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**PONGGAWA-SAWI RELATIONSHIP IN CO-MANAGEMENT:
AN INTERDISCIPLINARY ANALYSIS OF COASTAL RESOURCE
MANAGEMENT IN SOUTH SULAWESI, INDONESIA**

By

MUHAMMAD YUSRAN

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
Interdisciplinary PhD Program
Faculty of Graduate Studies

at
Dalhousie University
Halifax, Nova Scotia
March 2002

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The undersigned hereby certify that they have read and recommend to the Faculty of Graduate Studies for acceptance a thesis entitled “The *Ponggawa-Sawi* Relationship in Co-Management: An Interdisciplinary Analysis of Coastal Resource Management in South Sulawesi, Indonesia”, by Muhammad Yusran, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Dated: **March 11, 2002**

External Examiner:

Research Supervisor:

Research Supervisor:

Examining Committee:



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DATE: March, 11, 2002

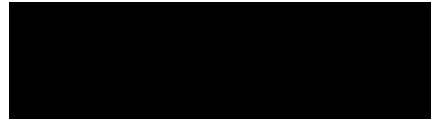
AUTHOR: MUHAMMAD YUSRAN

TITLE: *PONGGAWA-SAWI* RELATIONSHIP: AN INTERDISCIPLINARY ANALYSIS OF COASTAL RESOURCE UTILIZATION AND MANAGEMENT IN SOUTH SULAWESI, INDONESIA.

DEPARTMENT OR SCHOOL: INTERDISCIPLINARY STUDIES

DEGREE: PhD CONVOCATION: May YEAR: 2002

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Dedications

This thesis is dedicated to my beloved parent who passed away during the years of my study at Dalhousie University. This thesis is also dedicated to my beloved wife, Netty Nurmuliawaty and my two children, Muhammad Nizar Nur Fajri and Diza Nur Fahriza.

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Abstract

Coastal fishery resources in South Sulawesi, Indonesia, are important because they not only provide food and income for coastal communities, but also generate revenue at the local, regional, and national levels. Attempts by the national government to impose centralized fishery regulations and promote fisheries production have caused depletion of habitat, depletion of fish stocks, and an increase in conflicts among small-scale fishers. Thus, interest has emerged in the participation of local fishing communities in fishery resources management, as an alternative to centralized fisheries management.

A patron-client relationship in small-scale fisheries, called *pongawawa-sawi*, has been institutionalized by certain ethnic groups in South Sulawesi. This research has used participatory observation and semi-structured interview and is intended to evaluate and understand this patronage system in the Buginese, Makassarese, and Mandarese's fishing communities. The research results show that external and internal pressures have forced changes in the shape of this institution. Emerging changes include a shift from authoritative decision-making of the *pongawawa* (patron) to a more cooperative mode. Other emerging changes include a shift from decisions about the fishing locality, relaxing both the limitation of *sawi* (client) involvement to a single ethnic group and the patron's total control of all activities in the patronage system. The evolution of *pongawawa-sawi* in the Mandarese to a high degree of cooperation and investment by *sawis* and outsiders and the willingness of *pongawawas* in Buginese and Makassarese to consider alternatives for local fishery management suggest there may be willingness for further change to accommodate new arrangements for local fisheries management.

The research results are used for further analysis of this traditional institution from socio-anthropological, economic, political, legal, and ecological perspectives with respect to local fisheries management and leading to a model of integration of the *pongawawa-sawi* institution into fisheries co-management. In developing a model for cooperative fisheries management, the linkages and interactions among the relevant stakeholders (*pongawawa-sawi* participants, local government and independent fishers) are examined. The reasons for integrating the *pongawawa-sawi* into co-management include the failure of government to manage the fishery resources, the significant role of the *pongawawa-sawi* institution in local fisheries, and the recently enacted New Local Government Administration Act No.22/1999, which provides legal recognition of traditional fishers in local resource management. Combining the significant stakeholders, including the patron-client institution in a co-management framework should provide local leadership, lead to stability in the fisheries, and promote equity of access to the coastal fisheries resources of South Sulawesi.

Glossary and Abbreviations

ACI	Aku Cinta Indonesia (I Love Indonesia).
Adat	Customary tradition created by local community with a number of agreement and compliance systems.
Amo	Name of the patron in the Philippines coastal communities.
Anak Buah	Children or Clients.
Bagang	Typical lift net gear, constructed generally from bamboo. Typically a lift net is stationary, but the mobile lift net (<i>bagang</i>) is mounted on one or two boats. This gear is mainly used to catch small schooling pelagic species.
Bambu Betung	Big bamboo.
Bapak	Father or Patron.
Bappeda	Badan Pembangunan Daerah (Regional Development Planning Board).
BPS	Biro Pusat Statistik (Central Bureau of Statistics).
BRI	Bank Rakyat Indonesia (People Bank of Indonesia).
CAD	Canadian dollar.
Cakalang	Skipjack or little tuna.
CBRM	Community-Based Resource Management.
CEPI	Canadian Collaborative Environmental Project in Indonesia.
cm	Centimeter.
COREMAP	Coral Reef Rehabilitation and Management Program.
Dangkangeng	Buginese word for small-scale trading activities.
DGF	Directorate General of Fisheries, which is part of the Ministry of Fishery and Ocean.
DPRD	Dewan Perwakilan Rakyat Daerah (Assembly at Regional Level).

FCA	Fishers Cooperative Association in Japan.
Gensi	Gerakan Nelayan Seluruh Indonesia (Indonesian Fishers Movement).
Golkar	Golongan Karya (Political party for technocrats and civil servants).
Gotong Royong	Mutual cooperation.
GT	Gross Tonnage.
ha	Hectare.
HNSI	Himpunan Nelayan Seluruh Indonesia (Indonesian Fishers' Association).
HP	Horse Power.
Hutate Fishery	Pole and line fishing.
Ibuism	Motherhood.
led	The celebration at the end of the fasting month.
Ijon	A system where the wholesaler buys the product of farmers before harvesting time.
IK	Ikan (Fish).
IUCN	International Union for Conservation of Nature and Natural Resources.
Jala	Net.
Jala Lompo	Big net (Makassarese dialect).
Karang Taruna	Youth Organization created by the local government.
Kewang	The enforcer of regulations in <i>Sasi</i> System.
kg	Kilogram.
km	Kilometers.
km²	Kilometers square.

