity of contract has never been treated as an absolute principle in both theory and practice.¹⁶ As one leading publicist observed:

Neither the principle of acquired rights nor the principle of *pacta sunt servanda* is therefore to be regarded as being necessarily absolute or unconditional in its application.¹⁷

Our case studies also show that few, if any, petroleum agreements survive their legal life in their original form. Since the 1950s, there has been an extensive practice in which contract terms in general, and fiscal regimes in particular, have frequently been altered by subsequent legislation or renegotiations to maintain or create a genuine equilibrium of interests between governments and companies.

Even assuming that such an agreement falls into the domain of international law, the doctrine of *pacta sunt servanda* would be qualified by the equally well-established international legal principle of *clausula rebus sic stantibus*, which sanctions the revision of international agreements on the basis of a fundamental change of circumstance. It seems possible that a state can, by exercise of its legislative competence, use general regulatory powers, including modification of its contractual terms or obligations, for consideration of public interests or on the ground of substantial change of circumstances provided adequate compensation is paid.¹⁸ Of course, any state that makes such a decision will have to pay a price for its action, because any unilateral government action with respect to investment contracts will hurt its international image as a trustworthy place for foreign investments.

Modern petroleum contracts are a mixture of public and private laws. The private law elements are a necessary consequence of the contractual and commercial nature of the transaction. The public law elements, such as government control, domestic supply, state participation, and safety and environmental protection, are relatively recent introductions which result from the nature of the subject matter—state-owned natural resources developed by an alien. So a petroleum arrangement has the dual legal character of a commercial contract which regulates the government-company relationship in much the same way as any other ordinary contract on the one hand, and an agreement which possesses public law elements that are non-existent in a private contract on the other.¹⁹ These new developments suggest a substantial modification of traditional concepts of a rigid conceptual apparatus for petroleum arrangements. Despite its complex characterization, it is now widely recognized that an investment agreement is not a treaty but in essence a commercial contract,²⁰ as concluded in the *Liamco* case by the sole arbitrator, Dr. Sobhi Mahmassani:

Although a concession contract partakes of mixed public and private legal character, it retains a predominant contractual nature. According to the general rules of the law of concessions, widely accepted by modern jurists, the concessionaire's activities in mining, petroleum and similar concessions, do not have the character of public service, but are considered as private projects and enterprises, and as such are generally governed by the principles of the private law of contracts.²¹

Its proper law is normally the municipal law of the contracting state.²²

Examination of modern petroleum arrangements in terms of basic types is helpful only analytically. In theory, they differ from one another in legal format and offer alternative expectations for developing producer countries. In practice, the boundaries between them have often been less than sharp. The distinctions between the various petroleum agreements are in many instances primarily conceptual. From a purely economic point of view, it is possible to arrive at a similar government take or investment return from a commercial field, whatever type of contract is chosen.²³ While the forms of contract may still be interesting to energy-producing countries, oil companies are nowadays generally indifferent to the label attached to the various types of agreements. What really concerns them are the terms and conditions of the contract, particularly the fiscal package. In short, the form of the contract is nowadays much less essential than the actual content. The real legal difference lies in how the major functions, namely, the risk, control and revenue sharing, are designed. This is not to say that discussing the form of contract is irrelevant, but merely to suggest that its importance has been declining due to the increasing assimilation among contractual forms and to a gradual transition in emphasis from permanent sovereignty over natural resources to international co-operation towards their

conservation and development. In the final analysis:

... in the world oil industry, different types of contract can now be used flexibly to achieve often the same economic, financial, risk and control results. Contractual form is in today's world much less indicative of material substance than in the past.²⁴

VI. Recent trends in petroleum contractual developments

Apart from the main features examined above, there emerge from recent contractual developments some general trends which can be discerned from the national case studies and the comparative analysis.

1. Mutuality of interests

Most important among these trends is perhaps the mutuality of interests between governments and companies.²⁵ Based on the understanding that reciprocity is the foundation of any successful operation, each side accepted its limitations and has taken steps to recognize a mutuality of interests in their relationship in order to encourage maximum co-operation for the common good. This general trend has been clear in all our national case studies. On the one hand, the producing countries frequently revise their contract terms to meet the commercial interests of oil companies in a changing market. On the other hand, companies accept more social and

economic responsibilities toward the governments of producing countries. A new relationship based on a mutuality of interests has evolved to replace the outmoded adversarial and confrontational attitudes of the old days. Of course, the change in mood does not mean that difficulties in contract negotiations have been eliminated. The truth is that ideological conflict has been replaced by pragmatism. Nowadays government negotiators attach more importance to what actually happens around the negotiating table.

The term "mutuality of interests" is expressed variously in agreements. In the Chinese case, the principle of "equity and mutual benefits" is expressed as the fundamental basis of the foreign economic and trade relations. So the "principle of mutual benefits" is repeatedly emphasized in all contract negotiations and reiterated throughout the contract.²⁶ In the case of Indonesia, the PSC states that "the principles of mutual good will and good faith" are applied in the production-sharing relationship.²⁷ Whatever terms are employed, mutuality of interests means, at the bottom line, a fair government take and a fair return for oil companies. It may also include a fair sharing of exploration risks as evidenced by the seismic/drill option clause in the Brazilian RSC and the Chinese HC. The terms of modern petroleum agreements are generally able to strike such a balance and are considered, therefore, as reciprocal and acceptable to both parties.

In short, the global trend has moved unwaveringly in the direction of an equivalence of contractual benefits in petroleum agreements. Recent experience in petroleum agreements shows that evolving relationships between governments and companies have led to a greater recognition of mutuality of interests between the two parties. These relationships have now progressed to a new level of acceptance of this principle in achieving their common objectives. The doctrine of mutuality of interests has made the contractual relationships not only more stable, but also more constructive.

2. Contractual convergence and synthesis

There has been a clear trend over the past few decades towards convergence and perhaps synthesis of modern petroleum agreements.²⁸ As examined, there initially emerged in the process a multipolarization of petroleum agreements as the direct antithesis of the classic concessionary system prevailed in the first half of the century, and subsequently, a convergence of contract terms.²⁹ The pace of assimilation accelerated as the terms of these contracts became more publicized, albeit very limited, and as they became increasingly influenced by one another. This has been evidenced by the emergence of the hybrid form of agreements in the early 1980s.³⁰ The contractual convergence is a

reflection of the state of the art in petroleum arrangements of the time. The evolution of contract forms may be said to have approached a plateau. There is little likelihood that the parties will be able to negotiate agreements that are markedly superior to the existing systems.³¹

As a result of this process, modern petroleum contracts share many common elements such as work obligation, minimum expenditure, relinquishment, employment and training of nationals, preference for local goods and services, government participation, arbitration, and so forth. Such a development is described by one petroleum law expert in the following remarks:

If their respective products are examined one can only be struck by their remarkable similarity. Their financial structures are similar and the benefits to be gained under one or other of them for Government or for Company are virtually indistinguishable.³²

As a matter of fact, the bulk—80 per cent, as some have suggested³³—of the operative clauses of modern petroleum agreements are the same, irrespective of their labels. This phenomenon has led some commentators to suggest that there are few real differences between most forms of contract now being used.³⁴

3. Standardization

Another marked tendency in contractual development is

standardization. Since approximately the early 1960s, international petroleum agreements have evolved from *ad hoc* negotiation to standardized licensing.³⁵ In the wake of Indonesia's experience, most, if not all, producing countries have prepared model contracts as the basis for specific negotiations. This contractual standardization normally takes place in two ways: either in the form of model contracts prepared by the state oil companies, as in the cases of Indonesia, Brazil and China, or in the form of petroleum legislation of general application, as in Thailand. In either form, only a very limited number of provisions are open to negotiation. Individual agreements are not allowed to diverge much from the model contract or petroleum legislation. However, it is felt that it may be advisable to include certain standard agreements or basic contractual requirements in the law or model contracts which can be individually negotiated when investment opportunities arise.

Model contracts, revised normally from bidding round to bidding round, have several advantages: first, they serve well in publicizing and standardizing the licensing process and investment conditions; second, they enable both government managers and company employees to become more easily familiar with the contract terms; third, they facilitate contract negotiations and agreements; fourth, they reduce transaction time, costs and problems; and finally and most importantly, they simplify and improve contract administration and

management. The benefits of a standard approach are becoming increasingly evident and recognized over time.³⁶ Modern petroleum agreements are so widely utilized that they have developed very pronounced standardization in name, form, and substance. In today's world, standardization is necessary and desirable because it makes the contract negotiation more scientific and the agreement a more predictable matter, as examined above.

4. Sophistication

There are also various indications of a wide range of sophistication in recent petroleum arrangements.³⁷ Petroleum contract terms in general, and financial and fiscal packages in particular, have become increasingly sophisticated for symmetrical purposes. This complexity is perhaps due partly to a gradual completion of legal infrastructures and familiarity with petroleum legal frameworks in producing countries. The result of which development is twofold. On the one hand, the rights, obligations and revenues from petroleum operations are more clearly defined for both parties. On the other hand, the development places a new burden of the petroleum contract administration on some producing countries. Moreover, the level of sophistication is uneven in contract terms. As examined in the case studies, the "spinoff" provisions, such as employment and training of nationals, preference for local

goods and services, and transfer of technology, are often ill-drafted and, therefore, cannot be said to be sophisticated.

5. Flexibility and progressivity

The evolution towards contractual flexibility is also apparent over the past several decades. Under a rigid contract form such as a conventional concession with fixed royalty and income tax or a standard production-sharing contract with fixed profit oil split, the government take, as well as the company's profit, changes considerably with the types of discovery and the world oil price. The uniform, non-discriminatory fixed rates produce non-uniform results which are economically discriminatory.³⁸ In order to ensure a stable contractual relationship and to maintain a fair share of petroleum profits, conscious efforts have been taken to introduce more flexibility and progressivity into petroleum agreements. The sliding scale royalty adopted in Thailand's modern concession, the progressive production sharing in Indonesia's PSC, the drilling option in Brazil's RSC, and the alternative terms in China's hybrid contract, are perhaps the best examples of such flexibility and progressivity.

In theory, contractual flexibility and progressivity allows equitable terms for developing both large and small fields, and provides fairness to both hosts and inventors. It can thus add an element of stability. A contract with

sufficient flexibility has the advantage of being capable of responding within the terms of the contract to a wide range of economic variables, with the result that renegotiations may be reduced.

In view of the uncertainty of the industry regarding the future market, contracts should be designed with more adjustable mechanisms for the promotion of exploration and production projects, for the achievement of reasonable allocation of profits, and for the encouragement of the stability of the contractual relationship between the two parties.³⁹

6. Expansion of the government's role and increase in the government take

Recent developments in petroleum arrangements share another thing in common. All major types of contracts allow, though in varying degrees, the governments or their oil companies to play an increasingly important role in the international oil systems over the past decades. The second half of the 20th century has been one of increasing state control over oil. The petroleum agreements allow governments a substantial take in the petroleum profit. On a per barrel basis, the government take may fluctuate from about \$5 to near \$25 and, on a percentage basis, from about 50 to 90 per cent of the earnings from a particular oil field.⁴⁰ When the

actual production costs have been recouped, the government take may reach 80 to 98 per cent of the profits from oil production.⁴¹ However, it should be noted that governments have been reducing their take because of the declining oil price since the mid-1980s. In the four producing countries analysed in this study, the government take is in the range of 40 to 88 per cent (see Table 21).

7. Geographical preference

There are some indications that the forms of contracts are utilized with certain geographical preferences. The tendency is more evident in some regions/countries than in others. In South America, where the risk service contract is most widely used, the traditional Latin nationalism certainly has a strong influence on the formation and utilization of this form of contract. The hybrid contract employed in China is based largely on the Chinese culture of Confucianism. The traditional Chinese philosophy of consensus, compromise and conciliation can be seen throughout the agreement. Indeed, the idea of production sharing may be viewed as a modern extension of the "Doctrine of the Mean" which has certain influence on many parts of East Asia. This perhaps explains the increasing popularity of the production-sharing contract in that region. In essence, the geographical preference is mostly related to the culture and history of the specific region/country. It

also depends to a certain degree on the legal tradition and precedent there.⁴²

8. Other identifiable trends

Apart from the major trends described in the preceding sections, other tendencies can be discerned from recent licensing practice. Contractual dynamism can be mentioned as one example. Governments and companies have moved from the static and immutable relationship defined by the concessionary agreement towards an evolving relationship marked by dynamism and mutability.⁴³ As shown clearly in the case studies, the terms of contracts are periodically and systematically reviewed and adjusted to maintain the contractual equilibrium. To view a petroleum agreement as a static document under traditional contract law is inappropriate in light of the current reality. In the government-company relationship, periodic contract adjustments have come to be expected as an accepted part of doing business. This new pattern of relationship can be characterized as dynamic, evolving in a manner that is necessarily adjustable to the prevailing conditions while still recognizing the legitimate interests of the contracting parties.⁴⁴

The petroleum agreements are inherently dynamic because they are extremely complicated documents designed to govern a long-term relationship, negotiated on the basis of existing

conditions and assumed factors that will not be confirmed for many years and, agreed between parties whose bargaining positions may change over the life of the agreement. In actuality, many developing countries believe that provision for renegotiation is an essential feature of any satisfactory agreement.⁴⁵ In view of this dynamic nature, both sides should anticipate and be prepared for possible changes in the contract terms. One way to facilitate the orderly and systematic upgrading of the agreement is to incorporate into the contract a "review clause" which may trigger necessary revisions at specified time intervals.⁴⁶ The advantages of a review clause may include the following: first, it serves as a pre-notification to both parties of review and possible revision so that surprise and misunderstanding can be minimized; second, potential friction and conflict can be avoided through the operation of a legitimate process; and finally, the review and revision process can provide an opportunity for both parties to find a new equilibrium. Unfortunately, the trend to use provisions calling for a general review of the agreement has been less common in modern petroleum arrangements.⁴⁷

Moreover, there has been a clear movement from "delocalization" to "relocalization" of the petroleum agreements. The trend of relocalization occurs in several aspects of recent petroleum arrangements. First, relocalization of the contracts in the domestic legal system:

As observed at the outset, the original concession agreements were characterized by "delocalization", "internationalization" or "transnationalization" of the applicable law. Such concepts, which culminated in the Topco Award, have been made obsolete in modern petroleum arrangements.⁴⁸ All petroleum contracts analysed in this study made a successful effort on the relocalization of the domestic legal systems, which can be summarized into either of the following two situations: (a) the applicable law to govern the contractual relationship is absolutely the resource state's domestic legal system, as found in Indonesia and Brazil; or (b) the domestic legal system is *prima facie* the proper law for the contract, but principles of international law or principles that are widely used in petroleum resource countries may have a role to play in supplementing the producing country's legal system, as evidenced in Thailand and China. Second, relocalization of petroleum services and goods: it is now standard for the various petroleum agreements to require, without exception, the foreign contractor to give preference to local goods and services. Third, relocalization of human resources and expertise: all arrangements contain provisions on training of nationals and transfer of technology with a view to reducing the dependence on aliens and eventually developing an indigenous industry.

With respect to the future forms of contracts, a slight trend in favour of joint venture and various forms of

production sharing can be expected. The (modern) concession agreement is likely to make a comeback. It is also almost certain that all currently used forms will co-exist into the 21st century, as the main developments will be adjustments more to substance than to form.⁴⁹

The trends identified above have shown a clear shift in favour of developing countries. Nonetheless, the evolving relationship is not one-sided but mutually beneficial. Many of the new trends are designed to ensure a mutuality of interests between developing countries and foreign oil companies. As a result of these favourable developments, modern petroleum agreements are able to build up a more constructive relationship and produce a reasonable degree of balance and justice between the contracting parties. There is much hope that these favourable trends will continue to progress in the future.

Before closing this section, we must mention the environmental aspect of the petroleum arrangements. Although there is no doubt that the scope and volume of environmental provisions have tended to increase in petroleum arrangements in the recent past, environmental concerns have not emerged as a prominent feature in contractual arrangements. The environmental provisions in the four petroleum systems examined in this study are too few and too new to be regarded as a major trend in contractual developments. We will return to this issue below. Despite this discouraging finding, it is

almost certain that a new element will be added, willingly or reluctantly, to the scenario in the 1990s and the 21st century—environment protection and sustainable development.

VII. Modern petroleum agreements and environmental protection/sustainable development

As observed above and illustrated in the national case studies, environmental concerns in petroleum arrangements have not been a significant part of the government-company relationship in the past. The issue is further examined here in a comparative manner, beginning, as usual, with a general overview of environmental development in the developing world.

1. The environmental movement in developing countries

The environment was not a big concern in the developing world for many years. In the post-Second World War period, developing countries were preoccupied with many other urgent matters such as political independence and economic reconstruction. Later they were more interested in exercising permanent sovereignty over natural resources and in establishing a new international economic order. Environmental concerns developed in some industrialized countries in the late 1960s and the early 1970s attracted little attention from

the developing world.

A very strong and popular view in the developing world was that environmental protection was a luxury for rich nations. Running to extremes, some developing countries even suspected that environmental protection was a plot by the rich countries to keep the poor underdeveloped forever.⁵⁰

Not surprisingly, these misguided attitudes toward environmental protection were taken to the 1972 Stockholm Conference. There were widespread fears among developing countries that their own imperatives for economic development and the alleviation of poverty might be adversely affected or constrained by the developed countries' preoccupation with pollution and other environmental problems. Some developing countries expressed their concern by saying that they would welcome pollution if it was a necessary accompaniment to the economic growth they urgently needed.⁵¹

The Stockholm Conference was a success in the sense that it elevated the issue of environmental degradation to international attention. But its achievements are more on paper than in reality. In the past 20 years, while the first generation environmental issues, such as pollution of ocean, air and soil resulting from both industrial activities and activities associated with poverty and underdevelopment, have not been solved, the second generation issues, namely global warming, ozone depletion, extinction of species, have entered the scene. There may be many causes of these old and new

problems, but the massive development activities practised in most parts of the developing world under the pressure of their exploding population and immediate survival in the past two decades have certainly contributed to global devastation.

The clash between the developing and the developed worlds in environmental protection, emerging at the Stockholm Conference and persisting in the intervening years, ran deeper at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992.⁵² At the Rio conference, everyone agreed that to have a common future the environment must be saved, but the rich and poor disagreed on how to do it and who should pay for it. Developing countries, led by India, China and Malaysia, took the position that:

The developed countries bear the main responsibility for the degradation of the global environment. Ever since the Industrial Revolution, the developed countries have over-exploited the world's natural resources through unsustainable patterns of production and consumption, causing damage to the global environment, to the detriment of developing countries.⁵³

They contended that their plans for development should not suffer to rectify a problem that they did not create while the rich nations to blame for it were doing little to clean up the mess. They strongly objected to all suggestions that their natural resources should be "internationalized". Industrialized countries, while accepting that they were responsible for most of the world's environmental damage, argued that "that doesn't mean developing countries have no obligation to protect the environment".⁵⁴

As a result of these differences, the outcomes of the conference have been watered down considerably.⁵⁵ The Rio Declaration enshrines the "right to development" insisted by the developing countries, but within minutes of the Summit closing the U.S. released its own interpretation of this notion: "Development is not a right...but a goal we all hold".⁵⁶ The developing world wants the developed world to foot part of the bill by paying more than \$125 billion out of the total estimated \$600-billion cleanup cost. But western nations are reluctant to make the commitment.⁵⁷

There should be no surprise that the perspectives of developing countries on the issue of environment and development differ substantially from those of developed countries simply because the former are only at the initial stage of economic development. Anxious to raise their population out of poverty, they cannot practically afford to divert their scarce resources, required to meet the most immediate and fundamental needs of their people, to pay the additional costs of incorporating the measures needed to address major global environmental risks into their development policies and practices.

In addressing environmental problems, developing countries have the following difficulties in common: first, poverty and underdevelopment; second, shortage of resources and technology; third, lack of knowledge of sustainable development. As a result, "the environment is not a high

priority for most business. The most urgent issues facing these nations are economic restructuring and simply meeting basic needs... Most enterprises do not have environmental strategies".⁵⁸ Unfortunately, protecting the environment is not understood as an aspect of sovereignty or control over resources.

The foregoing brief overview indicates that developing countries, as a whole, have neither attached appropriate attention to environmental problems nor have they incorporated adequate measures into their development policies and practices to alleviate environmental threats. In fact, many developing countries are making the necessary economic progress at some sacrifice of the natural environment.

In conclusion, environmental resources in the developing world on a whole are being degraded, depleted, and destroyed at an alarming rate because of pressure from large and rapidly growing populations and commercial exploitation.⁵⁹ Developing countries generally favour a developmentalist theory which has led the way for a quarter of a century. The pro-development policies and practices of these countries certainly have an important influence on the development of modern petroleum agreements. In fact, the environment versus petroleum extraction balance tends to shift more in favour of production in most developing countries.

2. Environmental aspects of modern petroleum agreements

From an environmental point of view, oil exploration is a potentially destructive process beginning with exploration and ending in extraction. In the marine context, offshore petroleum operations are one of the sources of marine pollution.⁶⁰ Drilling and producing oil generate a variety of wastes that can have an impact on the environment in a negative way. Moreover, environmental accidents can happen at any time throughout the process due to either human negligence or to natural forces. Petroleum agreements that authorize exploration and exploitation activities should have adequate provisions to deal with the environmental issues. Unfortunately, the examination of the licensing practices in the four countries—dealt with earlier in this study—has revealed that environmental issues have not been adequately addressed in modern petroleum agreements. The environmental aspects of the four petroleum systems are summarized in the following sections for the sake of comparison and emphasis (see *supra* Chapters 3, 4, 5 and 6 at the environmental sections for a full citation of these environmental provisions).

(1) Petroleum contracts in Thailand, Indonesia, Brazil and China

A. Thailand's modern concession contract

Thailand is perhaps one of the most lenient states regarding environmental regulation over international petroleum operations. Its original model contract of 1971 and the individual concessions concluded in the first 12 rounds prior to 1989, were silent on environmental protection, despite a very broad provision in the 1971 Petroleum Act that "the Concessionaire shall take appropriate measures in accordance with good petroleum industry practice to prevent pollution... and shall take immediate action to combat such pollution".⁶¹ This simple regulation has remained unimproved to date. The model contract was not revised until 1989 to include the following general requirement:

As an assurance for obligation to prevent and make good such damages to the public interests or the people, the concessionaire shall secure insurance coverage with an insurance company acceptable to the Government.⁶²

B. Indonesia's production-sharing contract

Both the model and individual PSCs have no separate article on environmental protection. The provision on conduct of operations contains a simple clause which requires the contractor to perform his obligation "in a workmanlike manner and by appropriate scientific methods... [to] take necessary

precautions for protection of navigation and fishing and... prevent extensive pollution of the sea and rivers".⁶³ This brief reference is the only environmental provision in PSCs.

C. Brazil's risk service contract

Latin America has the most lax environmental control regulations over the activities of transnational corporations in the world.⁶⁴ Brazil is certainly no exception to this general situation. As the Brazilian national case study shows, the RSCs have undergone a process from zero to limited environmental regulation. The issue of environmental protection was conspicuously absent from the provisions of the original model contract of 1976 and the individual contracts concluded in the first bidding round. The subsequent model and individual RSCs were amended by adding a small paragraph to an existing article to require that:

Such services must be performed in such a way that will result in a minimum ecological disruption and shall cause no damage to the public and private property located along the shore. In case pollution is caused by CONTRACTOR's Operation, CONTRACTOR is obligated to carry out the clean-up operations...⁶⁵

D. China's hybrid contract

When it comes to protection of the environment, the Chinese hybrid contract is perhaps the best of the four contractual arrangements examined in this study. Both the model and individual contracts have a complex set of environmental regulations, ranging from references to domestic

environmental laws and regulations, to emergency procedures and reports on environmental protection and accidents, and to insurance programmes to cover liability for pollution and cleanup expenses.⁶⁶ In addition, the relevant domestic laws and regulations referred to in the HCs set out in a comprehensive manner the procedural, technical and performance requirements for protecting the environment, including particularly an environmental impact assessment.⁶⁷

Unfortunately, these regulations have produced little immediate practical value because they have, for one reason or another, not been brought fully into play.