Kontak Tani/Nelayan	A meeting place for farmers/fishers to discuss their problems together with local government.
KIK	Kredit Investasi Kecil (Indonesian small credit, for which collateral is not required).
Kpts	Keputusan (Ministrial Decree).
KUD	Koperasi Unit Desa (village cooperatives unit) which provides credit and equipment for fisheries and aquaculture communities.
KUD Mina	Koperasi Unit Desa Mina (village cooperative which specialize in fisheries).
Labuhan Sasi	Fishing grounds under Sasi arrangement.
Labuhan Bebas Sasi	Fishing grounds that are not part of Sasi arrangement.
Lapawawoi	Local fish wholesaler in Lappa Sub-regency, Sinjai regency.
Lhok	Rivers or bays in Acehnese language.
LSM	Lembaga Swadaya Masyarakat (Non Government Organization).
m	Meter.
Oyabun-Kobun	A patronage system in Japan where Oyabun means patron and Kobun means clients.
Pakkaja	Name of fishers who use beach seine in fishing.
Panglima Laut	Sea Commander. Traditional coastal resource management used by Aceh People.
Patorani	A name of fishers in Makassarese that specially catch flying fish.
Payang	Local name for Danish seine.
Penja	Small red or silver anchovies.
Petani	Farmers.
PD	Peraturan Daerah (Regional Regulation).
PKK	Pendidikan Kesejahteraan Keluarga (Family Welfare Education).

Ponggawa	Private financial providers for small-scale fishers.
Proyek Pesisir	Coastal Resources Management Project.
Ramadhan	A month of fasting for Moslems.
Rambe	A series of attached coconut trees at the main sinker rope of <i>rumpon</i> .
REPELITA	Rencana Pembangunan Lima Tahun (The Five Year National Development Plan).
Rumpon	Fish attracting devices, which mainly consist of leaves of coconut trees. These devices are used mainly in the operation of Danish seine.
Rp	Rupiah, Indonesian currency.
Sasi	<i>Sasi</i> (forbidden). Traditional coastal resource system used by Maluku People.
Sawi	Individual or group of people working under the ponggawa in fishing.
Sernemi	Serikat Nelayan Islam (Islamic Fishers Association of Indonesia).
Seser	Fishing gear used to capture juvenile shrimp and fish along the coasts. This gear mainly consists of hundreds of leaves of coconut trees, which are tied together along the rope.
Subak	A system used by Balinese people to manage their natural resources.
TAP-MPR	Ketetapan Majelis Permusyawaratan Rakyat (People Representative Decree).
Tauhan	Name of client in the Philippines coastal communities.
Tengkulak	A wholesaler who gives loans to farmers which in turn for a contract with the farmers to sell all resulting product to the wholesaler.
TMFA	Tunas Mekar Fishers Association in Bali.

Tri Hita Karana	Tiga konsep kehidupan (Three harmonious relationship) in <i>Subak</i> system.
Tri Konsep	Tiga Konsep (Three concepts used by South Sulawesi's government in developing its region).
Tudang Sipulung	A meeting of farmer and fishers with local government, expertise, and practitioners to discuss the problems of local community.
TURFs	Territorial Use Rights of Fisheries.
Ulayat	A type of traditional right specifically for the land.
UM	Umum (general or public).
UNCED	United Nations Conference on Environment and Development.
UNEP	United Nations Environment Programme.
UPPA	Undang-Undang Pokok Agraria (Agrarian Reform Act).
UUD 1945	Undang-Undang Dasar 1945 (National Guidelines of Indonesian Development).
Waring	Smallest mesh size of net in <i>bagang</i> .
WWF	World Wildlife Funds.

Acknowledgements

I would like to express my great gratitude to my supervisory committee members during the process of my study at Dalhousie University, Halifax, Canada, and field research in Makassar, Indonesia. Special thanks are expressed to: Dr. Gary Newkirk (chair-person), Dr. Timothy Shaw, Dr. Aldo Chircop, Dr. Jane Parpart, Dr. Pauline Gardiner-Barber, and Dr. Martin Willison (members) who continuously provided me with valuable ideas and suggestions throughout my studies. This study is under the auspicious of the ISLE (Island Sustainability, Livelihood and Equity) Program, financed by CIDA (Canadian International Development Agency).

Many thanks are also expressed to Professor R. Gany, Rector of Hasanuddin University, Professor Hardjoeno (Unhas-ISLE Project Coordinator), and Ir. Syamsu Alam Ali, MS, Dean Faculty of Marine Science and Fishery who have granted me leave of absence.

I wish to express my great thanks to people in Tongke-Tongke, Aeng Batu-Batu, and Banggae villages. Through warm and friendly discussions they assisted and provided me with information regarding the mechanisms and the dynamics of the *pongawa-sawi* relationship, as well as other perspectives relating to the patronage system in South Sulawesi. To them I wish to express my great thanks.

Many thanks also are given to my colleague, Ir. Mahfud Palo, who accompanied me during the field research as translator, I Wayan Sudiarta for computerizing my material presentation. For support received, I express my thanks especially to Becky Field (the ISLE Program Administrator) and other people in the Lester Pearson International and Marine Affairs Program at Dalhousie University, they continuously

provided encouragement. Thanks is also due to the Indonesian Student Association (Permika) in Halifax which provided me with a great warm environment during the years of my study at Dalhousie.

It was difficult for me to pursue my studies in Halifax while my family, with their patience, was left behind (my wife Netty Nurmuliawaty, and my two children, Nizar Nur Fajri and Diza Nur Fachriza). For my beloved father and mother-in-law, I express my great thanks and respects in taking care of my wife and my children during my studies.

Chapter I.

Introduction

1.1. Overview of the Research

Coastal resources, especially fisheries in South Sulawesi, provide a significant resource base including food and income for a majority of the coastal communities. Fishery landings in South Sulawesi mostly come from small-scale fishers who contribute to local, regional, and national revenues. However, an increase in the number of small-scale fishers is creating increased pressure on fishery resources in coastal areas. Attempts of the national government to impose centralized fishery regulations have met with little success due to the lack of qualified staff and detailed knowledge of local ecosystems (Bailey and Zerner, 1992), and the absence of direct participation of local fishing communities¹ in fishery resources management. The absence of community participation in fishery resources management has not only caused depletion of fish stocks and an increase in conflicts among small-scale fishers, but also the destruction of habitats. Recently, there has been an emergence of interest in local fishing communities participating directly in fishery resources management, as a viable alternative to centralized fisheries management.

In responding to the need for active participation of traditional fishers in local fishery resources management, there is a need to identify existing institutions that might participate in local fishery management. This may require the empowerment or revitalization of traditional fishers and their institutions that have utilized coastal fishery

¹ Community is used here to mean the people of a local administrative unit such as a regency/municipality or a cultural or ethnic group (IUCN/UNEP/WWF, 1991; Bartolme, 1993; Pomeroy and Williams, 1994; Ruddle, 1995; Ferrer *et al.*, 1996).

resources. In South Sulawesi's coastal fishing communities, a patron-client relationship called the *pongawa-sawi*, is the only known form of informal institution involving small-scale fishers. The *pongawa-sawi* is a patron-client relationship created by certain ethnic groups in South Sulawesi for utilizing the local fishery resources. The *pongawa* is a patron who finances his own fishing effort, and recruits members of his own ethnic group or other ethnic groups to work as labourers. Meanwhile, the *sawis* are the people who work as labourers for the *pongawa*. Historically, both the *pongawa* and the *sawis* are always male as it was culturally forbidden for females to become *pongawa*, *sawi* or fishers (Sallatang, 1982). Based on this cultural barrier, females are never identified as working as fishers, although women do utilize near shore coastal resources and participate in fisheries where gleaning occurs. It is also important to note that at the time of this research, this patronage institution did not deal with fishery resources management, but instead was concentrated on the utilization of fishery resources.

This informal institution is part of the culture and rural economy of South Sulawesi's coastal communities contributing to daily economic activities, and for some people, it has become important to their sustainable livelihood. This informal institution has specialized in fisheries utilization, while a similar patronage relationship also exists in agriculture, locally called as the *Tengkulak-Petani*² or wholesaler-farmer relationship. Especially in the fishery sector, the activities and dynamics of patronage in utilizing the coastal resources has raised debates among researchers and practitioners regarding its effectiveness and efficiency in providing local livelihoods and sustainable uses for the

² This type of patronage is the relationship between farmer and local buyer and there is no kinship or ethnic group relations involved, but the relationship is based on agreed price of product. Frequently, the local buyers give advance payment to the farmer before harvesting time, and this is called an *Ijon* system (Sallatang, 1982; Mubyarto *et. al.*, 1984; Mattulada, 1995).

resources. Such debates also consider patronage and livelihood as integrated with the dynamic changes of the social and coastal resource systems (Mattulada, 1995; Sallatang, 1982; Anwar, 1983; Sallatang, 1983).

Recent political reforms in Indonesia in 1998 promoting decentralisation, have produced an opportunity for local communities to strengthen their institutions (including patronage) in utilizing local fishery resources and possibly be directly involved in management schemes. To integrate the *pongawa-sawi* system into fisheries management, it is useful to evaluate how it works, how it has changed, the factors that caused the changes, and the role it can play. This requires institutional analysis of the *pongawa-sawi* linked to a set of contextual variables, i.e., the biological, economic, technological and market attributes, the stakeholders, the community characteristics, and decision-making influences. In addition, external pressures must be considered. Institutional analysis of the *pongawa-sawi* with these contextual variables is important in determining the incentives and disincentives to resource management (Kahane, 1984).

These will be used as a basis for identifying its strengths and weaknesses with respect to coastal ecological processes and species interactions. The success of the *pongawa-sawi* system's work may not just depend upon its structure (implementation rules and compliance in utilizing the resources), but may also be affected by a wide range of local, regional and even national development strategies and policies (Novaczek and Harkes, 1998). In addition, contextual variables may also affect how the *pongawa-sawi* system may participate in, support or comply with fisheries management regulations.

Until recently, no attempt has been made to evaluate the potential and the capabilities of the *pongawa-sawi*, or to develop a model that might integrate this system

into the legal framework of coastal fisheries management in South Sulawesi. Integration of this patronage system into the legal framework of fisheries management may result in a positive impact on the coastal aquatic resources and coastal community livelihood, however, such a model requires assessments on several dimensions. These assessments should be related to several questions, such as the following: will the overall goals of resources sustainability and improving a community's livelihood be achieved? Could cooperative fisheries management provide equitable access by coastal communities, result in sustainable fisheries yield, improve living standards, and legitimize local fishing communities in their rights to manage their resources?