(2) Petroleum contracts in other developing countries

The foregoing analysis is revealing. Environmental issues have not received enough attention from the representative O & G contracts. This finding also holds true for the petroleum agreements used in many other developing countries. A comprehensive survey of petroleum agreements in over 100 developing countries by this author reveals that the agreements, by and large, have followed the pattern of a general principle of, or reference to, environmental protection. Systematic and substantive requirements are missing.⁶⁸

The findings in this study about the inadequate and insufficient environmental provisions of developing countries' petroleum agreements are further illustrated by the opinions

of relevant international organizations. The report on Environmental Law Reform in the Seychelles, sponsored by the United Nations Development Programme (UNDP), concludes, after a detailed examination of the country's model petroleum agreement, that "the contractual framework includes limited provisions for the protection of the environment..."⁶⁹ The United Nations Centre on Transnational Corporations (UNCTC) observes in a recent report on alternative arrangements for petroleum development that in many developing countries' petroleum contracts, "the only explicit reference to environmental protection is a brief clause", such as:

Contractor shall... carry out operations in such a manner as to cause minimum social and ecological disruption and use its best endeavours to cause no damage to public and private properties. If pollution results from contractor's operations, contractor shall promptly carry out cleaning operations to the satisfaction of the appropriate governmental authorities and the costs therefor shall not be chargeable as exploration, development or production costs.⁷⁰

(3) Current state of the environmental provisions

Based on the findings of this study and the conclusions from other commissioned reports, the state of environmental management provisions in modern petroleum agreements can be summarized into the following points:

- There is in recent petroleum agreements a slowly increasing recognition of the issue of environmental protection, but most agreements have little more than

conventional requirements on "sound technical and engineering principles" or "good international oil field practice";

- Many countries still lack comprehensive and systematic environmental regulation and administrative capacity; this is particularly true in the petroleum sector;

- Developing countries have, to date, generally not required the submission of environmental impact assessments prior to exploration operations, and rehabilitation or abandonment after exploitation;⁷¹

- A few contractual systems have devoted greater emphasis to environmental protection, but in many cases the environmental objectives of these provisions have not been adequately backed up by political and administrative constituencies.

3. Critiques of existing environmental provisions

Prior to beginning the analysis, it is necessary to comment on the suggestion that environmental concerns have been a "basic feature" or "the most significant development" of mineral licensing.⁷² This observation is not an accurate statement of the current state of the development.

It should be apparent from the preceding examination that modern petroleum agreements, no matter what their form and regulatory approach, have provided little environmental regulation of exploration and exploitation activities.

Environmental regulations, if any, are supplementary to the principal operative articles. The reason for the lack of environmental protection clauses in petroleum contracts is simple: economic development outweighs environmental protection. Both parties to the contract view the environmental obligation as somehow in conflict with their own interests. The producing countries are afraid of scaring away potential investors by imposing strict environmental requirements. The investing companies consider the environmental obligation as an extra burden to exploration cost.

The inadequacies of the environmental aspects of the four representative contracts have been examined in detail in the national case studies. Some further legal analysis is carried out here to offer more critiques of the existing contractual clauses. As observed, many oil and gas contracts have adopted the usual approach of general reference to environmental obligation. In theory, such a general principle would inevitably indicate that investment and production must take priority over environmental objectives. In practice, a general reference leaves many questions unanswered. For instance, under the Thai concession, how would a concessionaire determine "appropriate measures"? Does that term require anticipatory and proactive actions? Under the Indonesian PSCs, how can the term "extensive pollution" be reasonably or quantitatively defined? Does the contractor assume any

responsibility in the case of less "extensive" pollution? If yes, to what extent? Under the Brazilian RSCs, what will happen if the liability for pollution or cleanup expenses is beyond the financial capacity of the service contractor? Disputes may well arise precisely from these delicate areas.

A second major limiting factor with the existing environmental provisions is that many of them, like Thailand's MCC, Indonesia's PSC and Brazil's RSC, tend to place greater emphasis on cleanup operations and insurance coverage. These requirements are obviously reactive rather than proactive with respect to environmental problems. Such a practice has a number of problems. First, the emphasis on retroactive measures may be interpreted to mean that foreign contractors assume no environmental obligation until their operations have caused pollution or damage to the environment. Second, these provisions do not conform with the precautionary principle of international environmental law, which requires not only preventive actions but also proactive and anticipatory measures in environmental protection and resources conservation.⁷³ Third, it is not enough to simply hand over environmental responsibilities to the insurers, because insurance policies will no longer cover companies that have chosen to disregard anti-pollution measures.⁷⁴ Moreover, there is a tendency towards limitations on environmental liability policies with respect to coverage.⁷⁵ Finally, the cost of reactive actions will be much greater than those of

proactive and anticipatory procedures and preventive measures. Indeed, pollution should be prevented, not compensated.

A third defect, as already observed in the case studies, is the supplementary character and generality of the contractual clauses. Environmental provisions are often a general goodwill principle added on to an existing clause such as conduct of operations. As such, the provisions emphasize the traditional concept of "good oil-field practice" or "sound technical and engineering principles", which really means minimum waste of the oil rather than environmental protection in modern sense. Moreover, most environmental provisions are ill-drafted on very broad lines which are vague and imprecise. Under such general references, the environmental objectives to be achieved are unclear and the environmental obligations are not spelled out in measurable terms, which makes fulfilling contract difficult or impossible. In reality, environmental concerns are assigned a mere cosmetic role by both parties during the life of the contract.

In the final analysis, the use of vague principles and general references is a rather casual way of addressing an important problem that is likely to cause multimillion-dollar liabilities as well as other ecological and social problems.

A fourth complication rests with the double environmental standards. As mentioned, the developed and developing countries have different perspectives on environmental protection. In the energy sector, the developed nations, such

as the United States, exercise much stricter environmental control over the offshore petroleum industry than do developing countries.⁷⁶ The consequence of the double environmental legal standards is that transnational oil companies have been allowed to conduct exploration operations in developing countries which would be considered environmentally unsound in developed nations. For example, pollution control expenditures knocked more than 10 per cent off the profits of big American oil companies in 1989,⁷⁷ and there is no compulsory environmental spending in most developing countries, and oil companies pocket whatever they have made after royalty and tax. The strict environmental regulation is one of the reasons for the American oil industry to have switched its investment overseas over the past 10 years. Warnings have been issued that the refining industry would follow the oil producers abroad, partly to escape from tough environmental regulations at home and to enjoy the less stringent requirements in developing countries.⁷⁸ Some European oil companies gave little attention to environmental procedures in developing countries compared with operations in developed countries. For instance, BP indicated in internal documents that it prepared 22 Environmental Impact Assessments (EIA), 40 Baseline Environmental Surveys, and 18 Environmental Monitoring Surveys in 1987 in its home country. But BP's record overseas during that same time was dismal in producing countries in Latin America: only one preliminary EIA, one

incomplete EIA, no baseline surveys, and no environmental monitoring.⁷⁹

As a last point, environmental management is found to be inadequate in modern petroleum agreements, because the contracting parties consider the environment only after development objectives have been set, and they separate the environmental performance from the contract objectives. As a result, the existing structures are considered to be either incapable of or inappropriate for the tasks of environmental protection and resource conservation.

After a comprehensive survey of insufficient environmental regulation by petroleum resource countries over international petroleum operations, it is now time for a quick review of the environmental performance of international oil companies. Transnational corporations (TNCs), "the engine of international economic development", have their major investments in high pollution-intensive industries such as petroleum and chemicals. They have been variously charged with damaging and threatening environment resources in the countries where they operate.⁸⁰ In the recent past, many of them have developed formal written statements or guidelines of environmental protection, but most of these policies:

set only the broadest kinds of behavioural constraints, left open the scope for discretionary action, said little about going beyond the legal requirements imposed upon them locally, and seldom specified the means to be used in complying with them.⁸¹

As this study and others found, even these broad policies tended to apply to home countries operations.⁸² "In general, many TNCs have tended to exploit the relatively lax implementation practices of host countries".⁸³

From the preceding discussion, it seems that neither party in the relationship has a genuine interest in protecting the environment. Nonetheless, international oil companies are a vital link in environmental management. With their vast resources and advanced technologies, they can potentially, and should, play an important role in protecting the environment and preserving the resources of the producing countries.

4. Corrective suggestions

The relationship between environment and development is now in the process of reassessment. The world has begun to realize that environment and development are not mutually exclusive but interdependent. It is equally clear that the environment is also a scarce commodity of great value for both present and future generations: environmental protection is not a cost but an investment in the future. To achieve the goals of economic development, the environment must be saved. Unfortunately, current economic growth is obtained by overtaxing environmental resources; this is beyond doubt not only unsustainable but also self-destructive. It is for these reasons that environmental protection is suggested for

consideration as an important new issue in petroleum arrangements. There is a clear and urgent need for actions to be taken to improve and correct the current contractual approach to environmental protection.

For developing countries to improve their contractual provisions on environmental management, sophisticated environmental legal systems can be used for reference. With regard to environmental protection, it is possible to identify three principal forms of regulation:⁸⁴

(a) a permit/licence system, which may include both the approval of operations to be carried out by, and imposition of restrictive terms and conditions on, the contractor;

(b) a reporting system, which requires the submission of information on the environmental capability and experience of the operator, potential environmental effects of the operations, and pollution damages and other environmental accidents; and

(c) a direct statutory system, which provides various environmental regulations and enforcement powers to be exercised by the competent authorities.

In fact, these forms of regulations are seldom employed alone. In many systems, a combination of two or three elements is introduced. For many developing countries, it is advisable to incorporate well-designed environmental provisions into the model and individual contracts than to pass new and comprehensive environmental laws. Accordingly, the following

corrective resolutions are recommended for consideration.

(a) Environmental impact assessment/statement

Environmental impact assessment is an effective tool in the service of environmental management. It is the most effective form of precautionary procedure which provides for detailed assessment of the expected direct and indirect environmental effects of the proposed operations, possible mitigation measures, and so on. Socioeconomic, physical and biological effects may also be considered. Many countries, particularly industrialized nations and increasingly developing countries, have passed legislation requiring an assessment of the effects a project is likely to have on the environment before development begins.⁸⁵ Petroleum contracts should require at a minimum the submission of a separate EIA by recognized independent environmental expertise before drilling operations begin.⁸⁶ The EIA serves a dual function: it informs the producing state of the potential effects on the environment of the proposed petroleum project; and it gives the contractor an opportunity to mitigate any likely environmental damages posed by the exploration. In view of the fact that petroleum exploration is a high-risk venture and foreign companies may be deterred by stringent requirements, it is more feasible for the producing states to postpone the requirement of a formal EIA until a commercial discovery has been made.⁸⁷

(b) Environmental management plan

A comprehensive environmental management plan may be required, and it should specify, *inter alia*, the operator's capability and experience in environmental management, environmental personnel and their responsibilities in the internal organization, emergency procedures and anti-pollution equipment, environmental training and technology transfer to the government/its state oil company, etc.

(c) Environmental report

The contractor may be obliged to file at specified time intervals an environmental report on the environmental situation, and pollution accidents and the measures adopted to mitigate adverse effects.

(d) Environmental liability assurance programmes

The governments of producing states should make the mandatory insurance programme or bank guarantees for environmental liabilities a necessary component of the environmental obligation. The insurance programme should provide adequate coverage for pollution liability, cleanup expenses and, particularly, expenses for killing blowouts.⁸⁸

(e) Rehabilitation/abandonment obligations

The issue of reclamation and abandonment has increasingly captured the attention of the industry. Rehabilitation is to restore the energy and resources sites to a safe state or to some approximation of the previous natural state through such methods as refilling or re-planting.⁸⁹ In the case of

offshore petroleum development, restoration of depleted areas poses essentially the same problem, but in a different form of abandonment of offshore platforms. The purpose of rehabilitation or abandonment is to minimize adverse effects on the environment.

As revealed in this study, very little petroleum legislation and few contracts have provisions specifically aimed at removal issues. But many developing countries are becoming concerned about the problem because the cost of removal will be largely their responsibility. For example, there are approximately 750 offshore structures in East Asia alone. Many of them are sure to be removed in the 1990s. The cost of removal is high, ranging from \$2 million to \$12 million.⁹⁰

Rehabilitation/abandonment is becoming a standard requirement.⁹¹ The Maritime Safety Committee (MSC) of the International Maritime Organization (IMO) developed in 1988 "Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone" for adoption by individual member states.⁹² Based on these guidelines, developing countries should be able to include such an obligation into their petroleum contracts. Since the obligation of rehabilitation and abandonment will not occur until the maturity of the field, which usually takes from 30 to 50 years after the agreement, it may be advisable for developing countries to

incorporate into the contract a general clause on rehabilitation and abandonment. The details of the obligation can be worked out after the commercial production has commenced.

(f) Environmental audit

As a relatively new form of environmental management, the environmental audit is being increasingly adopted in the developed nations. It serves as a kind of follow-up or monitoring procedure which facilitates the management control of environmental protection, evaluates the environmental performance and ensures compliance with environmental obligations. An environmental audit is considered to be one of the most effective tools in managing environmental protection.⁹³ To be effective in environmental regulation, petroleum contracts should include an audit obligation to be fulfilled in either of the following ways: requiring the contractor to carry out internal environmental audits and report on the results if there are no national audit procedures and standards to follow; or allowing the competent government agency to arrange for an independent environmental audit to ensure that the environmental obligations are faithfully complied with. A successful environmental audit should include the following elements: (a) a pre-audit; (b) setting objectives; (c) drawing up audit documents; (d) determining areas to audit; (e) reporting; (f) implementing changes; and (g) conducting a post-audit review.⁹⁴

VIII. Modern petroleum agreements and sustainable development

As noted, developing countries have traditionally preferred development to environment for historical, ideological and economic reasons. In the energy sector, energy policies in most developing countries have not given enough attention to the issue of resources conservation. Conservation objectives, if any, must step behind investment and production priorities. With respect to sustainable development, the awareness and knowledge of the issue is very low. There is little conscious effort to adopt measures conducive to sustainable development of natural resources.

This is precisely the case of the four countries examined in this study. Being energy-producing countries, they all have various problems such as dependency on petroleum as a major source of export earnings or tax revenue, self-sufficiency in oil, or self-reliance in petroleum development, etc. "While self-reliance may be a legitimate goal, total self-sufficiency often makes neither economic nor environmental sense in today's interdependent world".⁵⁵ To meet the rapidly increasing demand of domestic consumption, politically motivated production quotas, or export goals to maximize hard currency earnings, these countries have been "desperately destroying" the resources deposits.⁵⁶ Petroleum resource

countries with the help of international oil companies are resorting to extreme measures to squeeze more oil out of the ground and the ocean, often at the expense of the environment. It seems that these countries are intent on using up whatever might be available without concern for the future.

It is hard to imagine that contractual arrangements with little commitment to environmental protection would have incorporated requirements for sustainable development. These arrangements are products of a single-minded pursuit for immediate gains. Indeed, the four contractual systems which represent the principal forms of modern petroleum agreements have run into complete silence on sustainable development. Foreign companies have complied with no requirements whatsoever. In consequence, the environment and resources have generally been sacrificed for the sake of accumulating oil wealth.⁹⁷ "Clearly, oil transnationals are a vital link in a chain of development, which is unplanned, unsupervised, unpoliced, and unsustainable".⁹⁸

Domestic resources of oil have dried up in many countries. The rise and decline of the giant Renqu oil field in China, which went on stream with an annual production of 10 million tons in 1976 and is now nearly depleted, in a period of only about 15 years, provides the best example of this depletion practice in developing producer countries.⁹⁹ In Indonesia, if the present rates of depletion continue unchanged, the country will no longer be a member of OPEC by

the year 2010.¹⁰⁰ In Brazil, the rush to realize the political goal of self-sufficiency in oil, so much sought after by the nation for well over half a century, has caused premature exhaustion of many oil fields and early depletion of reservoirs. Current production output can stand for only 15 years.¹⁰¹ China will become a net importer of oil by the middle of this decade if substantial additional resources are not discovered, or if they are found but not developed rapidly.¹⁰² The estimated recoverable reserves of O & G in China have a possible life of only about 20 years at the present rates of production and consumption.¹⁰³

In short, sustainable development is, to date, a non-issue in the legal frameworks for international petroleum operations. Petroleum exploration and exploitation under the existing structures are unsustainable because: first, the contracts are designed with incentives for maximum production at an alarming rate; second, current development patterns authorized by these arrangements foreclose long-term opportunities; third, the systems allow profits to be made regardless of resources devastation; fourth, environmental resources have not been made an explicit part of these arrangements; fifth, all the current systems do not provide incentives or requirements for sustainable development.

IX. Summary

To sum up, international petroleum agreements are the product of a single-minded pursuit of narrow interests and profits. They are not designed for sustainable development, but rather are aimed at rapid exploitation in the event of a commercial discovery. While there is nothing wrong with this when viewed in retrospect, it is certainly problematic from the viewpoint of sustainability.

The previous chapters have clearly demonstrated that the second generation petroleum agreements developed since the 1950s have made significant improvements over their predecessors. These arrangements have generally achieved greater stability, commerciality, and mutuality of interests. As a result, there has been in recent years a distinct shift from inequity and instability to reciprocity and stability in the government-company relationship. Yet the development of petroleum contracts is not without shortcomings.

Although modern petroleum agreements have generally achieved greater commerciality and mutuality of interests, even these contracts have not taken into consideration the issue of sustainable development. Environmental protection, if it exists at all, is generally found only in peripheral terms to the principal exploration and exploitation conditions.

Consequently, petroleum development, even under the current systems, is not truly sustainable in terms of modern resource protection.

Based on the national case studies and the comparative analysis, we may arrive at the conclusion that modern petroleum agreements are not "modern" in terms of environmental protection and sustainable development. Environmental protection is only a marginal area and sustainable development a totally neglected one in the overall arrangements. Petroleum arrangements currently in use are not yet designed to achieve sustainable resource development. This is beyond doubt the most vulnerable part of modern petroleum arrangements for a unique, non-renewable resource.

In conclusion, developing countries now face the dilemma of selecting a proper course between environmental conservation and depletion of irreplaceable natural resources. Rapid extraction allows greater economic growth, but creates environmental degradation and resources depletion problems. Sustainable development provides the only correct path to the future.

Notes:

1. Boulos, A.J., "Mutuality of Interests between Companies and Governments", in International Bar Association (IBA), Energy Law '90 (London: Graham & Trotman, 1990), p. 20; Smith, E.E., "Typical World Petroleum Arrangements", a paper delivered at Rocky Mountain Mineral Law Foundation, International Resources Law: A Blueprint for Mineral Development, February 18-19, 1991, p.42.
2. UNCTC, Main Features and Trends in Petroleum and Mining Agreements, UN Doc. ST/CTC/29, 1983, p.5.
3. For an account of some of the differences, cf. Kusuma-Atmadja, M., "Indonesia's National Policy on Offshore Mineral Resources", Borgese, E.M., Ginsburg, N. and Morgan, J.R., ed., Ocean Yearbook 9 (Chicago: The University of Chicago Press, 1991), pp.97-98; Beals, R.E. and Gillis, M., "The Evolution of Indonesia Hard-Mineral Agreements", 4 Nat. Res. F. 353-55 (1980); Le Leuch, H., *infra* note 38, p.91.
4. Oon, K.C., The Politics of Oil in Indonesia (Cambridge: Cambridge University Press, 1986), p.221.
5. UNCTC, Main Features and Trends, *supra* note 2, p.55.
6. Tanzer, M., "Oil Exploration Strategies for Developing Countries", 2 Nat. Res. F. 319-20 (1978).
7. Adede, A.O., "A Profile of Trends in the State Contracts for Natural Resources Development", 12 N.Y.U.J. Int'l L & P. 529-30 (1980).
8. Cf. Barrows, G., "A Survey of Incentives in Recent Petroleum Contracts", in Beredjick, N. and Wälde, T., ed., Petroleum Investment Policies (London: Graham & Trotman, 1988), p.226; Smith, *supra* note 1, pp. 22-23.
9. Taverne, G.G., "Methods of Participation of Host Countries in Crude Oil Exploration and Production Ventures in the Middle East and Northern Africa", in IBA, World Energy Law '75 (Proceedings of Seminar on World Energy Law held at Stavanger, Norway, May 1975), pp.135-36.
10. UNCTC, Alternative Arrangements for Petroleum Development, UN Doc. ST/CTC/43, 1982, pp.7-11; Barrows Company, World Petroleum Agreements (New York: The Barrows Company Inc., 1985), pp.517-19, 528; Le Leuch, *infra* note 38, pp.82-83; UNCTC, Main Features and Trends, *supra* note 2, p.56.
11. *Ibid.*, p.55.

12. Cited in Kindley, M., "Indonesia", 8 O & G Investor 49 (1988).
13. See generally Fabri, N., "The Legal Nature of Petroleum Agreements: A Comparative Analysis", Australian Min. & Pet. L. Ass'n YB 1986, p.12; Jennings, R.Y., "State Contracts in International Law" 37 British YB Int'l L. 156(1961); Riad, T.F.A., "Host Countries Sovereignty over National Resources and Protection of Foreign Investors", 39 Revue Egyptienne De Droit International 35-99 (1983); Asante, S.K.B., "Stability of Contractual Relations in the Transnational Investment Process", 28 Int'l & Comp. L.Q. 404 (1979); El-Kosheri, A.S. and Riad, T.F., "The Law Governing a New Generation of Petroleum Agreements: Changes in the Arbitration Process: Part I & II", 7 & 8 OGLTR 171-81, 209-15 (1986 & 87).
14. See e.g., Dupuy, R., the sole arbitrator in Texas Overseas Petroleum Co./California Asiatic Oil Co. V. Government of Libyan Arab Republic, 17 I.L.M. 3, 29 (1978); Jennings, *supra* note 13.
15. E. g., Toriguian, S., Legal Aspects of Oil Concessions in the Middle East (Lebanon: Hamaskaine Press, 1972), p.289; Geiger, R., "The Unilateral Change of Economic Development Agreements", 23 Int'l & Comp. L. Q. 73 (1974).
16. See e.g., Geiger, *ibid.*, p.73. Brown, R., *infra* note 45, p.58; Asante, S.K., "International Law and Foreign Investment: A Reappraisal", 37 Int'l & Comp. L. Q. 612 (1988).
17. Jennings, *supra* note 13, p.177.
18. Mitchell, J.D.B., The Contracts of Public Authorities: A Comparative Study (London: London School of Economics and Political Science, 1954); Turpin, C., Government Contracts (Harmondsworth: Penguin, 1972); Fabri, *supra* note 13, pp.18-25; Asante, *supra* note 16, pp.611-16. Mewett, A.W., "The Theory of Government Contracts", 5 McGill L. J. 222 (1958-59). The Aminoil award supports in explicit terms this contention, see Government of the State of Kuwait v. American Independent Oil Co. (Aminoil), 21 I.L.M., 976 (1982).
19. Frihagen, A., "The Chinese and Some Developing Nations License Regimes", a paper presented at 7th Solstrand Oil and Gas Law Conference, University of Bergen, Norway, 1984, p.5, 17; Fabri, *supra* note 13, pp.12-13.
20. Brownly, I., Principles of International Law (Oxford: Clarendon Press, 1990), p.550; see Brown, *infra* note 45, p.58; Boulos, *supra* note 1, p.28; Lalonde, P.C.M., "Energy Companies and Their Host Governments, to Each His Own", in IBA, Energy Law '90, *supra* note 1, p.45; Geiger, *supra* note 15, p.100.

21. Libyan American Oil Co. (Liamco) v. Government of the Libyan Arab Republic, 20 I.L.M. 30 (1981).

22. The International Court of Justice also made this point clear in the Anglo-Iranian Oil Co. case by declaring:

The Court cannot accept the view that the contract signed between the Iranian Government and the Anglo-Persian Oil Company has a double character. It is nothing more than a concessionary contract between a government and a foreign corporation.

See "Anglo-Iranian Oil Co. Case", in International Court of Justice: Reports of Judgements, Advisory Opinions and Orders, 1952 (Leyden, Holland: A. W. Sijthoff's Publishing Co., 1952), pp.112.

For further discussion, see El-Kosheri and Riad, *supra* note 13; Jennings, *supra* note 13, p.156; Riad, *supra* note 13, p.53; cf. also Frants, D.K., "Exploitation Concession: Contracts or Permits? Contributions from the Norwegian Phillips/Elofisk Case", 5 J.E. & Nat. Res. L. 171-81 (1987).

23. Smith, D.N. and Wells, jr. L.T., "Mineral Agreements in Developing Countries: Structure and Substance", 69 AJIL 583 (1975); Le Leuch, *infra* note 38, p.92; Smith, *supra* note 1, p.42.

24. Waelde, T.W., "Innovations in Petroleum and Mineral Licensing?" in IBA's Section on Energy and Natural Resources Law (SERL), Energy and Resources Law '92 (Pre-seminar papers of the Tenth Advanced Seminar on Petroleum, Minerals, Energy and Resources Law, Washington, D.C., April 5-10, 1992), p.133.