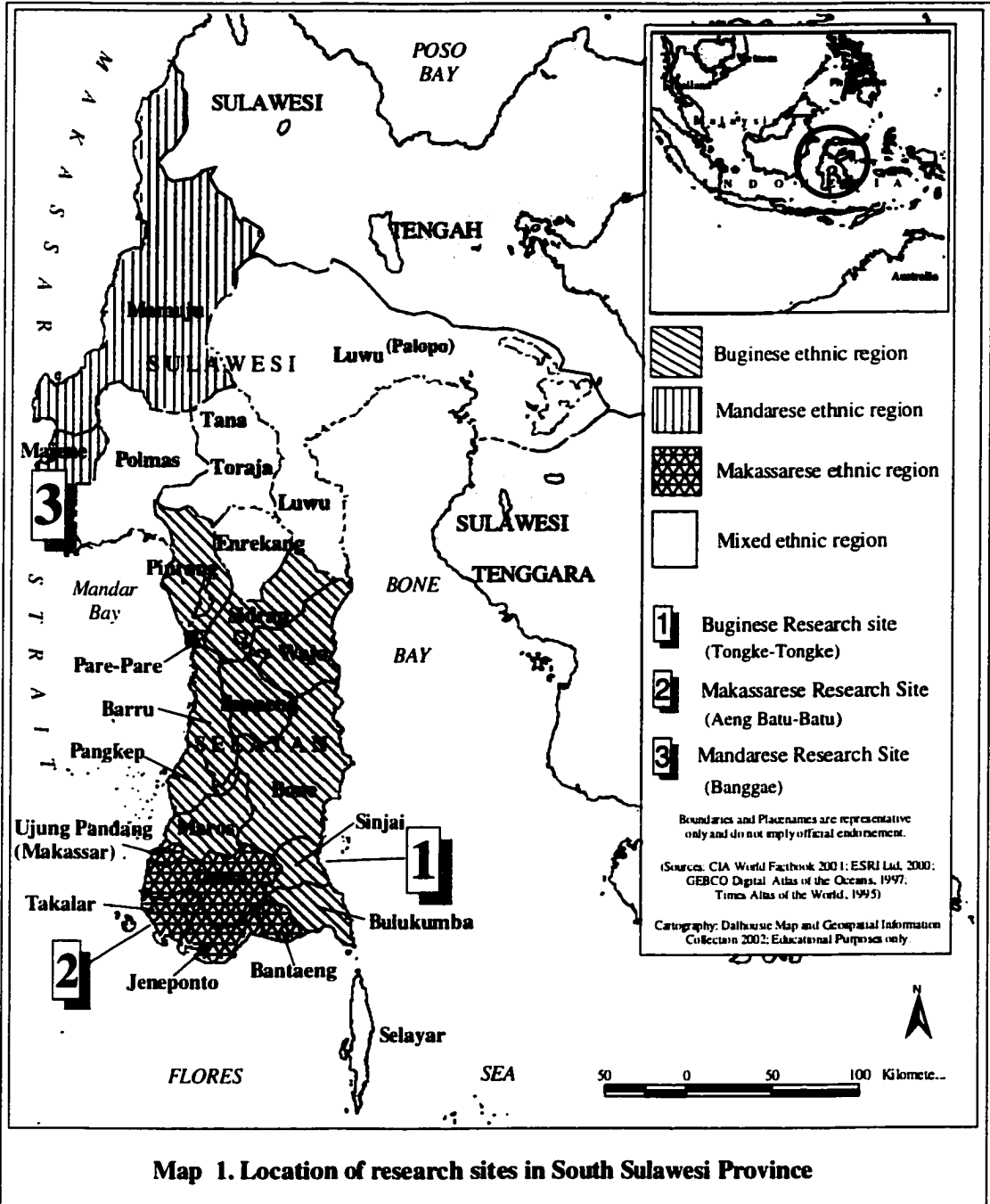
This research used participatory observation and semi-structured interviews in gathering information about the dynamic changes of this patronage institution in South Sulawesi. An interdisciplinary analysis of the *ponggawa-sawi* relationship is used to understand and to analyse various aspects that determine the performance of this informal system in coastal fishery utilization and livelihood attainment, as well as the impacts of this patronage system on coastal communities and coastal resources. The interdisciplinary analysis includes socio-anthropological, economic, political, legal, biological, and ecological perspectives. Further, as a result of the interdisciplinary analysis, the strengths and weaknesses of this patronage as well as other local resource users will be used to develop a co-management model with the integration of the *ponggawa-sawi*. The legal basis for developing this model is based on the recent enactment of the New Local Government Act No. 22/1999 and the need to include these local resource users in fisheries resource management. In this co-management model, three main users groups (*ponggawa-sawi*, independent fishers, and local government) will have roles that may

lead to sustainable use of local fishery resources. In addition, this research is intended to examine the integration of *pongawa-sawi* into co-management, the legal policy status of the New Local Government Act No. 22/1999, and the implications of three way co-management model.

1.2. Overview of Coastal Fisheries in South Sulawesi

The province of South Sulawesi lies in the eastern part of Indonesia (Map 1) surrounded by the Makassar Strait, the Flores Sea, and the Bay of Bone. The oceanographic dynamics contribute to various productive ecosystems in the coastal areas that produce many fish species. The habitats include seagrass beds, coral reefs, estuaries, lagoons, open water, and mangrove forests ecosystems (Nurkin, 1994; Tomascik *et al.*, 1997). The importance of coastal fishery resources for the majority of coastal communities in Indonesia has been illustrated by Polunin (1983); Bailey *et al.*, (1987); Patmosukismo *et al.*, (1989); Riopelle (1995); Dahuri *et al.*, (1996); Dahuri, (2001); and Dahuri and Dutton, (2001). South Sulawesi is rich in migratory species such as tuna, skipjack and Indo-Pacific mackerel, particularly in the eastern part of South Sulawesi (Amiruddin, 1995; Hasanuddin, 1996; Dahuri and Dutton, 2001).

South Sulawesi has a total population of more than 7 million people, with a growth rate of 1.42 percent (BPS, 1995), and about 600,000 fishers. With 2500 km of coastline (Regional Department of Fisheries of South Sulawesi, 1995), coastal habitats serve the fishers in the twenty-one coastal regencies (this Province is sub divided into administration units called regencies) from the total of twenty-six regencies (Tana Toraja, Enrekang, Gowa, Sidrap, and Soppeng regencies do not have coastal area).



The bulk of the fishery resource in South Sulawesi comes from various coastal ecosystems, such as, mangrove forests, coral reefs, seagrass bed, and estuarines. These coastal habitats are found in almost every coastal area in South Sulawesi. However, fast development and increasing numbers of resource users utilizing the coastal habitats have degraded coastal ecosystems and depleted some fish stocks. These changes happened especially in the 1980s with the construction of brackish water ponds (Nurkin, 1995). The increase of shrimp price at that time also led some of small-scale fishers to convert trawl gears into various demersal fishing gears in order to catch shrimp in the coastal area. As a result, coral reefs and seagrass beds were damaged and tensions were raised between small-scale fishers and small-scale fishers using the modified trawl (Setyohadi, 1996).

Among regencies in South Sulawesi, Bone, Sinjai, Bulukumba, Palopo, Majene, Pinrang, Pangkep, and Barru have the highest fish landings and these landings are dominated by small-scale fishers with simple fishing technology (Regional Department of Fisheries of South Sulawesi, 1995). The availability of soft credit from the local government to modify the trawl gear into purse seine and the larger purse seine introduced in the 1980s have increased fishing pressure along the coastal areas, especially along the coast of Bulukumba, Bone, Palopo, and Pangkep regencies. The areas along the west coast of South Sulawesi, around Spermonde archipelago, the western part of the coast of Flores Sea and the Bay of Bone are the major fishing grounds that are usually exploited by local fishers (Bailey *et al.*, 1987).

In identifying the fish resources, for example the pelagic schooling fish, small-scale fishers still use their traditional methods to identify them such as by observing birds flying close to the water's surface. Water current and the changes of water colour are also

other phenomena used by local fishers to identify fishing ground, while sophisticated equipment for identifying fishing ground such as sonar is completely unknown (Bailey *et al.*, 1987). In Palopo regency, skipjack and little tuna are abundant, and are caught by using purse seines, pole and line and long lines. In the western part of the Flores Sea, the small-scale fishers from Bulukumba, Sinjai, Bone and Jeneponto regencies catch mostly pelagic schooling fish species. Indo-Pacific mackerel and sardinella are the main target species, and these are caught by using purse seine and gill net. During July-September the abundance of some pelagic fish species increases in Bulukumba regency, and quite often fishers from Jeneponto, Bantaeng, and Bone regencies shift their fishing activity to that area. The migration of some pelagic species in South Sulawesi occurs due to the strong current from the Makassar Strait through the Lesser Sunda Islands to the Java Sea, while at the same time strong current from the Flores Sea flows through the Makassar Strait to the Pacific Ocean (Bailey *et al.*, 1987).