25. For a solid discussion of this issue, see Boulos, *supra* note 1, pp.4-31.

26. See e.g. arts. 7 (7.3) and 18 (10.1) of the Chinese Model and Individual HCs, *supra* ch.6, note 107.

27. Kusuma-Atmadja, *supra* note 3, p.95. This principle is also expressed in Indonesia as "the principle of reciprocal benefit based on reasonableness and fairness", see HE President Soeharto, "Century of Indonesia's Oil Industry", 16 OPEC Bull. 17 (1985).

28. For a discussion of the contractual convergence, see Kinna, J.C., "Recent Trends in Petroleum Regimes", in IBA and Lawasia Research Institute, Energy Law in Asia and the Pacific (New York: Matthew Bener, 1982), pp.479-98.

29. Zorn, S., "Permanent Sovereignty over Natural Resources: Recent Developments in the Petroleum Sector", 7 Nat. Res. F. 328 (1983).
30. Cf. Le Leuch, *infra* note 38, p. 89.
31. Zorn, *supra* note 29, p.328.
32. Kinna, *supra* note 28, p.480.
33. Blinn, K.W., et al., International Petroleum Agreements (London: Euromoney Publications, 1986), p.53.
34. E.g., Omorogbe, Y., "Contractual Forms in the Oil Industry: the Nigerian Experience with Production-Sharing Contract", 20 J. World Trade L. 346 (1986).
35. Waelde, *supra* note 24, pp.142-44.
36. Waelde, *ibid.*, pp.142-44; Oon, Politics of Oil in Indonesia, *supra* note 4, p.185; Beals and Gillis, *supra* note 3, 352 (1980); Smith, E.E. and Dzienkowski, J., "A Fifty-Year Perspective on World Petroleum Arrangements", 24 Tex. Int'l L.J. 14 (1989); Wood, W.A., "Legal Aspects of Foreign Investment in Oil and Gas Exploration and Development in Brazil", 7 J.E. & Nat. Res. L. 271 (1989).
37. Van Meurs, P., "Financial and Fiscal Arrangements for Petroleum Development—An Economic Analysis", in Beredjick and Wälde, Petroleum Investment Policies, *supra* note 8, p.47, 73; Blinn, International Petroleum Agreements, *supra* note 33, p.306.
38. Le Leuch, H., "Recent Evolution of Petroleum Exploration and Exploitation Agreements in Developing Countries: New Approaches to Introduce More Flexibility and Progressivity in the Contractual Terms", 10 Nat. Res. F. 205-19 (1986); An updated version of this article under the title "Contractual Flexibility in New Petroleum Investment Contracts" appears in Beredjick and Wälde, Petroleum Investment Policies, *supra* note 8, pp.81-100.
39. Le Leuch, *ibid.*, p.219; McCaskill, R.W., "Contract Flexibility—Oil and Gas", in SERL of IBA, Energy Law '86 (New York: Matthew Bender, 1986), p.111.
40. Le Leuch, *ibid.*, p.82
41. UNCTC, Transnational Corporations in World Development: 3rd Survey, UN Doc. ST/CTC/46, 1983, 1983, p.197.

42. The PSC is found less acceptable in West Africa, where the modernized concession is more popular. Cf. Padilla, V. R., "Petroleum Taxation in West Africa: A Comparative Study", 15 Nat. Res. F. 2 (1991); See also Omorogbe, *supra* note 34, p. 342.

43. El-Kosheri and Riad, *supra* note 13, p.211; Asante, *supra* note 13, p.401; Lando, C., "Renegotiation and Revision of International Contracts: An Issue in the North-South Dialogue", 23 German YB Int'l L. 37 (1980).

44. El-Kosheri and Riad, *ibid.*, p.171; Smith, "Typical World Petroleum Arrangements", *supra* note 1, p.43; Greiff, T., "International Business: Oil and Gas (Indonesia)", 19 Harv. Int'l L.J. 399 (1978).

45. Brown, R., "Contract Stability in International Petroleum Operations", 29 CTC Reporter 56-60 (1990).

46. For proposition of the review clause, see Annex II, para. 11 of the draft "Code of Conduct on Transnational Corporations", in Official Records of the Economic and Social Council, Supp. No. 7, UN Doc. E/C.10/1983/S/5/Rev. 1, 1983, which reads:

Contracts between Governments and transnational corporations should be negotiated and implemented in good faith. In such contracts, especially long-term ones, review or renegotiation clauses should normally be included.

In the absence of such clauses and where there has been a fundamental change of the circumstances on which the contract or agreement was based, transnational corporations acting in good faith, shall/should co-operate with Governments for the review or renegotiation of such contract or agreements.

See also Smith, D.N. and Wells, jr., L.T., "Conflict Avoidance in Concession Agreements", 17 Harv. Int'l L. J. 66-69 (1976); Asante, *supra* note 13, pp. 406-419; Frihagen, *supra* note 19, p. 15, 19; Lalonde, M., "Energy Companies and Their Host Governments: to Each His Own", in IBA, Energy Law '90, *supra* note 1, p.46. For an example of the review clause, see arts. 154 and 155 of The United Nations Convention on the Law of the Sea, UN Doc. A/CONF. 62/122, October 1982.

47. It is to be noted that there is some scepticism about the value of the review clauses. A growing interest has recently developed among some developing countries in preference of finding a more flexible fiscal regime to a review clause. Brown, *supra* note 45, pp.57-58.

48. For instance, *Texaco Overseas Petroleum Co./California Asiatic Oil Co. (Topco) v. Government of the Libyan Arab Republic*, 17 I.L.M. 3-37 (1978). For comments on the case, see Von Mehren, R.B. and Kourides, P.N., "International Arbitrations between States and Foreign Private Parties: the Libyan Nationalization Cases", 75 AJIL 476 (1981); Delaume, G.R., "State Contracts and Transnational Arbitration", 75 AJIL 784 (1981); Greenwood, C., "State Contracts in International Law—the Libyan Oil Arbitration", 53 British YB Int'l L. 27 (1982).

49. Cf., Wälde, T., "Investment Policies in the International Petroleum Industry—Responses to the Current Crisis", in Beredjick and Wälde, Petroleum Investment Policies, *supra* note 8, p.14.

50. Quigg, P.W., Environment: the Global Issues, *Headline Series No. 217* (New York: The Foreign Policy Association, October 1973); Munro, R.D., "Twenty Years after Stockholm: Past Achievements and Future Issues", 6 Mazingira 46 (1982).

51. "Turn to Pollute", *The New York Times*, February 23, 1972, p.38.

52. For an account of the confrontation, see Elmer-Dewitt, P., "Rich vs. Poor", Time, June 1, 1992, pp.22-32; Bidwai, P., "North Vs. South on Pollution", The Nation, June 22, 1992, pp.853-54.

53. Excerpt from "Beijing Declaration of the Ministerial Conference on Environment and Development in Developing Countries", cited in Rusk, J., "Hoping to Rekindle for Poor", *The Globe and Mail*, May 22, 1992, p.A2.

54. Manning, S., "The Cost of Survival", 124 Scholastic Update 11 (1992); Pearce, F., "How Green was Our Summit?" 134 New Scientist 12-13 (1992); Hecht, S. and Cockburn, A., "Rhetoric and Reality in Rio", The Nation, June 22, 1992, pp.848-53.

55. For instance, the U.S. has refused to sign the Convention on Biological Diversity on the ground that the treaty "threatened to retard biotechnology and undermine the protection of ideas". The oil-producing Gulf countries, Kuwait, Saudi Arabia, United Arab Emirates, Iran and Iraq refrained from signing the Convention on Climate Change, saying the convention puts too much emphasis on CO₂ as being one of the causes of the deterioration of the atmosphere and the climate.

56. Pearce, *supra* note 54, p.13; see also Frye, R.S., "Uncle Sam at UNCED", 22 Env. P. & L. 340-46 (1992).

57. Address at the UNCED by the Chinese Premier Li Peng, reprinted in *People's Daily* (overseas ed.), June 6, 1992, p.1; Hileman, B., "Earth Summit Concludes with Agenda for Action, but Little Funding", 70 Chem. & Eng. News 7-17 (1992).
58. International Institute for Sustainable Development (IISD), Business Strategy for Sustainable Development: Leadership and Accountability for '90 (Winnipeg: IISD, 1992), pp.24-25.
59. Cf. Karaosmanoglu, A., "Environment, Poverty and Growth: the Challenge of Sustainable Development in Asia", 13 Vital Speeches of the Day 396 (1989).
60. Although pollution from offshore operations accounts for only 1 per cent of the total marine pollution, accidents like the Santa Barbara blowout in 1969 could cause catastrophic damages to the marine environment. See Baldwin, M.F., "The Santa Barbara Oil Spill", 42 Univ. of Colorado L. Rev. 33-76 (1970); Fleischer, C.A., "The Lessons of the Ekofisk Bravo Blowout", in Cusine, D.J. and Grant, J.P., ed., The Impact of Marine Pollution (London: Montclair, 1980), pp.135-154. For general information on pollution caused by petroleum exploration, Boesch, D.F. and Rabalais, Offshore Oil and Gas Development: Long-Term Effects of Offshore Oil and Gas Development (London: Elsevier Applied Science, 1987).
61. Sect. 75 of Thailand's Petroleum Act B.E. 2514 of 1971, *supra* ch. 3, note 55.
62. Clause 11 (2) of Thailand's Ministerial Regulations No. 17 B.E. 2532 of 1989, *supra* ch. 3, note 63.
63. Sec. V, art. 1.2 (d) of Indonesia's Model and Individual PSCs, *supra* ch. 4, note 115.
64. UNCTC, Environmental Aspects of the Activities of Transnational Corporations: A Survey, UN Doc. ST/CTC/55, 1985, p.23.
65. Art. 5 (5.1.9) of Brazil's Model and Individual RSCs after 1977, *supra* ch. 5, note 101.
66. Arts. 7 (7.2.9), 8 (8.5.2), 21 (21.3), and 24 of China's Model and Individual HCs, *supra* ch. 6, note 107.
67. See the text and its accompanying notes 217-325 in *supra* ch.6.
68. It is not feasible to present here a highly detailed, country-by-country, account of the environmental provisions of the petroleum agreements concluded in the developing world.

Nevertheless, the reader is strongly encouraged to consult the following outstanding publication for a complete view of the environmental aspects of the world petroleum agreements. Barrows Company, ed., Middle East; North Africa; South and Central Africa; Europe; Asia and Australasia; Cental America and Caribbeans; and South America: Basic Oil Laws and Concession Contracts, Vols. 1-2 and various Supps. (New York: The Petroleum Legislation Co., 1959-present).

69. De B. Romilly, G.H., Environmental Law Reform in Seyshells: Marine Pollution Legislation (Draft), sponsored by Untied Nations Development Programme, August 1991, p.86.

70. UNCTC, Alternative Arrangements, *supra* note 10, p.43.

71. Ibid.

72. Adede, *supra* note 7, p.517-18; Waedle, *supra* note 24, p.136.

73. For the precautionary principle in general, see Cameron, J. and Abouchar, J., "The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment", 14 B.C. Int'l & Comp. L. Rev. 1 (1991); Hey, E., "The Precautionary Concept in Environmental Policy and Law: Institutionalizing Caution", 4 Geo. Int'l Env. L. Rev. 303 (1992).

74. Sheeline, W.E., "Pollution: Who will Pay?" 119 Fortune 12-16 (1989).

75. Gallello, C.F., "U.S. Firms Face Foreign EIL Exposure", 95 National Underwriter 33 (1991).

76. White, H.R., "United States Environmental Laws and Exploration and Production Operations", 13 Alberta L. Rev. 1-17 (1975). For a comparison of national legislation on marine pollution caused by offshore activities in the U.S., France, Norway, the U.K. and Indonesia, Malaysia, Thailand, Trinidad and Tobago, Venezuela, Ghana, Libya, Arab Republic, Madagascar, Nigeria and Senegal, see Hardy, M., "Offshore Development and Marine Pollution", 1 ODIL 239 (1973-74).

77. "Oil Companies: Split Profit", The Economist, March 3, 1990, p.62.

78. "Energy: in the Oildrums", The Economist, April 12, 1992, p.75; also Howard, L.S., "Risk Management In Asia: Only Public Ire Spurs Action on Risk", 95 National Underwriter 9 (1991).

79. For details, see Thomson, K. and Dudley, N., "Transnationals and Oil in Amazonia", 19 The Ecologist 222-23 (1989).
80. For a general survey of the issue, see Gladwin, T.N. and Walter, I., Multinationals under Fire: Lessons in the Management of Conflicts (New York: John Wiley, 1980).
81. UNCTC, Environmental Aspects, *supra* note 64, p.53.
82. For a comprehensive survey, see *ibid.*
83. ESCAP/UNCTC Joint Unit on Transnational Corporations (TNCs), "Environmental Aspects of TNCs in the ESCAP Region", 30 CTC Reporter 6 (1990).
84. For more information, see UNCTC, Alternative Arrangements, *supra* note 10, pp.42-43.
85. For instance, the European Community (EC) issued on June 27, 1985 a directive requiring Member Nations to assess the environmental effects of all major projects to be undertaken within their respective jurisdictions. For a comment, see Bono, L.L., "The Implementation of the EC Directive on Environmental Impact Assessments with the English Planning System: A Refinement of the NEPA Process", 9 Pace Env. L. Rev. 155-186 (1990).
86. For an example of environmental impact assessment, see "Convention on Environmental Impact Assessment in a Transboundary Context", 30 I.L.M. 800-15 (1991); particularly its Appendix II: Content of the Environmental Impact Assessment Documentation.
87. UNCTC, Alternative Arrangements, *supra* note 10, p.43.
88. Transnational oil corporations administer scores of contracts at a time, and insurance programmes often receive inadequate attention. Moreover, many of the lawsuits concerning liability and indemnity clauses resulted from inadequate insurance coverage. See Hunt, C.D., "Topic 4: New Issues of Offshore Liability, Indemnity, and Insurance—Canada", IBA, Energy Law '86, *supra* note 39, p. 283; For more information, see an excerpt of the OECD report, "Pollution Insurance and Compensation Funds for Accidental Pollution", 21 Env. P. & L. 176-77 (1991).
89. See generally, Redgwell, C., Zillman, D., Smith, H., and Kuehne, G., "Topic 3: Abandonment and Reclamation of Energy and Resources Sites and facilities", in IBA, Energy and Resources Law '92, *supra* note 24, pp.305-88; for a national case study, see Verwer, C.P., "Abandonment and Removal of

Mining Installations: Some Aspects of Dutch Legislation", 6 OGLTR 172 (1990).

90. Cameron, P. "Offshore Rigs: Removal Costs", 11 EAER 17 (1989).

91. For instance, the Province of Ontario, Canada, passed a new legislation (Mining Act, R.S.O. 1980 as amended by S.O. 1989) to require the total rehabilitation of all mining sites. For a discussion of the legislation, see Frawley, H., "Environmental Law Developments Affecting Ontario's Mining Industry", 2 J. Env. L. & P. 107-15 (1991).

92. See IMO, MSC/Circ. 490, May 4, 1988, pp.1-2 and its Annex, pp.1-6, reprinted in 4 Int'l J. Est. & C.L. 76-79 (1992). For a legal history and review of the guideline, see Kasoulides, G.C., "Draft Guidelines for the Removal of Offshore Platforms", *ibid.*, pp.71-76.

93. Vinten, G., "The Blossoming of the Environmental Audit", 91 Industrial Magt. & Data Systems 19 (1991). There are several types of environmental audits: permit performance audits; regulatory requirement audits; environmental management practice audits; technical processes-practices audits; risk management audits; special purpose audits; site assessment audits. The types of environmental audits available vary and each serves specific purposes. For more discussion, see Philbrook, J.N., "Environmental Audits: Determining the Need at Mining Facilities", 43 Mining Eng. 207-09 (1991).

94. Vinten, *supra* note 93, p.25.

95. International Union for Conservation of Nature and Natural Resources (IUCN), United Nations Environmental Programme (UNEP), and World Wildlife Fund (WWF), Caring for the Earth: A Strategy for Sustainable Living (Gland: Switzerland, 1991), p.92.

96. Environmental assessment has been described by the WCED legal expert group as "emerging principles of international law". See generally WCED Expert Group, Legal Principles for Environmental Protection and Sustainable Development (Dordrecht, the Netherlands: Martinus Nijhoff Publishers, 1987), pp.49-62.

97. Cf. "Environmental Concerns Gaining Importance in Industry Operations", O & G J. July 6, 1992, PP. 47-51.

98. Thomson, and Dudley, *supra* note 79, pp. 219-24.

99. See *supra* Chapter 6 at section 7.3 for detail.

100. Lecture by Mr. Paul Cartrier, Deputy Director of Environmental Enforcement Agency of Indonesia, at the School for Resource and Environmental Studies, Dalhousie University, October 21, 1991; Some even say that the country will become a net importer of oil by the year 2000. See also Livesley, K.P., "The Timor Gap Treaty", IBA, Energy Law '90, supra note 1, p.63.

101. See the text and its accompanying notes 233-34 in supra ch. 5.

102. See the text and its accompanying notes 330 to 335 in supra ch. 6.

103. Kinzelbach, W.K.H., "Energy and Environment in China", in Glaeser, B., ed., Learning from China? Development and Environment in Third World Countries (London: Allen & Unwin, 1987), p.175.

Chapter Eight

New Directions in Petroleum Agreements: Coexistence of Commerciality and Sustainable Development

I. Introduction

Humanity has been plagued over the past several decades by three inter-related groups of issues: population growth, environmental pollution and resources exhaustion. Unfortunately, these issues have largely, if not completely, escaped the attention of modern petroleum agreements. International petroleum exploration and exploitation under the current contractual systems are far from sustainable. "Energy is too important for its development to continue in such a random manner."¹

With this flaw of modern petroleum arrangements in mind, the remainder of this study focuses on the issue of sustainability and petroleum arrangements. The purpose is to explore whether a general principle of sustainable development can be made legally operational in petroleum agreements, and whether commercial energy interests can be reconciled with environmental sustainability. Before addressing that point, however, we should first look at sustainable development, a principle whose definition, contents and legal

characterization are still in debate.

II. The evolution of the principle of sustainable development

1. Historical perspective on sustainable development

Though the term of "sustainable development" was initially used in the early 1970s, the concept was not entirely new. Actually, it had been advocated periodically for centuries because unsustainable practices date back to ancient times. For example, China was 70 per cent forest 10,000 years ago, it is now about only 5 per cent.² The ancient forests of the United States have been virtually wiped out over three centuries.³ Indeed, the idea of sustainable development has its roots in the ancient writings of Aristotle and Confucius.⁴ Although a thorough study of all of these writings is beyond the scope of this study, it may be of interest, however, to examine some of the classic thought of ancient Chinese philosophy.

To begin, we are bound to mention Confucius (551-479 B.C.) whose ideas have greatly influenced not only Chinese culture but also world civilization.⁵ Chong Yung, which means, literally, equilibrium and harmony, is the whole quintessence of Confucianism. Confucius wrote: "Equilibrium

and harmony is the supreme law of the universe! Rare for a long time has been its practice among the people."⁶ In his Doctrine of the Mean, Confucius went on to elaborate:

Being without inclination to either side is called CHONG; admitting of no change is called YUNG. By CHONG is denoted the correct course to be pursued by all under heaven; by YUNG is denoted the fixed principle regulating all under heaven. ...This equilibrium is the great root from which grow all the human actings in the world, and this HARMONY is the universal path that all should pursue. Let the states of equilibrium and harmony exist in perfection, and a happy order will prevail throughout heaven and earth, and all things will be nourished and flourish.⁷

It is clear that Confucius advocated harmony among human beings and between human beings and nature. Equilibrium and harmony is not only a rule for human activities, but also a law applicable to the relationship between humanity and the environment. In modern language, the term Chong Yung means "moderate". It suggests a kind of constant use which neither exceeds nor falls short.⁸

Confucius not only taught his philosophy by precept but also practised it by example. He "angled but did not use a net. He shot but not at birds perching",⁹ because a fishing net across the river may catch all the fish regardless of their size, and shooting the perching birds may kill those that are nesting.

The ideas of sustainable development in Confucianism were inherited by his disciples. Mencius (371-289 B.C.?) put these ideas in more concrete terms:

If the seasons of farming are complied with, the grain will be more than can be consumed. If close nets are not allowed to enter the pools and ponds, the fish and turtles will be more than can be eaten. If the axes and billhooks enter the mountains and forests only at the withering season, the wood will be more than can be used. When the grain, fish and turtles are more than can be consumed, and the wood more than can be used, this enables the people to nourish their living and pass away without regret and hatred.¹⁰

From the above review, it can be said that Confucius was not only an ancient philosopher but also a pioneer environmentalist. His philosophy contains some of the earliest conservation ideas. If considered from today's environmental perspective, Confucianism proposes that human activities and development be moderate in harmony with nature, and that neither excessiveness nor insufficiency are justified. In his view:

Able to give their full development to the natures of creatures and things, he can assist the transforming and nourishing powers of Heaven and Earth. Able to assist the transforming and nourishing powers of Heaven and Earth, he may with Heaven and Earth form a ternion.¹¹

When equilibrium and harmony is practised and natural systems are conserved and enhanced, the mountains and rivers will enjoy tranquillity, and the birds and beasts and fishes realize the happiness of their nature, human beings accomplish prosperity and growth. All things on the earth "will be nourished and flourish." So what Confucius advocated over 2,500 years ago is in a sense the sustainable development the world seeks to pursue today.

The other school of ancient Chinese philosophy, Taoism,

also has something to say about the environment and development. In contrast with the philosophy of Confucius which is for the collective organization or society, Lao Tzu dealt with the individual's way of life. His cardinal theme was concerned with "the way of man's co-operation with the course or trend of the natural world".¹²

In a broad sense, Tao theory can be interpreted as the "order of nature".¹³ Taoism attached great emphasis on the unity of nature. "The universe came into being with us together; with us, all things are one".¹⁴ It regards humans as part of nature. Furthermore, everything in the world depends on one another,¹⁵ including humans as being inseparable from the environment. This is the principle of "mutual arising", which signifies that if everything is allowed to go its own way, the harmony of the universe will be established. In Taoist view:

Being one with Nature, he is in accord with Tao.
Being in accord with Tao, he is everlasting and is
free from danger throughout his lifetime.¹⁶

Taoism is deeply concerned with the environment through strong opposition to human chauvinism.¹⁷ One of its fundamental principle is Wu Wei (literally "taking no action" or "non-being").¹⁸ Taking no action does not mean inaction. Rather, it means taking no arbitrary, artificial action, non-interference, or letting things take their own course and not imposing the way of humans upon nature. It "supports all things in their natural state".¹⁹

Taoist philosophy is notable for its sustainable thinking. Lao Tzu warned that "to hold and fill a cup to overflowing is not as good as to stop in time. Sharpen a sword-edge to its very sharpest, and the (edge) will not last long."²⁰ And he further pointed out:

To force the growth of life means ill omen. For the mind to employ the vital force without restraint means violence. After things reach their prime, they begin to grow old, which means being contrary to Tao. Whatever is contrary to Tao will soon perish.²¹

Indeed, everything has its limits; it cannot be carried to extremes. This is perhaps the earliest expression about limits to growth. Lao Tzu went on to criticize the unsustainable practices by stating:

Racing and hunting cause one's mind to be mad. Goods that are hard to get injure one's activities. ... Elegant clothes are worn, sharp weapons are carried, foods and drinks are enjoyed beyond limit, and wealth and treasures are accumulated in excess. This is robbery and extravagance. This is indeed not Tao (the Way).²²

Lao Tzu was convinced that "the sage discards the extremes, the extravagant, and the excessive".²³

The philosophy of Taoism is, throughout, ecologically oriented, and a high level of sustainable development consciousness is built into it. It stresses that humans are part of nature, and nature should be cherished and allowed to take its own course, and should not be interfered with or destroyed by humans.

Clearly, there is much in the ancient Chinese philosophy

that fits easily and revealingly with the concept of sustainable development. Though little has been mentioned about such environmental problems as over-population, resources depletion and global warming, both Confucianism and Taoism emphasize harmony between humanity and nature and the need to "follow nature". Thus, a strong message is sent to us that we are part of nature; if we destroy nature, we destroy ourselves.

In short, the ancient Chinese philosophy has much to offer sustainable development, yet its richness remains to be fully articulated. Anyway, "what they have said is of immense importance for our own times when, in the [A.D.] 20th century, we are realizing that our efforts to rule nature by technical force and 'straighten it out' may have the most disastrous results."²⁴ (original square brackets)

The ancient Chinese philosophers are by no means either the first or the only people in written history to propose the ideas of environmental protection and sustainable development. A number of western philosophers and politicians, including Plato (350 B.C.) and Aristotle (322 B.C.), at times proposed such ideas, albeit in different terms and with different emphases.²⁵ Their philosophy and writings are not studied here because of space constraints.

The relationship between humanity and the environment was known to some of the ancients and has been recognized periodically by some civilizations, but it has been totally

disregarded throughout history. In consequence, civilizations across the world have fallen.²⁶ Looking back at the two million-year history of humans on Earth and the 10,000-year-old development of agriculture and settled societies, the history of mankind has been one of repeated development and destruction. Given this history, it is still an open question that "the more recent dependence on non-renewable fossil fuels constitute an ecologically sustainable strategy".²⁷

2. From Stockholm to Brundtland to Rio

The collapse of the early civilizations did not simply pass quietly. There have been outcries in history for a halt to humanity's conflict with nature. To mention a few examples, Fairfield Osborn, the founder and president of Conservation Foundation, devoted his life to arousing the concern of the people to the accelerating pace with which human is destroying its own life sources. In his book Our Plundered Planet, which appeared in 1948, he wrote:

We human beings were rushing forward unthinkingly through days of incredible accomplishment... and we had forgotten the earth, forgotten it in the sense that we were failing to regard it as the source of our life.²⁸

In addition to the concern about human's conflict with nature, awareness developed about the future and future generations. At the First United Nations Conference on the Law of the Sea, held in 1958 in Geneva, the Chairman, Wan

Waitharakon, Prince of Thailand, remarked that the resources of the sea had to be preserved, like a family heritage in civil law, for the benefit of future generations.²⁹

A more recent extension of this thinking is The Limits to Growth published by The Club of Rome in 1972. This report concludes:

If the present growth trends in world population, industrialization, pollution, food production, and resources depletion continue unchanged, the limits to growth on this planet will be reached some time within the next one hundred years. The most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity. (emphasis added)³⁰

These warnings and conclusions gave early publicity to the problems between the environment and development.³¹ Unfortunately, they have received little attention from the contemporary societies which have maintained their drive towards ever greater use of resources and heavier pressure on the environment.

As a result, the decades of the 1960s and 1970s have been marked by rapid expansion and intensification of pollution. It was not until 1972 when the United Nations Conference on the Human Environment was held in Stockholm that a milestone was reached in the evolution of sustainable development.³² Out of this conference came two documents: "Action Plan", which contains 109 specific recommendations for international co-operation on the environment in years to come; and the "Stockholm Declaration", which embodies a preamble and 26 general principles "to inspire and guide the peoples of the

world in the preservation and enhancement of the human environment" (introduction to the preamble).³³

The Stockholm Conference occupies an important place in history because it made the first global attempt to deal with international environmental problems. Its significance also lies in the fact that it elevated the environmental campaign to a new level which would otherwise have taken 10 or 20 more years to realize.

During the intervening years, a number of events have taken place in terms of sustainable development. In 1980, the International Union for Conservation of Nature and Natural Resources (IUCN), in co-operation with United Nations Environmental Programme (UNEP) and other relevant organizations, published the World Conservation Strategy, which introduced, for the first time in an official document, the concept of "sustainable development".³⁴ The strategy emphasized that humanity, which exists as a part of nature, had no future unless nature and natural resource were conserved. The fundamental principles laid down in the World Conservation Strategy were incorporated in the World Charter for Nature adopted by the United Nations General Assembly on October 29, 1982.³⁵

More importantly, the year 1987 saw the publication of Our Common Future by the World Commission on Environment and Development (WCED), also popularly known as "the Brundtland Report", as the commission was chaired by Prime Minister Gro

Harlen Brundtland of Norway.³⁶ The central theme of the report was sustainable development. The Brundtland Report dealt with the issue in a comprehensive manner and defined the term better than ever before in both political and scientific terms. It made a breakthrough in sustainable development by arousing the people of the world to the idea that sustainable development was the single most important challenge facing the planet earth today. The Brundtland Report can be regarded as the second landmark in focusing international thought on environmental sustainability.

The UNCED held in 1992 in Rio de Janeiro, Brazil, represents another global push for sustainable development. This "Earth Summit" brought together the largest number of heads of state ever assembled in one place. The conference resulted in three non-binding documents—the Rio Declaration on Environment and Development, Agenda 21, and a Statement on Forest Principles, and two binding agreements—Convention on Climate Change and Convention on Biological Diversity.³⁷ All these documents were designed with some important principles and measures to promote sustainable development. Particularly, the 800-page Agenda 21, an action plan containing 40 chapters and 115 specific programmes for developing the planet sustainably through the 21st century, devoted one of its four main parts to addressing conservation and management of natural resources, including nonrenewable fossil fuels such as oil and gas.³⁸

The Rio Conference made greater headway than its predecessor in Stockholm in two respects: first, the Earth Summit dealt with global problems such as climate change and biological diversity while the Stockholm Conference focused largely on local problems such as air and water pollution. Second, the Rio Conference concluded with two legally binding conventions while the Stockholm Conference produced only good will documents. The Earth Summit was a historical event that signified the transition from the old era characterized by the confrontation between the East and West to a new one dominated by the imperative of sustainable development. Suffice it to say that the Earth Summit marked the beginning of a systematic march towards global sustainable development. The Rio Conference was beyond doubt the third milestone in the quest for sustainable development, for it offered a real chance for theory to be translated into practice.

III. Legal aspects of sustainable development

After the Rio Conference, the real challenge is how to apply the principle of sustainable development to actual economic activities. The following discussion attempts to interpret and apply this principle in the context of petroleum agreements.

1. Sustainable development defined for petroleum resources

Since the publication of the Brundtland Report, public as well as political awareness of sustainable development has exploded all over the world. Despite the fact that the concept is gaining currency around the world, there is no consensus as to what it means.³⁹ It is one of those catch-phrases that means different things to different people.⁴⁰ Much effort has been undertaken to define the term. A good starting point is the Brundtland Report, which defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".⁴¹ A Canadian definition reads: "development which ensures that the utilization of resources and the environment today does not damage prospects for their use by future generations".⁴² In his book The Green Economy, Michael Jacobs construes that "sustainability implies maintaining environmental resources at levels which at least prevent future catastrophe and at best offer future generations the option of as much 'environmental consumption' as the present one".⁴³ Caring for the Earth, the successor to the World Conservation Strategy, uses the term to mean "improving the quality of human life while living within the carrying capacity of supporting ecosystems".⁴⁴

Nowadays it is not difficult for one to find scores of definitions. Despite various interpretations, there is no

actual conflict between definitions as such. More importantly, no one today challenges the concept that the world's resources should be used sustainably.

While sustainable development undoubtedly is, or has to be, the goal, it has hitherto generally remained a broad theoretical principle.⁴⁵ To be operative, it must be defined in virtually every sphere of human activity. Thus more insight is needed into precisely what it means to petroleum development. As for fossil fuel in general and petroleum in particular, sustainable development does not necessarily require a halt to the current development, or to negate economic growth. Rather, it differs from previous concepts of development in its recognition that environmental resources are finite. It means a new pattern of development that minimizes the depletion rate of reserves and maximizes the "life" of the resources for the interest of all parties concerned, particularly the interest of future generations. Or alternatively, sustainability means using as little as possible now and saving as much as possible for the future.⁴⁶ In other words, sustainability requires stewardship of non-renewable resources such as oil and gas, or replacement of resources to renewables.

2. Legal principles of sustainable development

It is, as was indicated earlier, by no means easy to

define the term sustainable development. Arriving at a legal definition represents an even greater challenge. But some legal aspects of sustainable development may be identified from existing literature and international agreements. The legal principles of sustainable development can be described largely as follows, *inter alia*:⁴⁷

(a) A general obligation of natural resources conservation

Under this general principle, every member of the present generation or of the world community has a responsibility to care for the environment and its resources. This is the fundamental principle of international environmental law developed after the 1972 Stockholm Conference and recognized now as an independent branch of international law.

(b) Intergenerational and intragenerational equity

The benefits and costs of natural resources use should be shared fairly among different communities and interest groups that are poor and those that are affluent, and between not only present but also future generations. From both economic and legal perspectives, sustainability is in essence a matter of intergenerational equity. Intergenerational equity is proposed here to have two basic legal principles: to acknowledge rights of future generations; and to assume responsibilities for our descendants. A central point of this theory is that the right of each generation to benefit and develop a natural resource is inseparably coupled with the obligation to conserve and pass it on to future generations in

no worse condition than it was received from past generations.⁴⁸

The theory of intergenerational equity also carries an intragenerational dimension. As beneficiaries of the planetary heritage, every member of each generation is entitled to equitable access to and use of the world's resources. Benefits of the natural resources cannot be allocated to some communities while the burden of caring for it is allocated to others.⁴⁹ It is sometimes claimed that the principle of intergenerational equity is "an emerging norm of customary international law".⁵⁰

(c) Constructive and rational use

Conservation requires maintenance, restoration and enhancement of a natural resource while it is in use. In terms of sustainability, renewable resources should be used within the resources' capacity for regeneration. Non-renewable resources must be employed at the rate at which renewable resources can be substituted for them so as to guard against the danger of their future exhaustion. The rate of wastes' emission must be kept within the assimilative capacity of the environment.⁵¹

(d) Prevention of irresponsible and destructive development

Development of natural resources should be carried out within the earth's carrying capacity and should not cause interference and damage to the environment and the interests of other people, now and in the future. We have a right to

develop and use the resources but no right to destroy them. Were it otherwise, we would deprive the right of other people to use and benefit from the same resources.

(e) Liability for unsustainable development

Violation of the sustainability principle that results in pollution and damages to natural resources will cause environmental responsibility, and claims should be raised on behalf of the present and future generations.⁵²

The above principles are by no means conclusive and they overlap to a certain degree. The full meaning of sustainable development needs a greater degree of elaboration in the legal domain. This is an issue for further research.

While at this stage sustainable development cannot be said to be a legal principle with binding force, it nevertheless has a profound legal significance. At any rate, it can be regarded as a "soft law" that carries strong political, moral and practical effects.⁵³ It will become enforceable as it finds expression in customary and conventional international law.

The principle of sustainable development has gained worldwide acceptance, both at national, regional and international levels, and by governments and non-governmental organizations.⁵⁴ Indeed, never in history has a concept such as sustainable development been so quickly accepted by so many around the world.⁵⁵ Ten years ago, few knew what sustainable development was, now it is all around us. Such a "norm",

almost unanimously adopted in the North and South, and by the rich and poor, may be compared with customary international law. It is not an overstatement that sustainable development is an emerging principle of international law. It is only a matter of time before this principle will turn from "soft" into "hard". There is good evidence that international law is generally moving in this direction.⁵⁶

IV. Sustainability provisions in petroleum agreements

1. Global petroleum resources and sustainability

As already mentioned, an important aspect of the issue of sustainability is the exhaustion of natural resources, particularly petroleum fossil fuels. The rapacious exploitation of this crucial resource on earth authorized by the current contractual systems is perhaps an excellent but depressing example of unsustainable development.

Oil and gas have been extracted without any regard to future development. Since the establishment of the modern petroleum industry at the beginning of this century, the consumption of fossil fuels has grown by a factor of 30.⁵⁷ This pace has accelerated in the past few decades. Between 1959 and 1979, worldwide fossil fuel use quadrupled.⁵⁸ Humankind expends, in one year, an amount of fossil fuel that

it took nature roughly a million years to produce.⁵⁹ Global oil production will begin to decline sometime in the next 15-25 years, as it already has in the producing countries examined in this study.⁶⁰ In fact, "most countries are already pumping oil as fast as they can."⁶¹ From these startling facts, it is absolutely evident that the current pattern of petroleum production and consumption is not sustainable, as pointed out in a special energy report to WCED:

Unfortunately, today's energy choices by governments, industries and individuals, and the narrow terms of reference within which those choices are made, results in overall energy patterns which, in the aggregate, are not sustainable; neither ecologically, nor economically.⁶²

In some cases, a particular country has been threatened by depletion of some energy resource upon which its economy critically depends, such as coal in Britain and oil in the United States.⁶³ Regrettably, over-exploitation of petroleum resources has not received any significant attention vis-a-vis the destruction of rain forest. In fact, petroleum resources are as important as—if not more than—the rain forest. It perhaps needs more care because forests can be replanted but petroleum is good only once.

As has been examined in this study, producing countries have virtually no regulations for sustainable development in their contractual arrangements with transnational oil companies. Such agreements are certainly responsible for the

over-exploitation, because it is under these agreements that foreign oil companies obtain the right to develop. Both parties to the agreement indulge, because of ignorance or greed, in the short-term gains and have forgotten that the more produced today the less will be left for tomorrow. What the contracting parties have been doing is overtaxing an irreplaceable global resource—"eating the dinner in the morning", as a Chinese proverb goes.

Responses to the depletion of resources have so far emphasized underlying processes such as energy use, largely ignoring the production side. But upstream exploration and production operations can also be made to work towards sustainable development. Energy-producing countries should incorporate sustainable provisions into petroleum agreements for international exploration and exploitation, and foreign oil companies must learn how to meet these requirements.

2. Resources for the Future Fund in petroleum agreements

The principle of sustainable development applies to all natural resources, both living and non-living, renewable and non-renewable,⁶⁴ though it is theoretically easier to implement with renewable resources. For renewable resources like fish, forestry and water, the goal of sustainable development is accomplished when harvest rates equal the rates of renewal, restoration or replenishment. An example of this

kind is the "maximum sustainable yield" provided for in the United Nations Convention on the Law of the Sea (LOS Convention).⁶⁵

(1) The Resources for the Future Fund

The picture is different for the management of non-renewable resources, since they are a fixed quantity which will ultimately be depleted. Development of these resources cannot be, in a strict sense, sustained, short of non-use. On the other hand, if they are never to be used, then there is no sense or need to maintain them for the future!

Instead, non-renewable resources have an equally important role to play in sustainable development. It is possible to develop non-renewable resources such as oil and gas in a quasi-sustainable manner by limiting their rate of depletion to the rate of creation of renewable substitutes.⁶⁶ The quasi-sustainable development requires that any investment in the exploitation of a non-renewable resource must be paired with a compensating investment in a renewable substitute, e.g., oil extraction coupled with tree planting for wood alcohol. The idea is to divide the net receipts from the non-renewable resources into an income component for current consumption each year and a capital component for investment in renewable substitutes. Capital must be invested in a sustainable substitute in such a way that it will produce, at the end of the life of the non-renewable resource, an annual

sustainable yield equal to the income portion of the receipts from the non-renewable resource.⁶⁷ In this way, the development of non-renewable resources is made "sustainable", since the consumption reduced from the nonrenewable resource is converted into sustainable consumption because it is continued in perpetuity by the sustained yield from the new renewable substitute, namely, harvest rate equals the regeneration rate.⁶⁸

The general principle is clear; the question of how to incorporate the rule into petroleum arrangements remains. As concluded, modern petroleum contracts are not designed for sustainable resource development. "National and international law has traditionally lagged behind events... Human laws must be reformulated to keep human activities in harmony with the unchanging and universal laws of nature."⁶⁹ The petroleum agreements in use today are no exception to this general situation. As such, they must be amended, and specific negotiated provisions need to be developed and incorporated into the existing structures to address the issue of sustainable development. Based on the quasi-sustainable development principle, one solution might be the establishment of a "Resources for the Future Fund" (RFF), which sets aside a specific percentage of royalty or rent paid by foreign companies for sustainable development, such as research and development of renewable substitutes, or saving for future use. RFF is one of the mechanisms that can transform non-

renewable resources into renewable ones.

The rationale for establishing the RFF includes, among other things, the following points. First, by setting up such a fund, host countries can extend the benefits from the petroleum resources to future generations. In this sense, the renewable substitute developed from the fund or the money saved in the fund serves to compensate future generations for the depletion of a public resource to which future generations also hold a title. Second, the fund has a potential role to play in sustainable development. It can be used, if necessary, to support sustainable initiatives such as environmental restoration or resources conservation. Third, the purpose of the fund would not be primarily to discourage energy development. Rather, it would be a fair and effective way to raise the money needed to fund a transition from relying predominantly on non-renewable energy resources to an increasing use of "renewable" ones.

(2) Permanent trust fund examples in petroleum development

The RFF suggestion may at first sound strange or impractical, yet models of this kind have already been put into practice. Several non-renewable resource-dependent states/provinces in North America have established various permanent trust funds in their non-renewable resource management.⁷⁰ Principal among these funds are the following:

(a) New Mexico's Severance Tax Permanent Fund (STPF)

The State of New Mexico has implemented an innovative Severance Tax Permanent Fund. The principal of the fund is from severance taxes levied on nonrenewable resources extracted in the state. The fund's principal is invested in several ways, and the income generated is deposited into the state's general fund to finance government activities. The purpose of the fund is to steward non-renewable resource revenues to serve long-term state interests.⁷¹

(b) Alaska's Permanent Fund (APF)

Petroleum resource rents are a significant income for the State of Alaska. The state received \$900 million from the first sale of oil leases in the late 1960s and early 1970s. But this income was quickly spent by the government.⁷² Alaskans were concerned for some time over the disposition of petroleum profits derived from public land, and came to realize that something needed to be done to preserve some of the oil wealth for the future.

In 1976 a referendum was held in the state to create the Alaska Permanent Fund Corporation. The fund is entrenched in the State Constitution which provides that at least 25 per cent of some state resources revenues, mainly from oil royalty, should be deposited into the fund. The three objectives of the APF are: to save a portion of the state's oil wealth for the future; to protect the savings from loss of value; and to invest the savings for an income. The principal of the fund is constitutionally protected, its use is only

permitted upon approval through a referendum.⁷³

The sustainable element of the APF is obvious for the fund clearly stresses that its primary objective is to save a portion of the oil wealth for the future. The APF is characterized by emphasizing saving rather than development since the principal of fund cannot be expensed.

(c) Alberta Heritage Savings Trust Fund (AHSTF)

Alberta is endowed with non-renewable resources, but its people recognized that "whereas there is a limited supply of non-renewable resources and therefore revenue from the sale of those resources will ultimately be reduced"; and "...it would be improvident to spend all that revenue as it is received", as stated in the preamble of the Alberta Heritage Savings Trust Fund Act passed by the Provincial Legislature on May 19, 1976.⁷⁴ As a consequence, the Alberta Heritage Savings Trust Fund was created by the act to serve the best interest of Alberta's current and future residents.

"The principal purpose of the Heritage Fund is to set aside for the future benefit of Albertans a significant portion of the revenues now being received from the sale of the Province's non-renewable natural resources."⁷⁵ The primary sources of revenue for the fund are royalties collected on the production of crude oil and natural gas in the province. The fund act provides for an annual transfer of 30 per cent of the province's non-renewable resource revenues to be set aside for the benefit of the people in future

years.⁷⁶ The rest of the fund comes from interest and other income earned from investments. By 1990, the fund had accumulated a total financial assets of \$12.6 billion.⁷⁷

The Alberta fund differs from the Alaska fund in that it emphasizes development rather than saving since the principal, and not interest, is used to fund projects. Noticeably, one of its investment areas is "renewable resources improvement". For instance, during 1977-78, the fund invested \$9.6 million in three separate projects to improve Alberta's renewable resources in the areas of reforestation, grazing reserves and land reclamation. When the new forestry nursery project is completed, it will have the capacity to provide 10 million barefoot seedlings and 10 million container seedlings annually.⁷⁸ By way of this project, the Alberta fund sets the first model in the world to use revenues from non-renewable resources to fund the development of renewable resources. It perhaps represents one of the best examples of non-renewable resources management for sustainable development in the world.

Although the permanent trust funds noted above are not entirely concerned with developing renewable substitutes or funding sustainable development initiatives, they are still relevant to our purpose because they all use trust funds as agents for sustainable development. Perhaps more importantly, they provide examples of successfully managed trust funds that could serve as the basis for the RFF proposed in this study.

Although the RFF towards petroleum sustainable

development will ultimately produce more opportunities and certainly more benefits than continuing business as usual along the existing frameworks, its implementation will inevitably be disruptive. It is likely to be viewed by both host governments and exploiting companies with some scepticism since the former are afraid of the potential loss in petroleum rents and the latter will undoubtedly regard such a fund as an extra financial burden.⁷⁹ Nevertheless, sustainable development is a matter of survival. The petroleum industry is by no means an exception to this challenge. Moreover, sustainable development of petroleum resources in the interests of the present and future generations is the industry's historical responsibility. Although sustainable development may be a principle that may never be fully reached, given the non-renewable nature of energy resources, there must be clear recognition of this principle in all contractual arrangements, particularly in terms of environmental degradation and the interests of future generations.

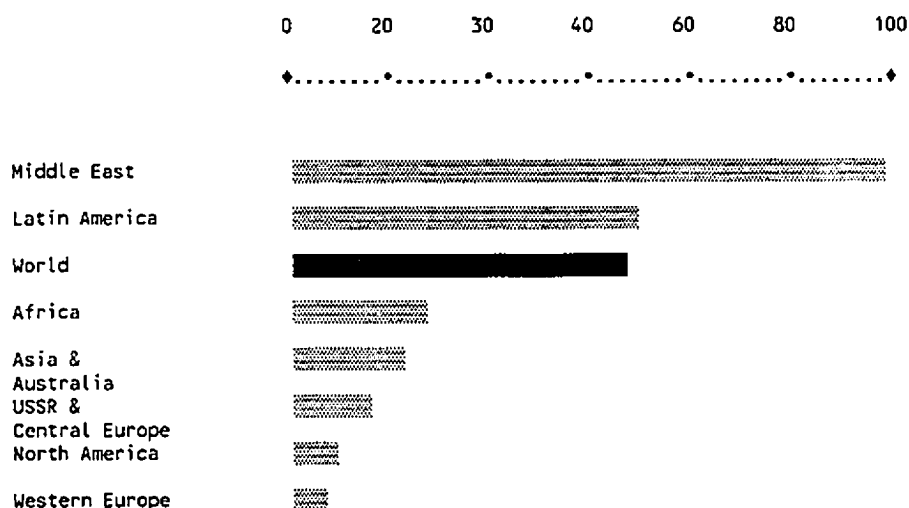
(3) Towards the compatibility of energy need and sustainable development

There have always been good reasons for both producing countries and exploiting companies to move in this direction. First, a broad view of the global petroleum resource picture reveals that world O & G are running short. Oil resources are

non-renewable and finite. The world originally contained 2,215 billion barrels of recoverable oil, some 29 per cent of which has already been produced and consumed.⁸⁰ The end of the remaining oil can be calculated from the current production and consumption rates. The following figure provides the information for us.

Figure 1: World Oil Reserves to Last

Years of oil reserves remaining*, 1990



* At current rates of production Source: BP

Source: The Economist, July 13, 1991, p.68.

"The key point is that energy has been used and continues to be used in most parts of the world in an unsustainable manner..."⁸¹ After over a century of exploitation, what has been left for the future is really very limited. To be more specific, at present global oil reserves stand at around 45 years' supply at the current rate of use;⁸² and the estimated lifetime of the global petroleum reserves and resources would be only three years and seven years respectively at the rates of consumption of the year 2030 (assuming a population of 10 billion, which will consume at current U.S. rates).⁸³ When it comes to sustainable development in specific countries, the situation is even worse.

**Table 24: Times to Which Current Oil Output
can be Sustained**

Short-term (0-4 yrs)	Longer mid-term (31-60 yrs)
U.S.	Indonesia*
Canada	India
U.K.	China
Australia	Libya*
Trinidad & Tobago	Brunei
Peru	
Angola	
Brazil	
Colombia	
Malaysia	
Romania	
End of century (5-10 yrs)	Long-term (60-110 yrs)
Egypt	Yemen
Argentina	Mexico
Norway	Iran*
Ecuador*	
Soviet Union	
Oman	
Mid-term (11-30 yrs)	Into 22nd century (110+ yrs)
Qatar*	Venezuela*
Algeria*	Saudi Arabia*
Nigeria*	U.A.E.*
	Iraq*
	Tunisia
	Kuwait*

* OPEC members

Source: O & G J., September 23, 1991, p.66.