Particularly during July-September, the strong currents produce turbulence that causes migration of some schooling pelagic fish species because the water turbulence increases fishing ground productivity (Bailey *et al.*, 1987). This upwelling occurs particularly in the western part of the Flores Sea or near Sinjai regency. Generally, the skipjack appears in South Sulawesi's coastal waters throughout the year, but the peak in their seasonal migration occurs during November-April (Soegiarto, 1980). These oceanographic phenomena have led many small-scale fishers to become dependent on migratory fish species. May-August is the spawning season for flying fish caught in the

Makassar Strait using batteries of floating traps together with fish attracting devices, known locally as *rumpon*³ (Nessa *et al.*, 1977).

In South Sulawesi, pelagic fishery resources that have highly migratory behaviour (for example, scad, herring, skipjack, little tuna, and sardine) between regencies or provinces are mostly targeted by *pongawas* and independent fishers. The migratory behaviour pattern of pelagic fish species frequently forces fishers to expand their fishing ground to their neighboring regencies. This creates a challenge for resource management because it may not be effective to manage them locally and it may be necessary to expand the range of stakeholders in management bodies.

1.3. Overview of Research Sites

Based on current practise of the patronage system, three main research sites were chosen. The research sites include Tongke-Tongke village, Sinjai regency (where most people belong to the Buginese), Aeng Batu-Batu village, Takalar regency (where most people belong to the Makassarese), and Banggae village, Majene regency (where most people belong to the Mandarese). Historically, the *pongawa* is labelled by the local fishing communities according to the fishing gear that is currently used by the *pongawa*. For example, (in the Mandarese), the *pongawa* is called *pongawa payang* (Danish-seine patronage), (in the Buginese), the *pongawas* are called *pongawa cakalang* (pole and line patronage), *pongawa bagang* (lift-net patronage), and *pongawa jala* (beach seine patronage), and (in the Makassarese), the *pongawas* are called *pongawa jala lombo* (purse-seine patronage), and *pongawa pakkaja* (trammel nets patronage).

³ *Rumpon* is an aggregating device that traditionally constructed and used for attracting the schooling pelagic fish in *payang* fishing. A complete description of this device can be found in the Chapter IV point 1.1.1.

1.3.1 Coastal Fishery Resources at Research Sites

Coastal fishery resources in these research sites are numerous and supported by various ecosystems, for example mangrove forests, coral reefs, and seagrass beds. In Tongke-Tongke village, coastal resources are mainly utilized by the local community. Besides the mangrove forest resources, Tongke-Tongke also has a variety of coastal ecosystems, such as pelagic fish resources and estuaries. Among the economically important fish species that are usually caught in mangrove forest are crabs, clams, and shrimps. In estuarine areas, valuable fish species are also found, including juvenile shrimp and milkfish, as well as other anadromous and catadromous fish species. Some juvenile fish and shellfish are also cultured by the local community, for example, crab, shrimp, and milkfish.

In Aeng Batu-Batu village, the migratory fish species such sardines, scad, herring, and flying fish (this species has become the major concern for its high exploitation rate caught by the *patorani* or surface trammel nets from Jenepono regency) are the main target for the majority of local fishers. Besides this pelagic resource, mangrove forest also provides some valuable species such as clams and crabs. Especially during the low tide of coastal areas, some local fishers and their family members are also utilizing the sedentary species such as clams.

In Banggae village, the topography makes it difficult for either family members or independent fishers to fully utilize the nearshore coastal resources, except the mangrove forest. However, some independent fishers are able to utilize coastal areas using simple vertical line fishing for yellow tail. Others with limited fishing capability frequently work as labourers in agricultural fields.

The multiple fishing gear, interaction among species, and the way local fishing communities in South Sulawesi utilize the resources provide challenges and opportunities for both livelihood and fisheries management alternatives. In order to achieve better fisheries management that may lead to the improvement of living conditions for many small-scale fishers in South Sulawesi, alternative management, possibly some kind of co-management, is needed. In considering co-management, there is a need to look at the capabilities of local resource users, such as the *pongawa-sawi*, independent fishers, and village government to assume roles in cooperative fisheries management. However, in order to develop an acceptable co-management initiative, it is necessary to review and to understand co-management concepts and the results of their applications in other places, the status and performance of patron-client institutions, the issue of common property resources, and other emerging issues in co-management that may affect a model of co-management in South Sulawesi's fishing communities.

Chapter II:

Cooperative Fisheries Management (Co-Management), Patron-Client Institutions and Emerging Issues in Co-Management

2.1. Cooperative Fisheries Management (Co-Management)

Any attempt to achieve success in fisheries management in South Sulawesi should first recognize the characteristics of the fisheries resources and systems of management and utilization. Fisheries resources management in South Sulawesi is a centralized system of the national government that is intended to benefit coastal communities, especially for coastal communities entirely dependent on these resources. In addition, the fishery resources in South Sulawesi are characterized by complex species interactions and dependencies.

In addition to the complexity of coastal ecosystems in this area, there is also a complexity of institutions or agencies responsible for maintaining the sustainable use of the resources and equitable access for the majority of coastal communities. These authoritative agents or institutions frequently produce conflicts or have overlapping functions in resource management both horizontally and vertically. Horizontally, conflicts among resource users can exist, especially in relation to exploitation of high valued fish species, while vertically, conflicts due to overlapping authority and responsibility occur because both provincial and local government set different objectives (Sloan and Sugandhy, 1994; Dahuri *et al.*, 1996; Mantjoro, 1996^a). Within this context, the crucial challenge for policy makers is how to manage the growing number of stakeholders who seek benefits from the resources.

There is an emerging trend to more actively involve local communities, especially the traditional fishers and their informal institutions in any local fishery management scheme. The need to recognize the local potential and local knowledge of fishing communities is also emerging in fisheries management in order to achieve effective management and to accommodate coastal community initiatives, ideas, and expectations (Ellsworth *et al.*, 1997; Li, 1993; Berkes, 1994; Pomeroy and Berkes, 1997). The recognition and the involvement of local community potential and their institutions in fisheries management and the willingness of the government to share some of its responsibilities and authority is known as co-management (Pomeroy and Williams, 1994; Pomeroy, 1998). With co-management, the government has the ability to provide enabling legislation, enforcement and conflict resolution, and other assistance (Jentoft, 1989; Rivera-Guieb, 1997), while the local community with their traditional ecological knowledge and institutions can be integrated into co-management (Hollup, 2000).

According to Pomeroy (1993^b) and Pomeroy (1998) co-management and community-based fishery resources management have some similarities and some differences. He stated that the objective of co-management is to accommodate the government concerns of efficiency and equity in the use of the fishery resources and the demand of the local community to exercise dominant management decision-making over their local fishery resources. Further Pomeroy (1998) stated that community-based resources management (CBRM) is a part of co-management where the CBRM is concentrated on the local community's capability, responsibility, and accountability in governing their local resources. Considering the demand of local fishing communities in South Sulawesi to manage their local resources and the need for the government to

achieve efficient, effective, and equitable resources access, there must be an initiative to integrate all potential capabilities in resource management through a cooperative mechanism.

The concepts, approaches, methods, and case studies regarding co-management are numerous, including Pomeroy and Williams (1994), Ellsworth *et al.*, (1997), Fanning (1997), Ferrer and Nozawa (1997), Pomeroy and Berkes (1997) Alcala (1998), Ruddle (1998), Crean, (1999), Symes (1999), Brown and Pomeroy (1999), and Noble (2000). Co-management can be useful since the top-down approach in South Sulawesi and many other places has had limited success, and informal institutions for utilizing fishery resources may provide significant roles in local fishery resources management. Co-management in this sense involves sharing some authoritative responsibilities and management mechanisms, and this will be based on the local community's knowledge and institutions in the area (Berkes *et al.*, 1991; Berkes, 1996; Pomeroy, 1995; Pomeroy and Berkes, 1997). Cooperative fisheries management will result in the local communities taking a dominant role and initiative in resources management while the local government functions as mediator or facilitator and enforcer of agreed regulatory measures (Johannes, 1981; Johannes, 1998; Jentoft, 1989; Pomeroy, 1993^b; Jentoft and McCay, 1995; Ruddle, 1998).

There is a trend to transform some centralized government authority and responsibility in managing fisheries resources to local communities because it is believed that the local community has a wealth of knowledge regarding their natural resources that can potentially be of benefit in designing sustainable use of the fishery resources. This knowledge then can be integrated with the national government fisheries management

system with respect to carrying capacity of local fishery resources and the number of users of the resources (Wilson and Dickie, 1995). Through the co-management process, the wealth of the fishery can be shared and spread among the greatest number of local communities to ensure that there is opportunity for fair and equitable access (Briassoulis, 1999). The transformation of government authority to local communities would be beneficial if there is continuing political will of the government in sharing its management responsibility and control over the coastal resources (Menasveta, 1997). It should be noted that not all government authority and responsibility can be delegated or shared, considering the limited capability of local communities to handle the task, for example enforcement mechanisms (Pomeroy and Williams, 1994; Pomeroy and Berkes, 1997). However, Pomeroy (1993^b) pointed out that the most difficult task for the government may be the delegation of fisheries management authority to local resource users.

The intent of cooperative management is to attempt to narrow the gap between the objectives of the local community and the local government by sharing responsibility and delegating authority. This implies that the government is willing to give a bigger role to local communities in coastal fisheries management, and that the local coastal community is able to respond to this opportunity. In co-management, the roles of local fishers and their institutions are essential in linking their objectives and aspirations with respect to the carrying capacity of their local fishery resources. Jentoft (2000^a) stated that there is an intimate relationship between the coastal community and their coastal resources, and the absence of linkages between them frequently results in the failure of fisheries management.

The option of proposing co-management might be derived from the fact that the centralized government in fishery resources management has proven costly either in providing skilled personnel or in financial administration (Ruddle, 1993; Crean, 1999; Nielsen and Vedsmand, 1999). Co-management should entail lower management and enforcement costs, improved data reliability on fisheries stocks, a promise of acceptance and compliance on agreed regulations, a high degree of local community participation, and improved social cohesion and community development (Pomeroy and Williams, 1994; Li, 1993; Li, 1996^a). Through co-management, the local community can also negotiate in the decision-making process about the mechanism for managing and utilizing their local resources. However, the development of a co-management system is not automatic or simple; it can be costly to establish, require a long-term effort and have limited guarantee of success (Pomeroy and Williams, 1994). The most important aspect in co-management is the consistency and the continuation of government support in providing expertise and legal enforcement, as well as the preparation of a local community to accept the consequences of cooperative fishery resources management. Practically, there is no guarantee that a co-management model successful in one place will also be successful in other areas. This entirely depends on the site-specific location and characteristics of local communities and local fishery resources (Pomeroy and Williams, 1994).

In addition, the success of co-management also depends on the nature of the resources, the capability of local community's knowledge and the ability of their informal institutions to interact with the local government's framework of fisheries management (Hollup, 2000; Noble, 2000), as well as the willingness of government to share authority

and responsibility over the fishery resources. Pomeroy and Williams (1994) and Brown and Pomeroy (1999) stressed that co-management is not an ultimate concept that can solve all the issues in coastal fisheries utilization and management, but a fishery management concept that facilitates the cooperation between a local community and local government in designing the sustainable use of local resources. Care is needed to design the co-management and to define an appropriate group of local stakeholders, particularly in relation to delegating authority and responsibility over the local resources. The local community may not be able to handle the management task, and may prefer to continue to rely on their government. For example in South Sulawesi, local fishing communities have been dependent on the government in any decision-making process regarding the fisheries management. This condition may also reflect the local community's inability to take responsibility over their resources. In addition, co-management is a matter of trial and error for any fisheries management putting the local community's main source of income at risk may need to be supported by providing an alternative source of livelihood (Pomeroy and Williams, 1994).

The concept of co-management requires some mutual understanding about the strengths and weaknesses of parties involved (Ellsworth *et al.*, 1997). Within this understanding, all parties would be able to start to initiate the cooperative work towards an effective way of managing the fishery resources. An optimistic assumption may be that co-management could be initiated since the local community with their knowledge about the dynamics of the local fishery resources and the capability of government to enforce the rules would ultimately be able to achieve effective resources management. The strengths of local community can be varied, and these may range from the existing

informal institutions (the patronage system and informal resources management practices, e.g., *sasi*, *panglima laut*, and *subak* systems⁴) to the familiarity of local community with their local resources dynamics.