It is clear from the above table that the countries with the shortest term for probable sustainable production constitute the largest group of all. At the head of this group are the United States and Canada whose present production can

be sustained for a period of only up to four years. At present some 60 million barrels of oil are removed from producer to consumer each day throughout the world, an amount enough to fill Lake Erie one and a half times.⁸⁴ If production and consumption continue at the current rate and in the same manner as it has in the past, there may be no future for the petroleum industry, or at least the future will be extremely bleak since production cannot be sustained in most producing countries, and oil in many parts of the world may be exhausted some time in the first half of the 21st century.⁸⁵ In fact, petroleum reserve additions from wildcat O & G discoveries in the 1982-1991 decade was down by almost 40 per cent from additions registered during 1972-1981.⁸⁶

As observed, sustainable development inevitably involves justice and equity, both intergenerational and intragenerational.⁸⁷ John Rawls' Theory of Justice can be invoked as the theoretical basis for arguing that the next generation should have access to at least the same resource base as previous generations.⁸⁸

The principle of equity requires that rights be allocated on the basis of population as well as generations, on the basis that everyone should have an equal share of the stock.⁸⁹ The world holds an estimated remaining oil of 1,755 billion barrels.⁹⁰ Divided by the number of 5.3 billion people alive today, the stock would provide a theoretical maximum allocation of about 330 barrels for each human being. This

figure would be greatly reduced to about 160 barrels if the ultimate remaining oil were divided by the 11 billion people expected to be the world's population within 40 years. The per capita share would be further watered down in consideration of the gulf between reserves and resources,⁹¹ and of the generations beyond 40 years hence. On the basis of equitable sharing, the current generation would already have exhausted all their rights and run into deficit.

Currently, the 25 per cent of the world's population in industrialized nations consumes 70 per cent of the world's resources; six of the leading industrialized nations are responsible for producing 45 per cent of greenhouse gases.⁹² This is certainly not equitable, not to mention intergenerational equity!

Petroleum resources have been handed over intact from one generation to another for millions of years. All members of each generation inherit the resource both as beneficiaries and as custodians, with the obligation to pass on it to the next generation. Theoretically, each generation should leave to the next one a world that is at least as diverse and productive as it inherited. Practically, this is not feasible given the non-renewable nature of petroleum resources, the only choice in the dilemma is to save and leave as many resources as possible to future generations. Steps must be taken immediately to start this process. At any rate, it is a historical commitment that our grandchildren and their grandchildren will thank us

for.

A closely related question is the issue of energy security, not in the traditional sense but in the context of sustainability. Historically, energy security represents the ability to withstand the disruptions of the sources of energy supply. Apart from this, the issue of energy security for the 1990s and the 21st century raises some new profound questions such as: How much has been left for this generation? How much is going to be left for the next generation? Are we still secure in consideration of the present mode of exploitation? If not what can be done?⁹³ So energy security is no longer a matter of sources and supply alone, but one that also embraces sustainability and, for that matter, global environmental security.

In the past both parties to petroleum contracts did not negotiate the agreement with the interest of future generations in mind. Because of their immediate need or responsibility, the deal was normally made with a view to self-sufficiency, the annual balance of payments, the next election, or to the rate of return, and the next meeting of the shareholders. However, petroleum development is now not the province of these two parties any longer, in the sense that their accountability is changing. Apart from their traditional stakeholders, a broad range of people and entities begin to have a stake in the petroleum business even if they do not share directly in the profits. These stakeholders

include employees, consumers, local communities and others that the exploration and exploitation affect in a significant way and, particularly, future generations. "Business enterprises have a moral, if not legal, accountability to these diverse groups".⁹⁴

The need for sustainable development of petroleum resources is particularly acute in producing countries because of their predominant reliance on the development of natural resources as the way to economic growth. Although developing countries now use only a fraction of the amount of energy per capita that industrialized nations do, rapid growth in energy use will come mainly in these countries as they develop their economies and as populations grow. Energy consumption in the developing world is expected to triple within the next 30 years.⁹⁵ So when the time comes for their economies to "take off", there will be no more oil, or not enough oil, to drive the development. Again, let's take Thailand, Indonesia, Brazil, and China as examples to demonstrate the case.

Thailand's petroleum consumption has almost doubled since the late 1970s, from the equivalent of 280,000 barrels of oil per day to more than 520,000 barrels today.⁹⁶ Its oil consumption continues to surge by 15-20 per cent a year, extraordinarily higher than the world's average of 1.5 per cent annually.⁹⁷ Indonesia's oil demand is growing by 10-15 per cent a year and consumption will surpass 2 million b/d by 2000. But its production is predicted to peak at only 1.6

million b/d in 1993.⁹⁸ Brazil's oil demand has continued to increase at 16 per cent annually, and the oil consumption is projected to reach 1 million b/d in 1995.⁹⁹ But its total proved reserves of crude oil plus all probable and possible reserves in existing fields can yield at most an estimate of sustainable production of 900,000 b/d.¹⁰⁰ This means a gap of at least 100,000 b/d between consumption and production. As the fourth largest producer in the world, China produces about 120 million tons of oil annually. The oil demand there is forecast to reach 200 million tons by the year 2000. But an annual increase of 10 million tons up to 2000 is "simply impossible", oil experts in the country have warned already, due to the limited reserves.¹⁰¹ China's production of natural gas averaged 1.38 billion cbft/d, but output must increase to at least 2.9 billion cbft/d in order to keep pace with the growth of domestic demand.¹⁰²

In many developing countries, energy demands have already outstripped supplies. Therefore, for producing countries, sustainable development means saving more oil for their own use in the future. Another important reason for producing countries to adopt sustainable practices regarding petroleum resources is that, as these resources begin to be exhausted, the poor countries will suffer most because they cannot afford to take the measures necessary to control or adapt to the depletion, or to make the transition to renewable substitutes.

As for oil companies, sustainable development means good

business in itself, too. The industry has a direct interest in supporting sustainable development for a number of important reasons. First, while sustainable development has received growing support and recognition, it may be a new concept to many oil company executives. In recognizing this concept and contributing to its support, a company will enjoy goodwill in its communities as well as with the public. Goodwill is also a solid business asset. Second, it is not only a matter of public relations, but also a useful vehicle for international image-building. Transnational oil corporations have suffered in the past from a lack of public trust and from mounting criticism, mostly focusing on their "irresponsibility" in putting profits before natural conservation.¹⁰³ Nonetheless, they can regain credibility through sustainable actions, which will certainly create a better image for them. In an environmental era, few businesses could withstand an "anti-nature" reputation. Third, oil is a competition-intensive business. If a company is to compete, it cannot misread the messages from sustainable development and conduct "business as usual". Taking sustainable initiatives will provide a company with a competitive advantage over its international rivals. These companies will eventually have a leg up on the competition. Fourth, protecting an enterprise's capital to ensure its financial sustainability is a well-recognized business principle. But business has not generally extended this notion to natural resources. Oil and gas resources are

the natural capital of the petroleum business. Conserving this "capital" means saving the base of its own survival and ensuring its own sustainability. Fifth, sustainable commitments will inevitably involve sacrifice in the short term, but those companies which take the initiative will see their efforts reflected in the bottom line in the long run.¹⁰⁴

In addition, sustainable development, or more specifically, resources for the future, is good business for both parties to the petroleum relationships. As we have seen, there is a real possibility that the world's petroleum resources will be depleted in the next 40 or 50 years. As a result, all parties in the petroleum sector will have to be forced out of business by then. So reduction by a few percentage points from present production means work for probably 10 or 20 more years in the future. It is in this sense that we argue that resources for the future is good business practice.

International oil companies have been extremely environmentally sensitive in their downstream operations, namely, refinery and shipping, for a long time. It is not because they are so altruistic but because to be insensitive would hurt their image, which in turn undermines their profit. It should be understood by oil companies that, although upstream exploration operations are conducted largely out of public sight in remote areas, particularly in the case of the offshore, these development and production activities could

also hurt their business image if they are carried out in an ecologically irresponsible manner. Unsustainable exploitation, like pollution, is also bad business for the oil industry. It is therefore suggested that transnational oil companies should be more environmentally friendly in their upstream operations, not only to have better public relations and build better corporate images, but also to save the bases of their business future.

Sustainable development has emerged as an accepted business principle. The United Nations Centre on Transnational Corporations (UNCTC) has recently developed a set of "Criteria for Sustainable Development" with 10 short initiatives to guide transnational corporations implementing practices consistent with sustainable development.¹⁰⁵ The centre points out in the criteria, "The concept of sustainable development should be used to guide decision-making and action at all levels of the firm."¹⁰⁶ The International Chamber of Commerce (ICC) also recently adopted a 16-principle "Business Charter for Sustainable Development", which calls upon all types of business around the world to promote and achieve sustainable economic growth.¹⁰⁷ Under these newly established business principles, corporations are required to do business in a sustainable manner. Exploiting companies must shift their management perspective from a traditional business-as-usual view towards one that stimulates thinking about sustainable development.

Traditionally, humanity tends to have an archaic mindset that tomorrow will take care of itself, and science and technology will find alternative fuels for us. The point, however, is whether scientific progress is automatic, and whether attempts are being made to find such fuels.

Nearly every book or essay on energy strategy agrees that energy reform has two solutions:¹⁰⁸ energy efficiency and a transition to much greater reliance on renewable energy sources, such as hydropower, biomass fuels, solar energy, geothermal power, etc.¹⁰⁹ In theory, renewable energy sources could provide 10–13 terawatts (TW) annually—equal to current global energy consumption. For instance, over the next 40 years, the gasification of sugar-cane waste in the 80 developing countries that grow sugar-cane could produce 70 per cent more electric power than all the countries generated by burning coal and oil in 1987.¹¹⁰ Today they provide about 2 TW annually, approximately 21 per cent of the energy consumed worldwide.¹¹¹ In practice, the fuel alcohol campaign in Brazil produced about 10 billion litres of ethanol from sugar-cane in 1984 and replaced about 60 per cent of the gasoline that would have been required, and currently 44 million cars are powered by ethanol.¹¹² At present, renewable resources are still in a relatively infant stage of development, due perhaps mainly to the easy and cheap access to fossil fuels. But they offer the world a great potential source of primary energy supply, sustainable in perpetuity and available in one

form or another to every nation on earth. "But it will require a substantial and sustained commitment to further research and development if their potential is to be realized."¹¹³ The RFF proposed in this study is designed precisely for funding the research and development of such renewable resources.

In addition, there is another important reason for reducing fossil fuels and making the transition to renewable energy sources, because they do not contribute to global warming. Fossil fuel consumption produces three interrelated threats to human beings: air pollution, acidification of the environment and climatic change. The level of carbon dioxide in the atmosphere has increased from 285 parts per million to 350 parts per million within the last four generations.¹¹⁴ About 60 per cent of the greenhouse gases entering the atmosphere comes from burning of fossil fuel; and energy consumption dumps more than five billion tons of carbon into the air each year.¹¹⁵ Therefore, even if there are enough resources, we must still undertake a major transition away from fossil fuels and wasteful production and consumption practices during the next 40 years, because otherwise we run the risk of using up the earth's assimilative capacity.¹¹⁶

Further analysis is concerned with the role of taxation. Traditionally, governments have chosen legislation to address environmental issues, as the four host countries examined in this study do in their petroleum legislation and agreements. But other tools of public policy—taxes or fiscal

policies—can work better for the same purpose. Recently various environmental taxes such as green tax, blue tax, resources taxes, carbon tax, etc., have been discussed in the international sphere.¹¹⁷ It is a popular conviction that such taxes would be among the most effective ways to protect the environment and the resources. It seems certain that environmental taxes will be increasingly introduced in the near future as a possible legal means of promoting sustainable development.¹¹⁸ The RFF proposed here is just one of such measures, which purports to allocate a percentage of corporate profits or taxes to pay for the development of renewable resources or to fund sustainable initiatives.¹¹⁹

In view of present political objections that resource taxes are additional to existing taxes and so are politically unacceptable, it is possible to keep the overall tax burden unchanged by reducing royalty while introducing the RFF. High royalty remains a problem area for oil companies in O & G contracts. But an obligation to pay a rate of RFF on realized profits is less burdensome to oil companies than an obligation to pay a royalty before any profits are made. It is therefore proposed that RFF partly replace existing royalties.

It must also be pointed out that modern petroleum agreements are negotiated on the traditional assumption that the present generation has all the rights to hydrocarbon resources. It is now recognized that future generations hold rights to the resources, too. So the petroleum rights

negotiated between the two parties and agreed in the contract includes a right that belongs to future generations. For that right a price must be paid.

Last but not least, there is a legal point to be emphasized. Many developing producer states, including the four representative countries examined in this study, are signatories of the 1982 LOS Convention which clearly spells out environmental obligations:

States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment.¹²⁰

More importantly, it has been claimed that "this international legal obligation has moved beyond *lex ferenda*, and now exists as a matter of customary international law".¹²¹ It may be argued that this means there are greater environmental and sustainable obligations on offshore oil production than on land in the sense that the LOS Convention provides the "highest-level global directives" and specific international obligations for the protection and preservation of the marine environment and resources,¹²² while such an international legal covenant is not yet available for land resources and their production which is not only desirable but also necessary.¹²³

After an examination of the rationales in support of the Resources for the Future Fund, it appears that the petroleum industry has two choices: doing business as usual and then going into a free fall; or taking steps towards sustainable

energy future. But society itself will not be passive. A company that does not embrace the principle will in time be regulated into taking action that it would not take voluntarily. Furthermore, nature will not allow inaction, either. It will, or will continue to, punish violations in its own way—such as global warming. Indeed, Fairfield Osborn's warning over 40 years ago is still valid:

Parts of the earth, once living and productive, have thus died at the hand of man. Others are now dying. If we cause more to die, nature will compensate for this in her own way, inexorable, as already she has begun to do.¹²⁴

These conclusions are not meant to paint a grim future. Instead they emphasize the incentives for conservation and a switch to renewable resources. It is for these political, legal, economic, ecological, social and moral reasons and for reasons of its transgenerational impact that a dominant place in international petroleum arrangements must be given to sustainable development.

Based on the permanent trust fund examples noted above, developing countries should be able to incorporate a provision for RFF in their petroleum arrangements with foreign companies. The fee to be fed into the fund could be levied upon a "well" basis. For instance, the Government of Saskatchewan has planned to charge companies \$125 for each oil and gas well drilled;¹²⁵ or on a fixed fee per barrel, e.g., about \$1 per barrel, or on a percentage of the value of the production removed.¹²⁶ As a general principle, the charge for

the fund should be progressive—the more you produce, the more you pay. This is consistent with the principle of user-pay. To reduce the burden on oil companies, part of the payment may be charged back to consumers, since this is in full agreement with the principles of a market economy that every business transaction and product must absorb and reflect the full costs to which it gives rise, including costs for sustainable development.

For the RFF provision in international petroleum exploration and exploitation agreements, something like the following may be suggested:

Article X

Resources for the Future Fund

The Concessionaire/Contractor shall pay to the Government of _____ \$1 per barrel/the sum of _____ at specified _____ production levels upon the establishment of commercial production for the purposes of a Resources for the Future Fund for petroleum sustainable development, including funding researches, studies, and development of renewable energy sources.

This payment shall be made within thirty days from the ending date of the year the commercial production has been established. Each subsequent contribution shall be made quarterly within fifteen days after the ending of each calendar quarter.

The above provision is intended to serve for illustration purpose only. In fact, the specific formulation of such a clause, particularly the time, amount, method, use of payment to the fund, can be negotiated between the contracting parties

along the line suggested in the preceding discussion.

It is argued that the RFF would help developing producer countries to pay for measures to begin the transition to more sustainable energy resources that would otherwise be impossible. It can stretch energy supply, buy time to develop renewable energy resources, slow climate changes, and more importantly, save petroleum resources for the future.

V. Summary

Sustainable development is an emerging principle of international law. Although it has not been precisely defined for international petroleum exploration and exploitation, this is not, and should not be, an excuse of inaction. Sustainable development is not an academic question, but a matter of life and death. The international petroleum industry is by no means an exception in this matter. Indeed, perhaps never before has the industry faced a challenge as profound and substantial as that of sustainable development.

Being the owner of the resources in question and the developer of them, both producing countries and oil companies have a special responsibility in developing them sustainably. Governments should take initiatives to incorporate sustainable measures such as the RFF proposed here into their model contracts. Companies should forge a partnership to facilitate

their implementation. The RFF proposed here is an effective measure to work towards sustainable petroleum development. Sustainable development is a common social "good", which means someone has to pay for it. The RFF would provide one solution to the problem. If accepted, even at a modest level, it would start the process of switching from burning fossil fuels to using more environmentally benign resources. Thus, the sooner it is adopted, the better the public interest and the interest of business, as well as the interest of future generations, will be served and protected.

All interests involved in petroleum development must become aware that sustainable development means life and a future. Although it may be a goal that is never fully reached, given the non-renewable nature of energy resources, there must be clear recognition of this principle in all contractual arrangements, particularly in terms of environmental degradation and the interest of future generations.

Sustainable development requires governments and companies to give up, through appropriate legal arrangements, a little of their benefits in the interest of the international community at large. The contracting parties must begin to realize that a very moderate reduction of immediate gains will result in overall long-term advantages.

In conclusion, it is strongly suggested that commercial energy interests should and can be reconciled with

environmental sustainability. The new direction for petroleum agreements is the coexistence of commerciality and sustainable development.

Notes:

1. World Commission on Environment and Development (WCED), Our Common Future (New York: Oxford University Press, 1987), p.202.
2. Ponting, C., "Historical Perspectives on Sustainable Development", 32 Environment 4 (1990).
3. 22 Env. P. & L. 280 (1992).
4. Roots, F., "The Brundtland Challenge: Background and Objectives", in Davidson, A. and Dense, M., ed., The Brundtland Challenge and the Cost of Inaction (Halifax, N.S.: The Institute for Research and Public Policy, 1988), p.89.
5. Comment, "Confucius and Chinese Culture", 38 China Reconstructs 12 (1989).
6. Liu, B.N., ed., Lun Yu (The Confucian Analets) (Beijing: Chinese Books Press, 1986), p.132 (the Author's translation). A different translation Reads: "Perfect is the virtue which is according to the constant Mean! rare for a long time has been its practice among the people.", see Legge, J., The Chinese Classics: Vol. I Confucian Analets, The Great Learning, and The Doctrine of the Mean (Taibei, Taiwan: Progressive Learning Books, 1969), p.193, 387. Please note that the Analets is not Confucius' own writing, but his philosophy and teachings compiled by his disciples and their students.
7. *Ibid*, pp.382, 384-85.
8. In ancient Chinese, the character of ZHONG denotes "harmonious" and "mean", and YUNG "to use" or to "employ". Collectively, they can also mean "constant use".
9. Legge, The Chinese Classics: Confucian Analets, *supra* note 6, p.203.
10. Liu, B.N., The Correct Meaning of Mencian Analets (Beijing: China Books, 1986), pp.32-33 (the author's translation); For a slightly different translation, see Legge, The Chinese Classics: Vol. II The Works of Mencius, *supra* note 6, pp.130-31.
11. Legge, The Chinese Classics: the Doctrine of the Mean, *supra* note 6, p.416.
12. Watts, A., Tao: the Watercourse Way (New York: Pantheon Books, 1975), p. xiv.

13. Ames, R.T., "Taoism and the Nature of Nature", 8 Environmental Ethics 339 (1986). Tao is just a name of whatever happens, or as Lao Tzu put it, "the Tao principle is what happens of itself". The word Tao is understood and interpreted differently. It means that on which something or someone goes, a path, or road, later extended to mean "method", "principle", "truth", and finally "reality". All of this is well summed up in the common English translation, "the Way". For more discussion, see Chan, W.T., The Way of Lao Tzu (Tao-te Ching) (New York: The Bobbs-Merrill Company, Inc., 1963), pp.6-10.
14. Watts, Tao: the Watercourse Way, supra note 12, p.55.
15. *Ibid.*, pp.42-44; Chan, The Way of Lao Tzu, supra note 13, pp.101-102.
16. *Ibid.*, p.128; For a different translation, see Legge, J., The Texts of Taoism, the Tao Te Ching of Lao Tzu, the Writings of Chuang Tzu: Part I (New York: Dover Publications, Inc., 1962), p.60.
17. For more discussion, see Sylvan, R. and Bennett, D., "Taoism and Deep Ecology", 18 The Ecologist 155-58 (1988).
18. Chan, The Way of Lao Tzu, supra note 13, p.166.
19. *Ibid.*, p.214.
20. *Ibid.*, p.115.
21. *Ibid.*, p. 197.
22. *Ibid.*, p.121 and 194.
23. *Ibid.*, p.151.
24. Watts, Tao: the Watercourse Way, supra note 12, p. xiv.
25. Plato, The Laws (London: Dent, 1960); Aristotle, Aristotle's Politics (Oxford: Clarendon Press, 1905).
26. Scoby, D.R., Environmental Ethics: Studies of Man's Self-Destruction (Minneapolis: Burgess Pub. Co., 1971); Meadows, D.H. et al, The Limits to Growth (New York: Universe Books, 1972), pp.4-9, 31-33.
27. *Ibid.*, p.33.
28. Osborn, F., Our Plundered Planet (Boston: Little, Brown and Company, 1948), p.194.

29. U.N. Public Information Depart., The United Nations Convention on the Law of the Sea: A Quiet Revolution (New York: United Nations, 1984), p.41.
30. Meadows, The Limits to Growth, *supra* note 26, p.23.
31. The book sold 9 million copies.
32. The Founex report, prepared by the Panel of Experts on Development and the Environment convened at Founex, Switzerland, in June 1971 at the initiative of the secretariat for the Stockholm Conference, was considered to be the first comprehensive document on the development-environment issue. For the report, see "Environment and Development: The Founex Report on Development and Environment", Int'l Conciliation, No. 586, January 1972.
33. Report of the United Nations, Stockholm Conference on the Human Environment, UN Doc. A/CONF. 48/14, 1972; also reprinted in 11 I.L.M. 1416-69 (1972). For a brief review of the Stockholm Conference and its outcome, see Koester, V., "From Stockholm to Brundtland", 20 Env. P. & L. 14 (1990).
34. International Union for Conservation of Nature and Natural Resources (IUCN), United Nations Environmental Programme (UNEP), World Wildlife Fund (WWF), Food and Agriculture Organization (FAO), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Conservation Strategy: Living Resources Conservation for Sustainable Development (Gland, Switzerland: IUCN/UNEP/ WWF, 1980). This document was commissioned by UNEP, and jointly financed by it and the WWF, but it was actually executed by IUCN in consultation with UNEP, WWF, FAO, and UNESCO.
35. "World Charter for Nature", UN G.A. Res. A/Res/37/7, adopted with 111 votes in favour and 1 against (U.S.A.) on October 29 1982, reprinted in 10 Env. P. & L. 30-31 (1983).
36. WCED, Our Common Future, *supra* note 1, p. x. For an introductory guide, see Lebel, G.G. and Kane, H., Sustainable Development: A Guide to Our Common Future (Geneva: The Centre for Our Common Future, 1990).
37. For a summary of the Earth Summit and the five documents, see 22 Env. P. & L. (1992). Altogether, 154 nations signed the convention on climate change and 153 signed the one on biodiversity (excluding the U.S.).
38. Chapters XX of Agenda 21. For the full texts of Rio Declaration, Forest Principles, the two conventions, and some selected chapters of Agenda 21, see 22 Env. P. & L. (1992).

39. The word "sustainable" is often used in several combinations, such as "sustainable development", "sustainable environment", "sustainable economy", "sustainable society", "sustainable use/utilization", "sustainable management", etc.

40. Cf. "Inheriting the Earth", The Economist, September 16, 1989, p.77.

41. WCED, Our Common Future, supra note 1, p.43.

42. The National Task Force on Environmental Economy, Report of the National Task Force on Environmental Economy (Ottawa: The National Task Force on Environmental Economy, 1987), p.3.

43. Jacobs, M., The Green Economy (London: Pluto Press, 1990), cited in "The Price for Green", The Economist, May 9, 1992, p.87.

44. IUCN, UNEP and WWF, Caring for the Earth: A Strategy for Sustainable Living (London: Earthscan Publications, 1991), p.10.

45. For more discussion, see Bodnarek, R.K., The Concept of Sustainable Development and its Implications for Environmental Law, LL.M. thesis, Dalhousie University, Halifax, Canada, January, 1993. Simon, D., "Sustainable Development: Theoretical Construct or Attainable Goal?", 16 Env. Conservation 42-48 (1989).

46. Cf. Langer, J., "Changing Our Approach", 16 Canadian Bus. Rev. 30 (1989).

47. An Expert Group on Environmental Law was established in 1985 to prepare a report on legal principles for environmental protection and sustainable development for consideration by the WCED. The resultant legal principles were included in the Brundtland Report as Annex 1, see WCED, Our Common Future, supra note 1, p.348; For a summary of the principles, see also 16 Env. P. & L. 168-69 (1986). For the complete text of the principles, see WCED Expert Group, Legal Principles for Environmental Protection and Sustainable Development (Dordrecht, the Netherlands: Martinus Nijhoff Publishers, 1987).

48. Cf. "Guidelines on Intergenerational Equity", infra note 52, pp.190-91; Weiss, E.B., "Our Rights and Obligations to Future Generations for the Environment", 84 AJIL 198 (1990); Gundling, L., "Our Responsibility to Future Generations", in *ibid.*, p.207.