However, in co-management, it is necessary to define the community and its various social groups and differences (Li, 1996^a), determine the strength and weaknesses of their informal institutions and knowledge, understand the distribution of wealth and power, evaluate the level of cooperation the local community can accept, and explore the availability of other alternative sources of livelihood in the community. All these issues are essential and should be understood before implementing co-management. It is argued that ignoring these essential elements would jeopardize successful implementation of co-management (Li, 1993).

According to Pomeroy and Williams (1994) and Pomeroy (1995), it is not easy to encourage the local community to participate in co-management especially when the resources that will be co-managed are the main source of livelihood for the majority in a local community and when alternative sources of livelihood are limited. Therefore, if the local community's main source of livelihood becomes an object of co-management, it should be undertaken on a trial basis. This condition is crucial when the local community has experienced dependency on their government for a long time (Pomeroy and Williams, 1994).

⁴ These traditional systems of fisheries management are described in Chapter V point 2.

It should be noted that any objective of establishing co-management must always consider the local community's expectations, needs, and the carrying capacity of local fishery resources. These then should be supported by government policy and an administrative framework. So, before initiating co-management in South Sulawesi, it may be useful to identify and recognize all potential fisheries resources systems that are traditionally used by local communities, as well as to identify all available alternative sources of livelihood.

The recognition of the property rights of fishing communities can be used as a basis of cooperation in co-management because property rights should accommodate the rights of local communities to utilize the resources in a sustainable manner (Ostrom, 1990; Ostrom and Schlager, 1996). In addition to an early recognition of local communities' property rights and their institutions and knowledge in resource utilization, the transition of top-down fisheries management to co-management requires interrelated or integrated strategies (Ellsworth *et al.*, 1997). Further Ellsworth *et al.*, (1997) emphasized that the integrated co-management policy then must involve partnerships among all stakeholders, various levels of government, and the local community. Then, the government should provide technical assistance, alternative livelihood and income improvement activities, advocacy, and policy and institutional reforms at all levels of government (Noble, 2000). Co-management should be based on a systematic inquiry into existing legal and institutional arrangements (Rivera-Gueib, 1997), and then the local community should be given an incentive for the conservation, restoration and sustainable use of their resources (Dahuri and Dutton, 2001).

Co-management can be initiated in two ways, namely, the local community initiates co-management with little direction and assistance from government, or outsiders initiate and specifically design co-management while the local community in the area has little participation (Fellizar, 1993; Punzalon, 1993). Co-management is a means to accumulate various objectives and expectations into one vehicle, as well as to address the primary issues in fishery resources utilization and management.

An understanding is needed both of the carrying capacity and limitations of coastal fishery resources in supporting co-management as well as its socio-economic and institutional arrangements. Actually, the capacity of coastal resources to continue to support co-management should not be underestimated because even though other emerging issues have been handled, the success of co-management implementation relies on the sustainability of the coastal resources. In addition, the analysis of the response of fishery resources to the changes of stakeholders and local community's behaviour and fishing patterns are also essential (Jentoft, 2000^a). In other words, there should be enough time to analyse and to understand the dynamics and behaviour patterns of coastal resources, the habitats and resource users.

In contrast, the overestimation of the capability of coastal fishery resources sometimes occurs at an early phase of the co-management formulation, while some emerging issues in the community, for example, inequalities in labour and resource access based upon gender relations, other social inequalities arising from different livelihoods, and informal institution, concerns are underestimated (Abregana *et al.*, 1996; Leach *et al.*, 1997). It is realized that a complex situation may appear in addressing the emerging issues of local community that lead to difficulty in selecting which one should

have priority. For these reasons, it should be emphasized that early identification and recognition of all issues in the community should be accomplished through an integrated approach or interdisciplinary approach. This may lead to the conclusion that government should begin to facilitate reasonable fishery management options, while the local fishing community should develop a responsibility for local fishery management and decision-making (Ellsworth *et al.*, 1997). In many Southeast Asian countries, co-management is still in an initial phase and is carefully designed to only delegate some authoritative governance to the coastal community, for example, in Vietnam (Pomeroy, 1995; Chircop and Torell, 1997). This is understandable because many coastal communities depend heavily on their government's direction in fishery resources utilization and management (Pomeroy and Williams, 1994).

Regarding the possibility of involving the *pongawa-sawi* institution and other local fishery resource user in fisheries management, the willingness-to-pay and the willingness-to-accept theory from Goodstein (1999) may provide insight. According to the willingness-to-pay theory, local fishery resource users are willing to invest or to contribute to the costs for coastal ecosystem conservation (especially to high value species), assuming that later they would gain benefit. But if they ignore conservation, it means they are willing to accept the costs resulting from coastal ecosystem destruction that might diminish their income. In this sense, it is reasonable to say that the first theory should be implemented; that the government continues its protection of the interest of local fishing communities, and to provide alternative livelihoods for the patron and the clients during any ecosystem conservation period. Ecosystem conservation measures will

include gear restrictions, imposed fishing seasons, or even closure of fishing grounds for certain periods of time (Charles, 1988).

2.2. Overview of the Patronage Institution

Patronage institutions exist in many parts of human life, especially in relation to the protection of livelihood security. This overview focuses on the performance of patronage institutions in coastal fishing communities when they are part of the communities' livelihood, especially for isolated regions and where small-scale fisheries are dominant. Patronage institutions cannot be separated from the culture and tradition of a local community, particularly in fishing areas where fishers may believe that prominent informal leaders will lead them in obtaining livelihood security. In addition, a patronage institution might have originated from the need of local resource users (patrons) to obtain labour in order to increase their fishing operations and, establishing a tied working relationship, they develop a relationship that is destined to secure their livelihoods (Scott, 1977).

The relationship between the patron and the client could be characterized by kinship⁵, ethnicity⁶, on a purely labour basis, belief system, reciprocity, mutual co-dependency, asymmetry, loyalty, solidarity, and obligations of both sides (Scott, 1977; Weingrod, 1977; Waterbury, 1997; Eisenstadt and Roniger, 1984; Amarasinghe, 1989). The number of labourers employed in the patronage system depends on the type of fishing gear used by the patron. The more complex fishing operations would lead to more labour needed. Various motivations underlay the relationships in the patronage

⁵ Kinship or blood is perceived as the organization into social groups, roles, and categories in which the culture's principle is embedded (Peletz, 1995; Schwimmer, 1998).

⁶ According to Schein (1984) ethnicity is identified by the similarities in social and value systems of language and cultural affiliation.

institution, for example ethnicity. The patron provides various forms of protection to the clients, especially in relation to livelihood security, and the protection offered could be meaningful if the clients must rely on someone for livelihood (Eisentadt and Roniger, 1984).