49. Weiss, *ibid.*, p.201.

50. Weiss, E.B. "The Planetary Trust: Conservation and Intergenerational Equity", 11 Ecology L. Q. 540-44 (1984); ———, In Fairness to Future Generations: International Law, Common Patrimony and Intergenerational Equity (Dobbs Ferry, N.Y.: Transnational Publishers, 1989).

51. Barbier, E.B. and Markandya, A., "The Conditions for Achieving Environmentally Sustainable Development", 34 European Economic Rev. 659 (1990).

52. "Guidelines on Intergenerational Equity" adopted by the Advisory Committee established to the United Nations University Project on International Law, Common Patrimony and Intergenerational Equity, reprinted in 18 Env. P. & L. 191 (1988).

53. Muldoon, P., "The International Law of Ecodevelopment: Emerging Norms for Development Assistance Agencies", 22 Texas Int'l L.J. 52 (1986).

54. At the international level, many organizations, both international and regional, have declared their determination to promote and achieve sustainable development. For instance, the leaders of the world's seven major industrialized countries endorsed the principle of sustainable development in the final Communique of the Toronto Economic Summit in 1988. At the national level, governments have shown their support by reshaping their policies. Within the academic circle, a great deal of literature has been produced to foster the concept and to make it operational, e.g., First African Conference on Sustainable Development, "Kampala Declaration on Sustainable Development", Kampala, June 12-16, 1989, 19 Env. P. & L. 222 (1989); UN/ECE, "Bergen Conference: Ministerial Declaration on Sustainable Development, May 14, 1990", 20 Env. P. & L. 100 (1990); "Draft European Charter on the Environment and Sustainable Development", 21 Env. P. & L. 37 (1991).

55. For instance, when compared with the principle of "common heritage of mankind" that emerged in the late 1960s and provided for in the 1982 LOS Convention.

56. The Brundtland Report proposed that a new Convention on Environmental Protection and Sustainable Development be prepared and adopted by the United Nations. See WCED, Our Common Future, *supra* note 1, pp.332-33. See also, UN/WCED, "Proposals for International Environmental Law Developments toward the Year 2000", 16 Env. P. & L. 90 (1986). As a matter of fact, an international convention on sustainable development has been under preparation. For information, see *infra* note 123.

57. MacNeill, J., "Strategies for Sustainable Economic Development", in Managing Planet Earth: Readings from Scientific American (New York: W.H. Freeman & Company, 1990), p.109. The global energy consumption can be put in another way. The global energy consumption rose from 21 exajoules in 1900 to 318 exajoules in 1988 (an exajoule is 10^{18} joules, approximately one quadrillion British thermal units, or the heat that would be released by burning 170 million barrels of crude oil), see Gibbons, Blair and Gwin, *infra* note 59, p.87.
58. Brown, L., State of the World (New York: W.W. Norton, 1980), p.11.
59. Gibbons, J.H., Blair, P.D., and Gwin, H.L., "Strategies for Energy Use", in Managing Planet Earth, *supra* note 57, p.87.
60. See *supra* ch. 7, section V. Cf. also Repetto, R., The Global Possible, Resources Development and the New Century (New Haven: Yale University Press, 1985), pp.508-09.
61. "Oil's New World Order", The Economist, July 13, 1991, p.67.
62. Energy 2000: A Global Strategy for Sustainable Development (London: Zed Books Ltd., 1987), p.vii.
63. Pearse, P., "Scarcity of Natural Resources and the Implications for Sustainable Development", 15 Nat. Res. F. 74 (1991).
64. Some people think that there is no such a thing as sustainable development in non-renewable resources.
65. Act. 61 of The United Nations Convention on the Law of the Sea, UN Doc. A/CONF. 62/122, October 1982.
66. Daly, H.E., "Toward Some Operational Principles of Sustainable Development", 2 Ecological Economies 4 (1990).
67. The division of receipts from a non-renewable resource project into capital and income components was originally proposed by El Sarafy, see El Sarafy, S., "The Proper Calculation of Income for Depletable Natural Resources", in Ahmad, Y.J., El Sarafy, S. and Lutz, E., ed., Environmental Accounting for Sustainable Development (Washington, D.C.: The World Bank, 1989), pp.10-18. For an account, see Daly, H.E. and Cobb, jr, J.B., For the Common Good: Redirecting the Economy Toward Community, the Environment, and A Sustainable Future (Boston: Beacon Press, 1989), pp.73-4.

68. Daly, *supra* note 66.

69. WCED, Our Common Future, *supra* note 1, p.330.

70. Other examples include Montana, and Wyoming. For more information, see Pretes, M. and Robinson, M., "Beyond Boom and Bust: A Strategy for Sustainable Development in the North", 25 Polar Record 115 (1989); ———, "Permanent Trust Funds and Sustainable Non-Renewable Resource Management in the Canadian North", 25 Resources: the Newsletter of the Canadian Institute of Res. L. 6-7 (1989); Robinson, M., Pretes, M. and Wuttunee, W., "Investment Strategies for Northern Cash Windfalls: Learning from the Alaskan Experience", 42 Arctic 265 (1989).

71. *Ibid.*

72. Alaska Permanent Fund Corporation, Annual Report (Juneau: Alaska Permanent Fund Corporation, 1988). For an account of the APF, see Pretes, M, and Robinson, M., "Alaskan and Canadian Trust Funds as Agents of Sustainable Development", in Saunders, The Legal Challenge of Sustainable Development (Calgary: Canadian Institute of Resources Law, 1990), pp.303-04.

73. Pretes and Robinson, *ibid.*

74. Chapter A-27, Statutes of Alberta, Vol. 1, 1992, pp.1-12. For general information, see Alberta Heritage Savings Trust Fund, Annual Report 1976-present (Edmonton: Treasury Department). For an brief discussion, see Warrack, A.A., The Alberta Heritage Savings Trust Fund as a Policy Instrument for Resources Management, sponsored by the Western Resources program, Institute for Research on Public Policy, November 1985; Pretes and Robinson, *supra* note 72, pp.304-05.

75. Alberta Heritage Savings Trust Fund (AHSTF), 1977-78 Annual Report, p. cover. Since its inception, the Fund has had three major objectives: (a) to save for the future; (b) to strengthen and diversify the economy; and (c) to improve the quality of life in Alberta today as well as in the future.

76. Alberta Heritage Savings Trust Fund Act, *supra* note 74.

77. Mumey, G., "Alberta Heritage Fund: Measuring Value and Achievement", 16 Canadian Public Policy 28, 45 (1990).

78. AHSTF, Annual Report 1977-78, *supra* note 74, p.14.

79. The scepticism on the part of the producing countries has been voiced at the Rio Conference by oil producing countries led by Saudi Arabia, which objected to any reduction in oil

consumption. OPEC even threatened to disrupt oil supplies if European or other nations imposed a carbon tax to reduce reliance on fossil fuels. Cf. "Oil Producers Campaign against Carbon Cuts", 134 New Scientist 7 (1992).

80. Riva, jr., J.P., "Dominant Middle East Oil Reserves Critically Important to World Supply", O & G J., September 23, 1991, p.66.

81. Sarre, P., Smith, P. and Morris, E., One World for One Earth: Saving the Environment (London: Earthscan Publications Ltd, 1991), p.116.

82. Please note that the estimated lifetime of petroleum resources by energy experts varies widely, from 35 to 75 years. For more information, see Dworetzky, T., "Perpetual Power", OMNI, May 1991, p.38; Scott, P. "Good to the Last Drop", OMNI, *ibid.*, p. 41, 100; "Inherit the Earth", The Economist, September 16, 1989, p.77; and Frosch, R.A. and Gallopoulos, N.E., "Strategies for Manufacturing", in Scientific American, September 1989, p.146. The figures here are quoted from O & G J., January 7, 1991, p.1, and Newman, P., "Greenhouse, Oil and Cities", 23 Futures 335 (1991).

83. Frosch and Gallopoulos, *ibid.*, p.146. Reserves refer to the quantities that can be profitably extracted with current technology, while resources mean the total quantities thought to exist.

84. Riva, *supra* note 80, p.63; and Scott, "Good to the Last Drop", *supra* note 82, p.41.

85. Cf. WCED, Our Common Future, *supra* note 1, p. 174.

86. "Total Outlines World Exploration, Production Challenges, Approaches", O & G J., July 27, 1992, p.101.

87. The term "sustainable development" has provoked a significant amount of literature in which intergenerational equity is overwhelmingly advocated and supported. See e.g., Pearce, D., "Economics, Equity and Sustainable Development", 20 Futures 598-605 (1988); Weiss, "The Planetary Trust", *supra* note 50, p.540.

88. For details, see Rawls, J., A Theory of Justice (Cambridge: Harvard University Press, 1973), pp.284-93.

89. The idea was not new and has been employed in Osborn, Our Plundered Planet, *supra* note 28, p.36. See also "A Survey of the Global Environment", The Economist, May 30, 1992, p.22.

90. Riva, *supra* note 80, p.66; Scott, *supra* note 82, p.41. For further information on the world's oil and gas reserves, see O & G J., November 4, 1991, p.24.
91. See *supra* note 82 for definition of reserves and resources. Moreover, even the reserves are not totally exploitable.
92. "Growth vs. Environment: in Rio Next Month, A Push for Sustainable Development", Business Week, May 11, 1992, p.66, 68.
93. Guruswamy, L., "Energy and Environmental Security", 3 J. Env. L. 209-228 (1991).
94. International Institute for Sustainable Development (IISD), Business Strategy for Sustainable Development (Winnipeg: IISD, 1992), pp.19, 49-53.
95. U.S. Office of Technology Assessment (OTA), Energy in Developing Countries (Washington, D.C.: U.S. Government Printing Office, 1991), cited in "Energy Consumption in Developing Countries", The Futurist, July-August, 1991, p.45.
96. Muller, K. and Klann, S., "Thailand", 9 O & G Investor 38-49 (1989).
97. Tanzer, A., "Good News for OPEC", 145 Forbes 40-41 (1990). For further information on the world's average percentage increase in energy demand, see O & G J., November 4, 1991, p.23.
98. "Oil's New World Order", *supra* note 61, p.68.
99. International Labour Office (ILO), Brazil and Peru: Social and Economic Effects of Petroleum Development (Geneva: ILO, 1987), p.9.
100. O & G J., January 14, 1991, p.50.
101. "Discussions and Prospects of the Development of the Chinese Oil Industry", Outlook Weekly, No. 41, October 12, 1992, pp.11-13 (in Chinese).
102. Bamber, D., "Energy Finance: Asian Demand Outstrips Supply", Euromoney, June/July 1990, pp.69-71.
103. Cf. Redclift, M., Sustainable Development: Exploring the Contradictions (New York: Methuen, 1987), p.73; Thomson, K. and Dudley, N., "Transnationals and Oil in Amazonia", 6 The Ecologist 719 (1989).

104. The smart Japanese and German companies began to make an environmental commitment in the late 1970s and early 1980s. Now they have successfully developed many environmentally sound technologies and products, and enjoy a competitive advantage over their international rivals across the world. Information from Jim MacNeil (former secretary of WCED), "The Road from Rio: Setting the Compass", speech at the 1992 Dorothy J. Killam Lectures, Dalhousie University, November 17, 1992.

105. UNCTC, Criteria for Sustainable Development Management (New York: United Nations, 1991); also reprinted in 20 Env. P. & L. 186-87 (1990).

106. *Ibid.*

107. Int'l Chamber of Commerce (ICC), "Business Charter for Sustainable Development", 21 Env. P & L. 35 (1991); for a short comment on the charter, see *ibid.*, p. 14.

108. *E.g.*, WCED, Our Common Future, *supra* note 1, pp.169-205; Energy 2000, *supra* note 62; IUCN, UNEP and WWF, Caring for the Earth, *supra* note 44, pp.89-95; Gibbons, Blair and Gwin, *supra* note 59, pp.85-95; Kats, G., "The Earth Summit: Opportunity for Energy Reform", 20 Energy Policy 546 (1992).

109. Other renewable energy resources include wood fuel, wind power, tides and waves. For general information, see WCED, Our Common Future, *supra* note 1, pp.192-196; Energy 2000, *ibid.*, pp.28-40; Sudo, P., "Liquid Gold", 123 Scholastic Update 2 (1991); and "Alternative Sources: A Status Report", OMNI, May 1991, pp.50-52.

110. "Alternative Sources", *ibid.*, p.80.

111. A TW year is equal to approximately 1 billion tons of coal. For details, see WCED, Our Common Future, *supra* note 1, p.192.

112. Goldemberg, J. et al, "Ethanol Fuel: A Use of Biomass Energy in Brazil", 14 AMBIO 293-98 (1985); "Alternative Sources", *supra* note 109, p.80.

113. WCED, Our Common Future, *supra* note 1, p.192.

114. Whitney, A.G., "What's Your Role in Fixing Our Planet?" 6 Financial Executive 9-12 (1990).

115. Goldemberg, J., "How to Stop Global Warming", Technology Rev., November/December 1990, p.25; and Gibbons, Blair and Gwin, *supra* note 59, p.85.

116. Dworetzky, *supra* note 82, pp.36-37.

117. *E.g.*, Shaw, C.L., "Green Taxes, Blue Taxes: A Comparative Study of the Use of Fiscal Policy to Promote Environmental Quality", 15 Nat. Res. F. 123-31 (1991); Cassils, J.A., "Structuring the Tax Systems for Sustainable Development", in Saunders, J.O., ed., The Legal Challenge of Sustainable Development (Calgary: Canadian Institute of Resources Law, 1990), pp.141-153; IUCN, UNEP and WWF, Caring for the Earth, *supra* note 44, p.48; Goldemberg, J., "A Carbon Tax to Prevent Climate Change", 1 Ecodecision 87-88 (1991); ———, "How to Stop Global Warming", *supra* note 115, pp.15-31; Brandbrook, A.J., "Energy Conservation Legislation for Industry", 10 J.E. & Nat. Res. L. 161-62 (1992); Gergen, D., "A Perfect Time for a Gasoline Tax", 109 U.S. News & World Report 88 (1990); "Global Warming and Hasty Taxes", O & G J., October 14, 1991, p.17.

118. Norway was the first country to have introduced a carbon tax. The European Community has proposed to start taxing all energy in 1993. For oil, the rate would start at \$3 per barrel and climb each year to a maximum of \$10 per barrel in 2000. see Vielvoye, R., "The Carbon Tax Issue", O & G J., October 28, 1991, p.29.

119. Whitney, *supra* note 114.

120. Art. 193 of the LOS Convention, *supra* note 65.

121. McConnell, M.L. and Gold, E., "The Modern Law of the Sea: Framework for the Protection and Preservation of the Marine Environment", 23 Case. W. Res. J. Int'l L. 84 (1991).

122. For a full account, see *ibid.*, pp.83-105.

123. In fact, a "Covenant on Environmental Conservation and Sustainable Use of Natural Resources" has been under development since 1989 by an *ad hoc* Working Group of the IUCN in co-operation with other relevant organizations. For a review of the history of the project and its recent developments, See Casey-Lefkowitz, S., "Draft Covenant on Environmental Conservation and Sustainable Development: Project History and Status", 21 Env. P. & L. 189, 221 (1991); and "Draft Covenant on Environmental Conservation and Sustainable Use of Natural Resources", 22 *ibid.* 334-35 (1992). For the text of the fourth draft of the covenant, see UNCED Doc. A/CONF.15/PC/WE3, 1992.

It may be expected that a comprehensive international convention on environmental conservation and sustainable development, like the 1982 LOS Convention dealing with all the issue of the oceans, will be adopted by the world community in the near future.

124. Osborn, Our Plundered Planet, supra note 28, p.vi.

125. O & G J., May 6, 1991, p.48.

126. In this respect, the Texas Severance Tax provides a useful example, under which system oil production is taxed at a rate of 4.6 per cent of the market value of oil produced or 4.6 cents for each barrel, whichever rate is greater. See Crumbley, D.L. and Williams, A.K. "Texas Severance Tax on Oil and Gas Production", 32 O & G Tax. Q. 362-63 (1983/84).

Chapter Nine

Conclusion

In examining the legal frameworks developed between producing states and foreign companies for international petroleum exploration and exploitation, this study has covered a long journey of almost a century from the original forms of these frameworks, at the turn of the century, to the modern formats of the 1990s. Broadly speaking, this legal relationship has undergone two distinctive generations of contractual arrangements: traditional concession agreements and modern petroleum contracts.

The legal terms, structures, characterizations of these arrangements have been set forth in the relevant chapters, and their analyses, comparisons and critiques, as well as the possible improvements over some of the terms and the corrective resolutions to the problems raised have been interwoven along the way in the discussion. Hence they will not be repeated again. However, it is appropriate to conclude this study with a review of the major findings of the contractual evolution and policy suggestions made earlier for the sake of facilitating the future development of international petroleum agreements.

As observed, the evolution of modern forms of petroleum contracts occurred as a reaction to the old concession system

which dominated in the first half of the century. International petroleum arrangements began to change from approximately the beginning of the second half of the century. Contractual development began with the joint venture contracts in the late 1950s, followed in turn by the production-sharing contracts in the 1960s, the risk service contracts in the 1970s and the hybrid/comprehensive contracts in the 1980s. Among the modern petroleum contracts, the production-sharing contract that was created in Indonesia deserves special commendation for its general precedence in many respects, such as the use of a model contract and, particularly, for its ways of sharing symbolic power and allocating the title to oil between the parties. For these and other reasons, it may be regarded as the best of its time.

Modern petroleum agreements represent a conscious effort to equalize the historical imbalance between producing countries and foreign companies. More importantly, diverse objectives and interests can be accommodated under these agreements to achieve generally greater commerciality and stability. But these oil and gas contracts, as currently drafted and negotiated, are not adequate for energy development in the late 20th century and the early 21st century because they have not taken into consideration the issue of sustainable development. Environmental protection, if in evidence at all, is found only in peripheral terms to the principal arrangements. Even these limited environmental

provisions are often neglected by developing oil-producing countries. These countries have faced the dilemma between encouraging foreign investments for economic growth and environmental conservation for sustainable development and are compelled by the prevailing economic conditions to give preference to the former.¹

As contractual arrangements developed, the government-company relationship generally experienced three phases. The first was the "concession phase" prior to the middle of the century. The legal relationship of the parties under the concession system was unbalanced and unstable during this period. This was followed by the "confrontation phase". Developing oil-producing countries fought to regain control over their natural resources, or even to keep international oil companies out. This lasted about a quarter of a century after the demise of the concession system. The third is the "co-operation phase", which is currently dominant. The relationship has now generally entered a stable and mutually satisfactory state. As Nigeria's oil minister, Jibril Aminu, states: "The era of confrontation is over."² It may be predicted that next will come the "conservation phase", in which sustainable development will be the order of the day.

It took almost a third of a century for producing countries and exploiting companies to learn the lesson: petroleum agreements should recognize the legitimate rights and interests of both parties and the relationship must always

be mutually beneficial. In short, a degree of balance and justice must be maintained in the relationship if it is to be constructive, productive and stable.

From both the case studies and comparative analyses, we can perhaps learn that excessive emphasis on, or demand for, management control, technology transfer, or oil independence may result in reactions adverse to the introduction of foreign investments and cause unnecessary political constraints. Developing countries can, obviously, benefit from the experiences, both positive and negative, of the four producing countries examined in this study, adopting whatever is still relevant to their own particular conditions and current needs. Moreover, it must be borne in mind that poor investment conditions may well drive international petroleum companies to seek alternative venues because, after all, they have the choice of where to invest. Yet, too liberal terms will reduce government revenues from oil development and, more importantly, result in rapid depletion of the resources. The balance between the two is often a fine one that must be struck carefully.

As examined, the environment has, historically, not been a focus of world petroleum arrangements. Modern petroleum agreements have failed in principle to provide adequate environmental regulation and, in their entirety, to address the issue of sustainable development. This serious deficiency has not yet captured sufficient attention from either the

industry or the world. For instance, the environment did not receive equal billing with upstream and downstream sectors of the petroleum industry until the 13th World Petroleum Congress in 1991—and the congress was established in 1933.³ But "in the sustainable world case, industry is placed under increasing pressure to reduce energy's effect on the environment."⁴ A better understanding is therefore essential in the interests of global attention in general, and of better government-company co-operation for sustainable development in particular.

Along with these important findings, we can ultimately arrive at an overall evaluation of recent contractual developments: modern petroleum contracts are generally able to achieve and maintain a necessary balance of rights, interests and benefits between the contracting parties, but have failed to produce any balance between resources extraction and environmental sustainability. They are therefore inappropriate for the future development of a unique non-renewable resource faced with possible depletion in the next few decades.

It is important to emphasize that petroleum exploration and exploitation can neither be equitable nor sustainable unless environmental considerations are taken into account. The traditional commercial relationship, which took care of only the interests of the contracting parties without regard to those of the world community and future generations, must be reconsidered. This recognizes the important reality that

environmental and resources consequences arise as a result of the developmental behaviour authorized by petroleum contracts. They can be addressed effectively only by changes in that legal system and the resultant behaviour.

The search for sustainable development strategies, both for governments and private industries, must receive higher priority. Modern petroleum contracts are compatible with the notions of environmental protection and sustainable development, and commercial energy interests can be reconciled with global community interests and the interests of future generations. It is possible to develop, through the utilization of most petroleum arrangements currently in existence, contract terms which take into account environmental sustainability while still meeting the interests of the contracting parties and producing commerciality. The policy suggestion for a Resources for the Future Fund in the petroleum agreements provides such an approach to integrate environmental sustainability into resources development.

For over a century, petroleum production and consumption has brought out both the best and worst of modern civilization. Caught in this dilemma, we can afford neither to give up the best nor to continue the worst. The solution appears to be only one, that is, to sacrifice a modest proportion of the best for the time being in exchange for the reduction and termination of the worst in the long run.

The philosophy underlying the Resources for the Future

Fund suggestion is simple and based on one of humans' basic common senses—"to save for a rainy day". Energy resources are now becoming scarce and must be managed more effectively if the benefits from these resources are to be sustained. The emphasis should be, therefore, on preserving them rather than exploiting them for immediate gains. The main point of this prescription is that an oil and gas contract with a sustainable element can meet all the interests and needs of the various parties, both now and in the future. Thus, it provides a desirable and viable solution to the problems raised. More importantly, it can eventually lead the world to an environmentally sound, economically viable and legally justified energy pathway that will sustain human progress into the distant future. The feasibility of such a legal framework for future energy development merits experimentation.

Few people would quarrel with the justification of such a sustainable petroleum contract. But it will challenge existing political will and institutional co-operation of the two parties concerned to achieve it. Humanity is always reluctant to give up what it is used to, and accept new challenges. This is particularly true for civil servants in developing countries who normally lack the initiative for change. It may be anticipated that more difficulties with respect to change in petroleum arrangements towards sustainable development will come from producing states.

Energy ministers and the managers of state oil companies

in developing countries tend not to think about future. Their energy policies and production plans have little environmental input and future dimensions because they generally only look ahead for five or 10 years while they are in power.⁵ This problem occurs in the petroleum sector, but it has deep roots in the overall planning process which normally emphasizes revenue generation to meet current needs. In order to correct the problem, governments of producing countries must not set politically determined production quotas for their state oil companies to meet the rocketing energy demand without regard to environmental conservation for sustainable development. Here the bottom-line question is: if producing countries, the owners of the resources, do not care about sustainable development, how can foreign oil companies, the service contractors to the owner, be expected to do so?

After two or three decades' pursuit, perhaps developing countries can now claim to have won the battle of "permanent sovereignty over natural resources" which has been duly recognized by the international community. But this marks only the beginning of a long process. Today they face, as the whole world does, the challenge of sustainable development. In view of the significant political and economic changes that have taken place since the 1972 Stockholm Conference, it seems appropriate and necessary for developing countries to shift their struggle to "sustainable sovereignty over natural resources". This is not only because the term "sustainable

sovereignty" makes more political, legal and ecological sense, but also because only when natural resources are sustainable can the sovereignty be permanent. Developing countries must take the initiative in change, otherwise they face the possibility of winning the battle of "permanent sovereignty over natural resources" but losing the war of sustainable development.

Sustainable development is a global imperative unmatched in history. The global petroleum business is at an important crossroads. The time has now come for both producing countries and exploiting companies to respond co-operatively to the challenge of sustainable development. Under any circumstances, the risk of action would be less than that of inaction.

In this respect, the offshore petroleum industry must learn a lesson from the marine fishing industry. Over the past few decades indiscriminate fishing has resulted in a very clear reduction of fishery resources.⁶ Since 1950, the world harvest of marine fish has grown fourfold and approaches 100 million metric tons. About 25 per cent of the world's fishery are now over-exploited and some to the point where they may never recover. These are clearly indications of unsustainability.⁷ This unsustainable harvest has caught the attention at both global and national levels. At the international level, the 1982 LOS Convention explicitly requires coastal states to take proper conservation and management measures to maintain sustainable yield.⁸ At the

national level, many countries, both developed and developing, have adopted various fishing permit or quota systems to protect, preserve and enhance the resources. In the petroleum sector, sustainable efforts have not yet been made at either level. The energy industry must come up with new ideas.

As mentioned at the outset, this study is primarily concerned with the development of offshore petroleum arrangements. But the study has shown that there is no significant variation from offshore to onshore arrangements, except some changes in royalty, as in the cases of Thailand's modern concession and China's hybrid contracts, or alterations in the exploration period, as in the case of Brazil's risk service contract. In some producing countries, the same contractual system applies almost in its entirety to both onshore and offshore development, as in the Indonesian case. Therefore, the arguments advanced are of broader application, not only to petroleum arrangements, both onshore and offshore, but also to other energy and mineral development agreements currently employed in developing countries. In fact, both knowledge and acceptance of sustainable development of natural resources in general, and non-renewable resources in particular, are still in their infancy worldwide. In this sense, the policy suggestion is of relevance to the intersection of global energy and environmental policies. Environmental protection and sustainable development in energy development continue to require a high degree of attention,

globally.

In retrospect, the legal system for international petroleum exploration and exploitation has generally worked well, though not without the problems as raised in this study, in defining the relationships between producing states and exploiting companies. In recent decades, there has been a shift from inequity and instability to mutuality and stability in petroleum contractual development. This favourable trend can probably continue, but only if environmental sustainability is given more prominence in the basic commercial arrangements. Sustainable development does not suggest the previous patterns of growth were inappropriate for their time. Rather, it suggests that current practices under the existing system are no longer sustainable, given the unbalanced relationship between resources development and rates of depletion. Sustainable development requires new ways of thinking and acting for the sake of the future.

In looking ahead, the late 20th and early 21st centuries can be characterized as a conservation/sustainable era for energy development, which will demand a much broader consideration of the traditional commercial relationship against the background of global community interests and the interests of future generations. International petroleum agreements must be capable of producing and maintaining the "equilibrium and harmony"—"equilibrium" between developing producer countries and international oil companies and

"harmony" between energy extraction and environmental sustainability. Only under such a contractual system can energy development be made legally justifiable, politically acceptable, ecologically sustainable, environmentally sound, and economically viable.

In short, the new direction in world petroleum arrangements must be the coexistence of commerciality and sustainable development. This study wishes to bring a message of warning, a message of hope, and a call for action to the global community in general, and the international petroleum industry in particular. The warning is that the survival of the industry is threatened if the governing legal system and the traditional way of doing business are not reformulated. The hope is that there still exists an opportunity to prevent the potential disintegration from happening by reconciling commercial energy interests with environmental sustainability. The call for action is that environmental sustainability must be made an explicit part of all investment arrangements by incorporating specifically negotiated provisions such as the Resources for the Future Fund. If we change our attitude, improve our production pattern, integrate energy and environmental goals, and consolidate sustainable governance, the world petroleum industry could make a major contribution to energy security in the future.

In conclusion, this study has demonstrated that energy needs and sustainable development are compatible, and economic

and environmental interests can be served at the same time. International petroleum agreements must begin to make the transition from the old era that was characterized by the government/company ideological conflict and their putting development before environment to a new one that will be dominated by the imperative for ecological sustainability.

Notes:

1. Cf. ESCAP/UNCTC, "Environmental Aspects of TNC Activities in the ESCAP Region", 30 CTC Reporter 6 (1990).
2. Cited in "Oil's New World Order", The Economist, July 13, 1991, p.67.
3. "13th World Petroleum Congress Report No. 2: Environment Claims Equal billing during 13th World Congress", O & G J., November 4, 1991, p.23. For the first time in history, environmental concern, mainly the global warming issue, ran throughout the 13th World Petroleum Congress held in October 1991 in Buenos Aires, the United States. But as one would expect, there was obvious scepticism and objections to the general trend, as Richard J. Stegemeier, president and chief executive officer of Unocal Corp., asked: "How sure are we that global warming is, indeed, a real, long-term threat to the environment?" "Recent studies have shown that we may be jumping to conclusions about the threat of global warming before we fully understand the phenomenon", added he. Cited in *ibid.*
4. *Ibid.*
5. Many developing countries, such as Indonesia, China and Brazil, adopt a five-year-plan strategy, which maps out their economic developments for a period of only five years.
6. See generally, Satchell, M., "The Rape of the Oceans", U.S. News and World Report, June 22, 1992, pp.64-71; Hinds, L., "World Marine Fisheries: Management and Development Problem", 16 Marine Policy 402 (1992).
7. *Ibid.*, p.402.
8. Art. 61 of the United Nations Convention on the Law of the Sea, UN Doc. A/CONF. 62/122, October 1982.

Selected Bibliography

This selective listing includes general works which consider the major issues of this study. References should be made to individual chapters for specific sources.

A. Legislation

Alberta Heritage Savings Trust Fund Act. Statutes of Alberta. Vol. 1, Chapter A-27, pp. 1-12.

Barrows Company, ed. Middle East, North Africa, South and Central Africa, Europe, Asia and Australasia, Central America and Caribbeans, and South America: Basic Oil Laws & Concession Contracts. Vols. 1-2 and various Supps. New York: The Petroleum Legislation Co., 1959-present.

———. Petroleum Legislation. Vols. 1-2 and Supps. 1-79. New York: The Barrows Company Inc., 1959-1990.

Ely, N. Summary of Mining and Petroleum Laws of the World. 5 vols. Washington, D.C.: U.S. Dept. of Interior, Bureau of Mines, 1970.

Fabrikant, R. Oil Discovery and Technical Change in South East Asia: the Indonesian Petroleum Industry, Miscellaneous Source Material. Field Report Series No. 4. Singapore: Institute of Southeast Asian Studies, March, 1973.

Harjasumantri, K. Environmental Legislation in Indonesia. 2nd ed. Yogyakarta, Indonesia: Gadjah Mada University, 1989.

Organization of American States (OAS), ed. Mining and Petroleum Legislation of Latin America and the Caribbean. Dobbs Ferry, N.Y.: Oceana Publication, Inc., 1986.

State Oceanic Administration (SOA). Regulations of the People's Republic of China Concerning Environmental Protection in Offshore Oil Exploration and Exploitation. Beijing: SOA, 1983.

United Nations. Convention on Environmental Impact Assessment in A Transboundary Context. International Legal Material 30 (1991): 800-19.

B. Model and individual concessions/contracts

- Agreement of May 28th, 1901 between the Government of His Imperial Majesty the Shah of Persia and William Knox D'Arcy (the D'Arcy concession). Appendix to Annex 1419c. League of Nations. Official Journal. Vol. XIII (1932): 2305-07.
- Convention of 14th March 1925, as revised in 1936 (Iraq Petroleum Company Concession). Middle East: Basic Oil Laws and Concession Contracts. Vol. 2. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1959, pp. Iraq A 1-37.
- Draft Production-Sharing Contract of August 1976 (model contract of Indonesia). Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 52. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1977, pp. 1-55.
- Gopher Oil Ltd. Petroleum Concession No. 4 2528/29 dated November 21, 1985 (Thailand). Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 89. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1986, pp. 77-89.
- Ministerial Regulations No. 4 B.E. 2514 of 1971 (model concession contract of Thailand). Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 35. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1973, pp. Thailand A 0-17.
- Ministerial Regulations No. 17 B.E. 2532 of 1989 (revised model concession contract of Thailand). Thai Gov't Gazette. Vol. 10, Part 227, Special Issue, December 25, 1989.
- Model Contract for Brazilian Exploration as Proposed by Petroleo Brasileiro A.S. (Petrobrás) in 1976. South America: Basic Oil Laws and Concession Contracts. Supp. 42. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1976, pp. 1-52.
- Model Contract for Offshore Operations. Beijing: China National Offshore Oil Corporation (CNOOC), 1983. Reprinted in Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 78. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1983, pp. China 1-85.
- Model Contract for the Second Round of Bidding. Beijing:

China National Offshore Oil Corporation (CNOOC), March 1985. Reprinted in Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 88. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1986, pp. 1-63.

Model Contract for the Third Round of Bidding. Beijing: China National Offshore Oil Corporation (CNOOC), September 1988, 114p.

Offshore Agreement between the Government of Saudi Arabia and Arabian American Oil Company of 1948. Middle East: Basic Oil Laws and Concession Contracts. Vol. 1. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1959, pp. Saudi Arabia A 53-56.

Offshore Contract Dated December 1, 1983 between CNOOC and Pearl River Operating Company, Getty Oil International (Orient), Inc., Japex Hanhai Ltd., SunOrient Exploration Company, Texas Eastern Orient, Inc. and Hunan Oil Development Company, Ltd. Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 98. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1988, pp. 1-40.

Petroleum Contract dated May 28, 1985 between Hai Nan Petroleum Development Corporation and CSR/BHP/Basin/Base Resources. Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 97. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1988, pp. 1-83.

Production Sharing Contract dated 12 February 1979 between Pertamina and Citco Indonesian Petroleum Corp. (Siri Block—East Java Sea). Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 70. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1981, pp. 50-93.

Production Sharing Contract of 30 August 1985 between Pertamina and Sceptre Resources Bunyu (offshore Bunyu east Kalimantan). Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 89. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1986, pp. 1-27.

Summary of the 1979 Model Contract (Brazil). Petroleum Legislation. Supp. 38. Edited by Barrows Company. New York: The Barrows Company Inc., 1980, pp. 45-56.

Summary of the Service Contract Dated November 13, 1980 between Petrobrás and Conoco Grupi Petroleum Services

Inc. Petroleum Legislation. Supp. 68. Edited by Barrows Company. New York: The Barrows Company Inc., 1987, pp. 34-44.

The 1977 Model Service Contract between Petroleo Brasileiro S.A. (Petrobrás) and Private Contractors for Offshore Exploration/Exploitation. South America: Basic Oil Laws and Concession Contracts. Supp. 51. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1978, pp. 1-91.

The Typical Production-Sharing Contract for Exploration/Exploitation Agreements between Pertamina and Private Contractors. Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp. 25. Edited by Barrows Company. New York: The Petroleum Legislation Co., 1969, pp. A 0-24.

Triton Oil & Gas Corp. Concession No. 8/2515/12 Covering Offshore Exploration Blocks 18 & 19 dated October 12, 1972 (Thailand). Asia and Australasia: Basic Oil Laws and Concession Contracts. Supp.38. Edited by Barrows Company. New York: Petroleum Legislation Co., 1973, pp. Thailand A 0-13.

C. Documents/reports

Albertan Heritage Savings Trust Fund (AHSTF). Annual Report 1976-1992. Edmonton: AHSTF, 1976-1992.

China National Offshore Oil Corporation (CNOOC). Annual Report 1984-1992. Beijing: CNOOC, 1984-1992.

Department of Mineral Resources (DMR). Development of Offshore Mining & Petroleum in Thailand. Unpublished document. Bangkok, Thailand: May 1989.

Energy Information Administration (EIA). The Petroleum Resources of Indonesia, Malaysia, Brunei and Thailand. Washington, D.C.: U.S. Depart. of Energy, 1984.

International Chamber of Commerce (ICC). "Business Charter for Sustainable Development." Environmental Policy & Law 21 (1991): 35.

International Labour Office (ILO). Brazil and Peru: Social and Economic Effects of Petroleum Development by Gall, N., and Alba, E.M. Geneva: ILO, 1987.

———. China and Malaysia: Social and Economic Effects of Petroleum Development by Hills, P. and Bowie, P. Geneva: ILO, 1987.

———. India and Thailand: Social and Economic Effects of Petroleum Development by Jata Energy Research Institute with Jagannathan, C.R., and Tingsabadh, C. Geneva: ILO, 1987.

International Union for Conservation of Nature and Natural Resources (IUCN), United Nations Environmental Programme (UNEP), World Wildlife Fund (WWF). Caring for the Earth: A Strategy for Sustainable Living. London: Earthscan Publications, 1991.

Pertamina. Pertamina on the Move. Hong Kong: Hill and Knowlton Asia Ltd, 1990.

The Expert Group of World Commission on Environment and Development (WCED), Legal Principles for Environmental Protection and Sustainable Development. Dordrecht, the Netherlands: Martinus Nijhoff Publishers, 1987.

United Nations. Permanent Sovereignty over Natural Resources: Report of the Secretary-General. UN Doc. E/C.7/66, 1977.

———. Petroleum Co-operation among Developing Countries (Proceedings of the United Nations Meeting on Co-operation among Developing Countries in Petroleum, Geneva, November 10-20, 1975). UN Doc. ST/ESA/57, 1977.

United Nations Centre on Transnational Corporations (UNCTC). Alternative Arrangements for Petroleum Development: A Guide for Government Policy-Makers and Negotiators. UN Doc. ST/CTC /43, 1982. Sales No.E.82.II.A.22.

———. Criteria for Sustainable Development Management. New York: United Nations, 1991. Reprinted in Environmental Policy & Law 20 (1990): 186-87.

———. Environmental Aspects of Transnational Corporations: A Survey. UN Doc. ST/CTC/55, 1985. Sales No.E.85.II.A.11.

———. Financial and Fiscal Aspects of Petroleum Exploitation (Advisory Studies, Series B, No.3). UN Doc. ST/CTC/SER. B/3, 1987. Sales No.E.87.II.A.10.

———. Licence Agreement in Developing Countries. UN Doc. ST/CTC/78, 1987. Sales No.E.87.II.A.21.

- . Main Features and Trends in Petroleum and Mining Agreements. UN Doc. ST/CTC/29, 1983. Sales No.E.83.II.A.9.
- . Natural Gas Clauses in Petroleum Arrangements (UNCTC Advisory Studies, Series B, No. 1). UN Doc. No. ST/CTC/SER.B/1, 1987. Sales No.E.87.II.A.3.
- . Transnational Corporations in World Development: 3rd Survey. UN Doc. ST/CTC/46, 1983. Sales No.E.83.II.A.14.
- U.S. Embassy, The 1991 Petroleum Report: Indonesia. Jakarta: Embassy of the United States of America, July 1991.
- World Commission on Environment and Development (WCED). Our Common Future. New York: Oxford University Press, 1987.
- World Bank. Brazil: Oil and Gas Sector Review, 1983. Reprinted in Offshore Petroleum Industry. Supp. 60. Edited by Barrows Company. New York: The Barrows Company Inc., 1985, pp. 9-83.

D. Books and proceedings

- Ahmad, Y.J., El Sarafy, S., and Lutz, E., ed. Environmental Accounting for Sustainable Development. Washington, D.C.: The World Bank, 1989.
- Barrows Company, ed. World Petroleum Arrangements. New York: The Barrows Company Inc., 1985.
- Bartlett III, A.G., Barton, R.J., Bartlett, J.C., Fowler, jr., G.A., and Hays, C.F. Pertamina: Indonesian National Oil. Singapore: Amerasian Ltd., 1972.
- Beredjick, N., and Wälde, T., ed. Petroleum Investment Policies in Developing Countries. London: Graham & Trotman, 1988.
- Blinn, K.W., Duval, C., Le Leuch, H., and Pertuzio, A. International Petroleum Exploration and Exploitation Agreements: Legal, Economic and Policy Aspects. London: Euromoney Publications, 1986.
- Bodnarek, R.K. The Concept of Sustainable Development and its Implications for Environmental Law, LL.M. thesis, Dalhousie University, Halifax, Canada, January, 1993.
- Carlson, S. Indonesia's Oil. Boulder, Colorado: Westview

Press, 1977.

Cattan, H. The Evolution of Oil Concessions in the Middle East and North Africa. New York: Oceana Publications, Inc., 1967.

———. The Law of Oil Concession in the Middle East and North Africa. New York: Oceana Publications, Inc., 1967.

Chisholm, A.H.T. The First Kuwait Oil Concession Agreement: A Record of the Negotiations 1911-1934. London: F. Cass, 1975.

Chu, B.T., and Dong, W.Y. Legal Issues of Foreign Investments in China. Beijing: Business Administration Press, 1988 (in Chinese).

Daly, H.E., and Cobb, jr, J.B. For the Common Good: Redirecting the Economy toward Community, the Environment, and A Sustainable Future. Boston: Beacon Press, 1989.

Danielsen, A.L. The Evolution of OPEC. New York: Harcourt Brace Jovanovich, 1982.

Fabrikant, R. Legal Aspects of Production Sharing Contracts in the Indonesian Petroleum Industry. Singapore: Institute of Southeast Asian Studies, 1973.

Fridley, D. China's Petroleum Industry: International and Domestic Policy Imperatives. Honolulu, HI: East-West Centre, 1987.

Gladwin, T.N., and Walter, I. Multinationals under Fire: Lessons in the Management of Conflicts. New York: John Wiley, 1980.

Hossain, K. Law and Policy in Petroleum Development: Changing Relations between Transnational and Governments. New York: Nichols Publishing Company, 1979.

Hossain, K., and Roy Chowdhury, S. Permanent Sovereignty Over Natural Resources in International Law: Principle and Practice. New York: St. Martin's Press, 1984.

International Bar Association (IBA). World Energy Laws (proceedings of the IBA Seminar on World Energy law held in Stavanger, Norway, 1975).

———. Energy Law 1981. 2 vols. (Proceedings of Seminar organised by the Committee on Energy and Natural

resources, Section on Business Law, Banff, Alberta, Canada, April 26-May 2, 1981).

International Bar Association (IBA) and LawAsia Research Institute. Energy Law in Asia and Pacific. New York: Matthew Bender, 1982.

International Bar Association (IBA), Section on Energy and Natural Resources Law (SERL). International Energy Law 1984 (Proceedings of Seminar organized by Section on Energy and Natural Resources Law of IBA, 1984).

———. Energy Law '86. New York: Matthew Bender, 1986,

———. Energy Law '90, Changing Energy Markets—the Legal Consequences (Proceedings of the Ninth Advanced Seminar on Petroleum, Mineral and Energy Resources Law, April 22-27, 1990, the Netherlands). London: Graham & Trotman, 1990.

———. Energy Resources Law 1992 (Pre-Seminar papers of the 10th Advanced Seminar on Petroleum, Minerals, Energy and Resources Law, Washington, D.C., April 5-10, 1992).

International Development Research Centre. Energy 2000: A Global Strategy for Sustainable Development: A Report for the World Commission on Environment and Development. London: Zed Books Ltd., 1987.

International Institute for Sustainable Development (IISD). Business Strategy for Sustainable Development: Leadership and Accountability for the '90s. Winnipeg: IISD, 1992.

International Petroleum Encyclopedia. Vols. 9-26. Tulsa, OK.: The Petroleum Publishing Co., 1976-1993.

Kemp, A. Petroleum Rent Collection Around the World. Halifax, N.S.: The Institute for Research on Public Policy, 1987.

Khan K.I.F. Petroleum Resources Development. London: Belhaven Press, 1988.

Lax, H.L. States and Companies: Political Risks in International Oil Industry. New York: Praeger, 1988.

Legge, J. The Chinese Classics: Vol. I Confucian Analets, The Great Learning, and The Doctrine of the Mean. Taipei, Taiwan: Progressive Learning Books, 1969.

Liu B.N., ed. Lun Yu (The Confucian Analets). Beijing: China

Books Press, 1986 (in Chinese).

- . The Correct Meaning of Mencian Analets. Beijing: China Books Press, 1986 (in Chinese).
- Meadows, D.H., Meadows, D.L., Randers, J., and Behrens III, W.W. The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind. New York: Universe Books, 1972.
- Mikdashy, Z.M. A Financial Analysis of Middle Eastern Oil Concessions. New York: F.A. Praeger, 1966.
- Mikesell, R.F. Petroleum Company Operations & Agreements in the Developing Countries. Washington, D.C.: Resources for the Future, Inc., 1984.
- Mitshell, J.D.B. The Contracts of Public Authorities: A Comparative Study. London: London School of Economics and Political Science, 1954.
- Moser, M.T., ed. Foreign Trade, Investment, and the Law of People's Republic of China. 2nd ed. Hong Kong: Oxford University Press, 1987.
- Neto, J.A.C. Risk-Bearing Service Contract in Brazil: An Overview. Diploma thesis, University of Dundee, May 1983.
- Noreng, Y. Oil Politics in the 1980s: Patterns of International Cooperation. New York: McGraw-Hill, 1978.
- Oil and Gas Journal. Vols. 68-91, 1970-1993.
- Oldham, G., Warhurst, A., Lao, Y.Y., and Zhang, X.B. Technology Transfer to the Chinese Offshore Oil Industry, SPRU Occasional Paper Series No.27, Science Policy Research Unit, University of Sussex, November 1987.
- Ooi, J. B. The Petroleum Resources of Indonesia. Kuala Lumpur, Oxford University Press, 1982.
- Oon, K.C. The Politics of Oil in Indonesia: Foreign Company-Host Government Relations. Cambridge: The Cambridge University Press, 1986.
- Osborn, F. Our Plundered Planet. Boston: Little, Brown and Company, 1948.
- Philip, G. Oil and Politics in Latin America: National Movements and State Companies. New York: Cambridge

- University Press, 1982.
- Rawls, J. A Theory of Justice. Cambridge: Harvard University Press, 1973.
- Repetto, R. The Global Possible, Resources Development and the New Century. New Haven: Yale University Press, 1985.
- Ross, L., and Silk, M.A. Environmental law and Policy in the People's Republic of China. Connecticut: Greenwood Press, Inc., 1987.
- Scoby, D.R. Environmental Ethics: Studies of Man's Self-Destruction. Minneapolis: Burgess Pub. Co., 1971.
- Shea, D.R. The Calvo Clause. Ph.D. thesis, University of Minnesota, 1955.
- Smith, D.N., and Wells jr., L.T. Negotiating the Third World Mineral Agreements. Cambridge, Mass.: Bollinger Publishing Company, 1975.
- Smith, P.S. Oil and Politics in Modern Brazil. Toronto: The Macmillan Company of Canada Ltd., 1976.
- Stocking, G.W. Middle East Oil: A Study of Political and Economic Controversy. Kingsport, Tenn.: Vanderbilt University Press, 1970.
- Stubbs, R.C. Environmental Administration in Thailand. East-West Environment and Policy Institute, Research Report No. 57. Honolulu, Hawaii: East-West Centre, May 1981.
- The National Council for US-China Trade. China's Petroleum Industry. Special Report No. 16. Washington D.C.: The National Council for US-China Trade, June 1976.
- . Standard Form Contracts of the People's Republic of China. Washington, D.C.: The National Council for U.S.-China Trade, June 1975.
- Tolba, M.K. Sustainable Development: Constraints and Opportunities. London: Butterworth Scientific, 1987.
- Toriguian, S. Legal Aspects of Oil Concessions in the Middle East. Lebanon: Hamaskaine Press, 1972.
- Turpin, C. Government Contracts. Harmondsworth: Penguin, 1972.
- Weiss, E.B. In Fairness to Future Generations: Inter-

national Law, Common Patrimony and Intergenerational Equity. Dobbs Ferry, N.Y.: Transnational Publishers, 1989.

William, H.R., and Meyers, C.J., ed. Manual of Oil and Gas Terms. 8th ed. New York: Matthew Bender, 1991.

Woodard, K. The International Energy Policies of the People's Republic of China. Ph. D. thesis. Stanford University, 1976.

———. China's Changing Petroleum Industry. Washington, D.C.: The Washington Institute for Value and Public Policy, 1988.

D. Articles

Adede, A.O. "A Profile of Trends in the State Contracts for Natural Resources Development Between African Countries and Foreign Companies." New York University Journal of International Law & Politics 12 (1979): 479-568.

———. "International Environmental Law from Stockholm to Rio—An Overview of Past Lessons and Future Challenges." Environmental Policy and Law 22 (1992): 88-103.

Asante, S.K.B. "Stability of Contractual Relations in the Transnational Investment Process." International & Comparative Law Quarterly 28 (1979): 401-23.

———. "Restructuring Transnational Mineral Agreements." American Journal of International Law 73 (1979): 335-71.

Attwell, J.E. "Changing Relationships between Host Countries and International Petroleum Companies." Huston Law Review 17 (1980): 1015-19.

Bamber, D. "Energy Finance: Asian Demand Outstrips Supply." Euromoney (June-July 1990): 69-71.

Barraz, P. "The Legal Status of Oil Concessions." Journal of World Trade Law 5 (1971): 609-30.

Barrett, B., and Howells, R. "The Offshore Petroleum Industry and Protection of the Marine Environment." Journal of Environmental Law 2 (1990): 54-57.

- Beals, R.E., and Gillis, M. "The Evolution of Indonesian Hard Mineral Agreements 1976-1977." Natural Resources Forum 4 (1980): 341-58.
- Bentham, R.W. "People's Republic of China: Petroleum Agreements and Bilateral Treaties." Journal of Energy & Natural Resources Law 4 (1986): 39-44.
- Bidwai, P. "North vs. South on Pollution." The Nation (June 1992): 853-54.
- Boulos, A.J. "Mutuality of Interests between Company and Government—Myth and Fact?" Energy Law '90, Changing Energy Markets—the Legal Consequences. Edited by Section on Energy and Natural Resources Law (SERL) of International Bar Association (IBA). London: Graham & Trotman, 1990, pp. 3-31.
- Boxer, B. "China's Environmental Prospects." Asian Survey 29 (1989): 669-86.
- Boyle, P. "Commercial Dispute Resolution in the Peoples Republic of China." Oil & Gas Law and Taxation Review 4 (1985/86): 247-54.
- Bradbrook, A.J. "Energy Conservation Legislation for Industry." Journal of Energy & Natural Resources Law 10 (1992): 145-63.
- Broadman, H.G., and Kerley, D.J. "The Drilling Gap in Non-OPEC Developing Countries: the Role of Contractual and Fiscal Arrangements." Natural Resources Journal 25 (1985): 415-28.
- Brown, C. "Tough Terms for Offshore Oil." The Chinese Business Review (July/August 1982): 34-37.
- Brown, jr., E.A. "Considerations Attending Investments in Oil and Gas Operations in Latin America." Rocky Mountain Mineral Law Foundation Minerals Acquisition and Operations Institute (1974): 13-1 - 13-19.
- Brown, R. "Contract Stability in International Petroleum Operations." CTC Reporter 29 (1990): 56-60.
- Bunnag, J. "Thailand's Mineral Resources Crisis—A Legal Practitioner's Viewpoint." Journal of Energy & Natural Resources Law 10 (1992): 164-71.
- Cameron, J., and Abouchar, J. "The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment." Boston College

- International & Comparative Law Review 14 (1991): 1-27.
- Cameron, P. "Offshore Rigs: Removal Costs," East Asia Executive Reports 11 (1989): 17-9.
- Carlston, K. "International Role of Concession Agreements." Northwestern University Law Review 52 (1958): 618-643.
- Capener, C.R. "Legal Aspects of Sino-American Oil Exploration in the South China Sea." Journal of International Law & Economics 14 (1980): 443-83.
- Cassils, J.A. "Structuring the Tax Systems for Sustainable Development." The Legal Challenge of Sustainable Development. Edited by Saunders, J. O. Calgary: Canadian Institute of Resources Law, 1990, pp. 141-53.
- Chandler, A.T. "Current Development in the Thai Petroleum Concession." Oil & Gas Law and Taxation Review 7 (1987/88): 205-07.
- . "Evolution of the Thai Petroleum Concession." Oil & Gas Law and Taxation Review 10 (1987/88): 287-97.
- Cheng, X.H., and Li, Y.Z. "Warning Bells to the Big Oil Producer, Part I and II." Outlook Weekly. 35 and 36 (August 31 and September 7, 1992): 13-14; 14-15 (in Chinese).
- Comment. "From Concession to Participation: Restructuring the Middle East Oil Industry." New York University Law Review 48 (1973): 774-816.
- Comment. "Oil's New World Order." The Economist (July 13, 1991): 67-69.
- Cribb, R. "The Politics of Pollution Control in Indonesia." Asian Survey 30 (1990): 1123-35.
- Dalgaard-Knudsen, F. "Exploitation Concessions: Contracts or Permits?: Contributions from the Norwegian Phillip/Ekofisk Case." Journal of Energy & Natural Resources Law 5 (1987): 168-81.
- Daly, H.E. "Toward Some Operational Principles of Sustainable Development." Ecological Economics 2 (1990): 1-6.
- De Andrade, C.C.B. "Some Key Aspects of the Brazilian Legal Framework on Energy and Mineral Resources." Journal of Energy & Natural Resources Law 7 (1989): 231-37.
- Delaume, G.R. "Excuse for Non-Performance and Force Majeure

- in Economic Development Agreements." 10 Columbia Journal of Transnational Law 10 (1971): 242-66.
- Dobinovic, T.E.J.P. "Petroleum Service Contract in Argentina, Brazil and Columbia: Issues Arising from their Legal Nature." Journal of Energy & Natural Resources Law 5 (1987): 15-30.
- Elder, P.S. "Sustainability." McGill Law Journal 36 (1991): 832-50.
- El-Kosheri, A.S., and Riad, T.F. "The Law Governing A New Generation of Petroleum Agreements: Changes in the Arbitration Precess: Part I & Part II." Oil & Gas Law and Taxation Review 7 & 8 (1986 & 1987): 171-81; 209-15.
- Elmer-Dewitt, P. "Rich vs. Poor." Time (June 1, 1992): 22-32.
- Ely, N., and Pietrowski, jr., R.F. "Changing Concepts in the World's Mineral and Petroleum Development Law." Brigham Young University Law Review (1976): 9-35.
- ESCAP/UNCTC Joint Unit on TNCs "Environmental Aspects of TNCs in the ESCAP Region." CTC Reporter 30 (1990): 6-9.
- Fabri, N. "Comment on Indonesia: Minerals and Petroleum." Australian Mineral and Petroleum Law Association Yearbook (1989): 301-36.
- . "The Legal Nature of Petroleum Agreements: A Comparative Analysis." Australian Mineral and Petroleum Law Association Yearbook (1986): 1-38.
- Fabrikant, R. "Production Sharing Contract in the Indonesian Petroleum Industry." Harvard International Law Journal 16 (1975): 303-51.
- . "Pertamina: A Legal and Financial Analysis of A National Oil Company in A Developing Country." Texas International Law Journal 10 (1975): 495-536.
- Faintly, R.W. "Pollution Control in Brazil." Ecology Law Quarterly 15 (1988): 1-68.
- Farer, T.J. "Economic Development Agreements: A Functional Analysis." Columbia Journal of Transnational Law 10 (1971): 200-41.
- Fernandes, E. "Law, Politics and Environmental Protection in Brazil." Journal of Environmental Law 4 (1992): 41-53.

- Frihagen, A. "The Chinese and Some Developing Nations Licence Regimes—What can We Learn from Them?" A paper presented at the Seventh Solstrand Oil and Gas Law Conference, Bergen, 1984, pp.1-27.
- Gadon, J. "Offshore Oil Prospects for the Year 2000." Natural Resources Forum 11 (1987): 301-23.
- Gao, Z. "China and the LOC Convention." Marine Policy 15 (1991): 199-209.
- Geiger, R. "The Unilateral Change of Economic Development Agreements." International & Comparative Law Quarterly 23 (1974): 73-104.
- Gess, K.N. "Permanent Sovereignty over Natural Resources." International & Comparative Law Quarterly 13 (1964): 398-449.
- Gibbons, J.H., Blair, P.D., and Gwin, H.L. "Strategies for Energy Use." Managing Planet Earth: Readings from Scientific American Magazine. New York: W.H. Freeman and Company, 1990, pp.85-92.
- Gold, E. "Pollution from Offshore Activities: An Overview of the Operational, Legal and Environmental Aspects", a paper presented at the Seminar on Liability for Pollution Damage, held by the Comité Maritime International, Genoa, Italy, September 21-25, 1992, pp. 1-64.
- Goldemberg, J. "A Carbon Tax to Prevent Climate Change." Ecodecision 1 (1991): 87-88.
- . "How to Stop Global Warming?" Technology Review (November/December 1990): 15-31.
- Goodwin, jr., R.C. "New Marine Environmental Protection Law will Affect Oil Exploration & Development (China)." East Asia Executive Report 5 (1983): 9-11.
- . "The Evolving Legal Framework." The Chinese Business Review (May/June 1983): 42-48.
- . "Offshore Oil Exploration : An Overview of Legal and Organizational Aspects." East Asia Executive Report 6 (May 1984): 9-19.
- Gorman, T.W. "Chinese Legal Inducement for the Development of A Domestic Petroleum Industry." Texas International Law Review 20 (1985): 189-202.

- Granucci, A.F. "Joint Development of Resources in Indonesia." Journal of Energy & Natural Resources Law 4 (1986): 116-23.
- Greiff, T. "International Business: Oil and Gas (Indonesia) New Production-Sharing Contracts with Foreign Oil Contractors." Harvard International Law Journal 19 (1978): 396-402.
- Gündling, L. "Our Responsibilities to Future Generations." American Journal of International Law 84 (1990): 207-12.
- Guruswamy, L. "Energy and Environmental Security: The Need for Action." Journal of Environmental Law 3 (1991): 209-28.
- Hardy, M. "Offshore Development and Marine Pollution." Ocean Development & International Law 1 (1973-74): 239-73.
- Herron, "Foreign Participation in Mineral Development and Operations in Indonesia," Rocky Mountain Mineral Law Foundation International Minerals Acquisition and Operations Institute (1974): 17-24.
- Hey, E. "The Precautionary Concept in Environmental Policy and Law: Institutionalizing Caution." Georgetown International Environmental Law Review 4 (1992): 303-18.
- Ho, M.S. "Income Tax on Foreign Oil Companies in the People's Republic of China." Oil & Gas Finance and Accounting 5 (1990): 195-212.
- Jennings, R.Y. "State Contracts in International Law." British Yearbook of International Law 37 (1961): 156-82.
- Jirananda, K., and Cristal, R.J. "Thailand." International Financial Law Review. Supp. (April 1991): 71-74.
- Johnstone, D. "Share and the Share Alike." Oil and Gas Investor 12 (1992): 34-39.
- Jolly, D. "Thailand: Trade and Investment—Cleaning up Their Act." Far East Economic Review 155 (1992): 46-48.
- Jones, D. "China's Offshore Oil Development: Japanese and French Contracts Offer Some Insights, Some Confusion." The Chinese Business Review (July-August 1980): 52-56.
- Kats, G. "The Earth Summit: Opportunity for Energy Reform."

Energy Policy 20 (1992): 546-58.

- Kelsey, T.F. "Brazil." In The Energy Crisis and the Environment: An International Perspective. Edited by Kelley, D.R. New York: Praeger Publishers, 1977, pp. 189-217.
- Kemp, A.G. "Petroleum Exploitation and Contract Terms in Developing Countries after the Oil Price Collapse." Natural Resources Forum 13 (1989): 116-26.
- Khan, K.I.F. "Petroleum Taxation and Contracts in the Third World—A Law and Policy Perspective." Journal of World Trade Law 22 (1) (1988): 67-88.
- Khan, K. "Some Legal Considerations on the Role and Structure of State Oil Company: A Comparative View." International & Comparative Law Quarterly 34 (1985): 584-592.
- Kinna, J.C. "Recent Trends in Petroleum Regimes." Energy Law in Asia and Pacific. Edited by International Bar Association and LawAsia Research Institute. New York: Matthew Bender, 1982, pp. 491-94.
- Kirwood, C. "The Chinese Onshore Exploration Agreements." Oil and Gas Journal (December 30, 1985): 162-72.
- Koester, V. "From Stockholm to Brundtland." Environmental Policy & Law 20 (1990): 14-19.
- Kusuma-Atmadja, M. "Indonesia's National Policy on Offshore Mineral Resources: Some Legal Issues." Ocean Yearbook 2. Edited by Borgese, E.M., Ginsberg, N., and Morgan, J. Chicago: The University of Chicago Press, 1991. pp. 91-103.
- Lando, O. "Renegotiation and Revision of International Contracts: An Issue in the North-South Dialogue." German Yearbook of International Law 23 (1980): 37-58.
- Le Leuch, H. "Recent Evolution of Petroleum Exploration and Exploitation Agreements in Developing Countries: New Approaches to Introduce More Flexibility and Progressivity in the Contractual Terms." Natural Resources Forum 10 (1986): 205-19.
- Leach, J.B. "Offshore: the Petroleum Industry in the People's Republic of China, 1969-1978." Chinese Economic Studies 13 (1-2) (1979-80): 105-51.
- Ma, Y.J. "Foreign Investment in the Troubled Waters of the

- East China's Sea." Chinese Yearbook of International Law and Affairs 1 (1981): 35-73.
- Makarim, N.A. "Indonesia: Minerals and Petroleum." Australia Mineral and Petroleum Law Association Yearbook (1989): 258-90.
- Makarim, N., and Christensen, P. "Indonesia." International Financial Review. Supp. (April 1991): 40-46.
- Mann, F.A. "The Aminoil Arbitration." British Yearbook of International Law 54 (1983): 213-21.
- . "The Law Governing State Contracts." British Yearbook of International Law 21 (1944): 11-33.
- McConnell, M.L., and Gold, E. "The Modern Law of the Sea: Framework for Protection and Preservation of the Marine Environment." Case Western Reserve Journal of International Law 23 (1991): 83-105.
- Mcperson, "Recent Developments in Petroleum Laws and Contracts." In International Energy Law. Edited by International Bar Association (IBA), Section on Energy and Natural Resources Law (SERL). (1984): Topic 1.
- Moran, T.H. "The Evolution of Concession Agreements in Underdeveloped Countries and the United States National Interest." Vanderbilt Journal of Transnational Law 7 (1974): 315-34.
- Moser, M.J. "Legal Aspects of Offshore Oil and Gas Exploration and Development in China." Foreign Trade, Investment, and the Law of People's Republic of China. 2nd. ed. Edited by Moser, M.J. Hong Kong: Oxford University Press, 1987, pp. 270-303.
- Muir, J.D. "Changing Legal Framework of International Energy Management." International Lawyer 9 (1975): 605-15.
- Muller, K., and Klann, S. "Thailand." Oil & Gas Investor 9 (1989): 38-49.
- Mumey, G. "Alberta Heritage Fund: Measuring Value and Achievement." Canadian Public Policy 16 (1990): 28-45.
- Neto, J.S.C. "Risk-Bearing Service Contract in Brazil." Journal of Energy & Natural Resources Law 3 (1985): 114-20.
- News. "Foreign Firms to Figure More in Rebounding China E & D Scene." Oil and Gas Journal (September 28, 1992): 23-

29.

- Nordberg, C.A., and Kelleher, M.F. "Production-Sharing Contracts and Foreign Tax Credit: A Current Analysis." Journal of Taxation 45 (1976): 218-22
- Note. "Indonesia: Pertamina." OPEC Bulletin 15 (9) (1984): 20-32 .
- Note. "Petrobrás Role in Brazil's Economy Disputed." Oil & Gas Journal (January 14, 1991): 47-51.
- Note. "The Price of Green." The Economist (May 9th, 1992): 87.
- O'Keefe, P.J. "The United Nations and Permanent Sovereignty over Natural Resources." Journal of World Trade Law 8 (1974): 239-82.
- Omorogbe, Y. "Contractual Forms in Oil Industry: the Nigerian Experience with Production Sharing Contracts." Journal of World Trade Law 20 (1986): 342-49.
- Ondrink, R.S. "Training Chinese Oilfield Workers." The China Business Review (July/August): 7-11.
- Padilla, V.R. "Petroleum Taxation in West Africa: A Comparative Study." Natural Resource Forum 15 (1991): 2-13.
- Parnell, A. "The New Foreign Corporate Income Tax Law of the People's Republic of China." Oil & Gas Law and Taxation Review 9 (1991): 19-24.
- Pearce, D. "Economics, Equity and Sustainable Development." Futures 20 (1988): 598-605.
- Pearse, P.H. "Scarcity of Natural Resources and the Implications for Sustainable Development." 15 Natural Resources Forum 15 (1991): 74-79.
- Peck, J., and Clarke, B. "Taxing the Oil Industry." The China Business Review (March/April 1990): 20-26.
- Pels, G.J. "Mining Investment in Brazil, Peru and Mexico: A Practical Methodology." Georgia Journal of International and Comparative Law 14 (1984): 265-67.
- Peng, D.D. "China's Offshore Oil Policy and Legislation." Journal of Energy and Natural Resources Law 11 (1993): 36-47.

- Philbrook, J.N. "Environmental Audits: Determining the Need at Mining Facilities." Mining Engineering 43 (1991): 207-09.
- Ponting, C. "Historical Perspectives on Sustainable Development." Environment 32 (1990): 4-9, 31-33.
- Pretes, M., and Robinson, M. "Alaskan and Canadian Trust Funds as Agents of Sustainable Development." The Legal Challenge of Sustainable Development. Edited by Saunders, J.O. Calgary: Canadian Institute of Resources Law, 1990, pp. 300-12.
- . "Beyond Boom and Bust: A Strategy for Sustainable Development in the North". Polar Record 25 (1989): 115-20.
- . "Permanent Trust Funds and Sustainable Non-Renewable Resource Management in the Canadian North." Resources: the Newsletter of the Canadian Institute of Resources Law 25 (1989): 6-7.
- Ramazani, R.K. "Choice of Law Problems and International Oil Contracts: A Case Study." International & Comparative Law Quarterly 11 (1962): 503-18.
- Riad, T.F.A. "Host Countries Sovereignty over National Resources and Protection of Foreign Investors." Revue Egyptienne De Droit International 39 (1983): 35-99.
- Rich, L.D. "American Oil Interests in China," 6 Loyola of Los Angeles International & Comparative Law Journal 6 (1983): 119-40.
- Riva, jr., J.P. "Dominant Middle East Oil Reserves Critically Important to World Supply." Oil & Gas Journal (September 23, 1991): 62-68.
- Rønne, A., and Budtz, M. "The Legal Framework for Exploration for and Production of Oil and Natural Gas in Denmark." Journal of Energy & Natural Resources Law 3 (1985): 153-68.
- Ross, L. "Force Majeure and Related Doctrines of Excuses in Contract Law of the People's Republic of China." Journal of Chinese Law 5 (1991): 58-106.
- Roth, P.C.L. "The Emerging Role of the Extractive Reserve in the Enforcement of Brazilian Deforestation Controls." Colorado Journal of International Environmental Law & Policy 2 (1991): 247-75.

- Ruangsuwan, C. "Evolution of the Petroleum Legislation of Thailand: A Case History." Energy 6 (1981): 1299-1302.
- Russell, H.F. "The Foreign Tax Credit for American Oil Contractors in Indonesia: An Allocation Approach." Cornell International Law Journal 10 (1977): 307-34.
- Sabhasri, S., and Wibulswas, P. "Thai Energy Sources and Related Environmental Issues." Energy Policy 20 (1992): 522-26.
- Scott, P. "Good to the Last Drop: Squeezing Oil from A Shrinking World Supply." OMNI (May 1991): 41-42, 100.
- Shaw, C.L. "Green Taxes, Blue Taxes: A Comparative Study of the Use of Fiscal Policy to Promote Environmental Quality." Natural Resources Forum 15 (1991): 123-31.
- Simon, D. "Sustainable Development: Theoretical Construct or Attainable Goal?" Environmental Conservation 16 (1989): 42-48.
- Smith, A.H. "Standard Form Contracts in the International Commercial Transactions of the People's Republic of China." International & Comparative Law Quarterly 21 (1972): 133-50.
- Smith, D.N., and Wells jr., L.T. "Mineral Agreements in Developing Countries: Structure and Substance." 69 American Journal of International Law 69 (1975): 560-90.
- . "Conflict Avoidance in Concession Agreements." Harvard International Law Journal 17 (1976): 66-69.
- Smith, E.E. "Typical World Petroleum Arrangements." A paper delivered at Rocky Mountain Mineral Law Foundation, International Resources Law: A Blueprint for Mineral Development, February 18-19, 1991, pp. 1-43.
- Smith, E.E., and Dzienkowski, J.S. "A Fifty-Year Perspective on World Petroleum Agreements." Texas International Law Journal 24 (1989): 13-46.
- Suleiman, A. "The Oil Experience of the United Arab Emirates and its Legal Framework." Journal of Energy & Natural Resources Law 6 (1988): 1-24.
- Suvey, J. "Petroleum Development in Brazil: The Strategic Role of A National Oil Company." Energy Policy 15 (1987): 7-17.

- Sylvan, R., and Bennett, D. "Taoism and Deep Ecology." The Ecologist 18 (1988): 155-59.
- Thomson, K., and Dudley, N. "Transnationals and Oil in Amazonia." The Ecologist 19 (1989): 219-24.
- Tocher, "Patterns and Trends in Agreements with Foreign Countries." Rocky Mountain Mineral Law Foundation International Minerals Acquisition and Operations Institute. (1974): 3-1 - 3-22.
- "Total Outlines World Exploration, Production Challenges, Approaches." Oil and Gas Journal (July 27, 1992): 101-03.
- Van Meurs, A.P.H. "Economic Analysis of Selected Offshore Petroleum Arrangements." Natural Resources Forum 10 (1986): 107-23.
- Vinten, G. "The Blossoming of the Environmental Audit." Industrial Management & Data Systems 91 (4) (1991): 19-25.
- Vock, R.D. "The Evolution of the Legal Relationship between International Petroleum Mining Company and Host Countries." International Business Lawyer 17 (1983): 244.
- Waelde, T.W. "Innovations in Petroleum and Mineral Licensing?" Energy Resources Law 1992 (Pre-Seminar papers of the 10th Advanced Seminar on Petroleum, Minerals, Energy and Resources Law, organized by Section on Energy and Natural Resources Law (SERL) of International Bar Association (IBA), Washington, D.C., April 1992), pp.128-47.
- . "Lifting the Veil from Transnational Mineral Contracts: A Review of Recent Literature." Natural Resources Forum 1 (1976): 277-84.
- Weiss, E.B. "Our Rights and Obligations to Future Generations for the Environment." American Journal of International Law 84 (1990): 198-207.
- . "The Planetary Trust: Conservation and Intergenerational Equity." Ecology Law Quarterly 11 (1984): 540-44.
- Wetter, J.G., and Schwebel, S.M. "Some Little Known Cases on Concession." British Yearbook of International Law 40 (1964): 183-2. 2.

- White, H.R. "United States Environmental laws and Exploration and Production Operations." Alberta Law Review 13 (1975): 1-17.
- Whitney, A.G. "What's Your Role in Fixing Our Planet?" Financial Executive 6 (1990): 9-12.
- Wood, W.A. "Legal Aspects of Foreign Investment in Oil and Gas Exploration and Development in Brazil." Journal of Energy & Natural Resources Law 7 (1989): 265-74.
- Woodard, K., and Vernor, B. "Petroleum Exploration Update: China's Strategy into the '90s, Part I: Demand/Capital Squeeze, Offshore Development; and Part II: Offshore Contracts, Opening the West." East Asia Executive Report (March and April 1989): 9-13; 9-14.
- Yang, B.C. "The Legal Framework for the Sino-Foreign Co-operation in the Offshore Petroleum Exploitation." An unpublished paper, July 1991, pp.1-14. An updated version of this paper under the same title was presented at the Law Asia Conference, Jakarta, Malaysia, September, 1992, pp. 1-25.
- Yuan, P.C. "China's Offshore Petroleum Resources Law: A Critical and Interpretive Analysis." International Lawyer 16 (1982): 647-69.
- . "China's Offshore Oil Development Policy and Legislation: An Overall Analysis." International Journal of Estuary and Coastal Law 3 (1988): 101-37.
- Zakariya, H.S. "New Direction in Search for and Development of Petroleum Resources in Developing Countries." Vanderbilt Journal International Law 9 (1976): 545-77.
- . "Sovereignty, State Participation and the Need to Restructure the Existing Petroleum Concession Regime." Albert Law Review 10 (1972): 218-31.
- Zhang, Z.K. "The Contract Form for the Exploitation of Offshore Petroleum Resources in Co-operation with Foreign Enterprises and its Legal Characteristics." Maritime Law and Policy. Edited by China Institute for Marine Development Strategy. Vol. 1. Beijing: Ocean Press, 1990, pp. 185-92 (in Chinese).
- Zorn, S. "Permanent Sovereignty over Natural Resources: Recent Developments in the Petroleum Sector." Natural Resources Forum 7 (1983): 321-28.

List of Cases

Anglo-Iranian Oil Co. Case, International Court of Justice: Reports of Judgements, Advisory Opinions and Orders, 1952 (Leyden, Holland: A.W. Sijthoff's Publishing Co., 1952).

Award of Aminoil-Kuwait Arbitration, March 24, 1982, 21 I.L.M. 976-1005 (1982).

Libyan American Oil Co. (Liamco) v. the Government of the Libyan Arab Republic, 20 International Legal Materials 1-87 (1981).

Texco Overseas Petroleum Co./California Asiatic Oil Co. (Topco) v. the Government of the Libyan Arab Republic, 17 International legal Materials 3-37 (1978).