With various protection for livelihood offered along with natural resources access and control (Weingrod, 1977), the patron eventually produces benefits, and if these benefits are sufficient, the patron transforms them into new investments for other natural resource utilization. To show the patron's (usually male) influence or power over the local community, he then establishes a network of resource utilization where his family takes control. In these circumstances, the patron then recruits lower social class workers from his clan. Initially, they may receive no income, other than daily subsidies. Social protection takes the form of mutual trust that each will play their part when called upon by the other. The relationship is fundamentally unequal (as are all class relations), yet it also entails codependency and benefits for each party.

According to Scott (1977) both patron and client must have exchanged something in order to maintain dependency. He further stated that the basis for exchange arises from different needs, power and status. For the clients themselves, the ratio of services received from the patron would be used to evaluate their relationship with the patron (Scott, 1997). In sum, the clients would show their reciprocity to the patron according to the amount of services received from the patron.

Especially in isolated fishing communities, the patronage institution might be the only option for members of a lower social class to obtain and secure their daily livelihood. There is a clear structure of authoritative function between the patron and the

clients. The patron normally provides investment and operational costs in resource utilization, while the clients conduct and obey the patron's commands. For example in fishing activities, the patron normally provides fishing boat and gear, fuel, and food for the crews, while the crews just work as labour. Through fishing activities, the patron also must provide additional costs, for example operational and maintenance which later are included in the economic calculation (benefit-cost) and determine the form of the redistribution system (Nessa, 1981).

In South Sulawesi, the establishment of a patronage institution arose from the need of local people for an informal leader in their ethnic group for protecting and securing their livelihood (Mattulada, 1995). The patron (the prominent leader in an ethnic clan-like group) was the only person with enough capital to exploit the coastal resources (Putra, 1988; Pelras, 2000). Historically, in South Sulawesi, utilization of fishery resources was initially intended for obtaining daily livelihood while economic benefit was not a main objective, certainly on the part of poor fishers who worked as *sawis*. However, as the fishery products have become increasingly significant as marketable products and there has been an introduction of more effective fishing gear, the patronage institution has emerged into two functions: for livelihood, and for economic benefits (Mattulada, 1995; Sallatang, 1983). This change eventually entailed some new requirements and conditions in the relationship, for example, the requirement of more specialization in fishing skill and the establishment of a conditional sharing system and loans from the patron to the clients.

A sharing system is used as the basis for allocating the income received by both patron and clients. In practice, there is no universally applicable formulation for the

sharing system, for this entirely depends on the type of fishing gear used and the number of clients employed and the class ambitions of the all parties. However, in each case these are clearly defined means to determine each person's share. The share received will be based on the roles and expectations of the patron and clients. For example, in most cases, the patron provides the investment for fishing boat and gear, as well as operational and maintenance costs. Later he will receive shares for his status as patron and for his fishing equipment. The rest of the shares then will be divided among clients. However, the shares received by the clients are determined by their roles in fishing, for example clients who are fishing masters or anglers will receive a larger share than the rest of the clients or crew.

In South Sulawesi's fishing communities, historically not all community members are part of the patronage institution, but they are clan group members within an ethnic group. There are also some people who are called independent fishers and are not considered members of a patronage. In the patron-client system (known as the *ponggawa-sawi*), there is an agreement that the *sawis* must give all the catch to the patron, and the money from the sale of the catch will be shared between the patron and the clients. Frequently, the patron also gives loans to independent fishers and normally the patrons determine the price obtained for the catch before loans are given (Pelras, 2000). If the independent fishers agree with the terms which may include interest charges, all the catch must be sold to the patron.

In South Sulawesi, there are two types of *ponggawas*: big *ponggawa* and small *ponggawa* (Mattulada, 1995) according to the size of the business and the capital that they have to diversify the patronage network. In essence, the big *ponggawa* is

characterised by multiple business activities, while the small *pongawa* is responsible for only a single fishing business.

In order to more effectively control his various businesses, the big *pongawa* recruits trusted and dedicated *sawis* to become assistants to manage parts of the business. Historically, it is not easy to appoint a *sawi* as a new assistant to a *pongawa*. It takes time to convince the *pongawa* that a new assistant would be loyal and dedicated to him⁷. The selected *sawi* then becomes a small *pongawa* with the main responsibility to coordinate the big *pongawa*'s business. This means that each small *pongawa* is specialised in a particular business, for example, in fisheries exploitation or inter-island trade (locally known as *pongawa dangkangeng*). Whatever the type of *pongawa*, it seems that some *sawis* are gaining social and economic benefits from their relationship with the *pongawa*, especially in relation to livelihood security. The most obvious reason is that the *sawis* find it easy to obtain a loan or assistance at any time without providing collateral (Pelras, 2000). In addition, the *pongawa* can provide other social services to the *sawi*; for example, assistance for the marriage of *sawis*' children, or recovering from calamities such as occurred during the recent economic crisis (Nessa, 1981; Sallatang, 1982; Sallatang, 1983; Putra, 1988; Pelras, 2000). The *pongawa* always accompanies his *sawis* both in fortunate and difficult times.

It is expected that the *pongawa* will provide the best services to his *sawis* as part of the *pongawa* strategy to maintain the *sawis*' loyalty. If the *pongawa* cannot maintain services to his *sawis*, he would then lose reciprocity and obedience from the *sawis*. This also implies that the role of the *pongawa* is not only limited to the financial affairs of the

⁷ Historically, his own clan members were normally the priority, but later other ethnic groups or non-clan members in his ethnic group are also recruited if the *pongawa* prefers a skilled and trusted person.

sawis but is also a social relation. Whenever possible, the *pongawa* would buffer and shelter his *sawis* from difficult economic times (Sallatang, 1982; Sallatang, 1986; Susilowati, 1987).

In Javanese societies (Indonesia) a patronage institution is also found, called the *bapak-anak buah* system (literally, *bapak* means father or the patron, while *anak buah* means children or the clients) relied upon by lower class and poor peasant groups (Geertz, 1983). The strong characteristic of this patronage system is indicated by the intimate relationship between the “father” and the “children”, and this intimate relationship of the clients to the patron is reflected through loyalty and reciprocity. Meanwhile, the patrons respond to their clients’ loyalty and reciprocity through protecting their livelihood and social security. For example, the patron always attempts to cover his client’s economic debts from other persons in order to increase his power over a client (Waterbury, 1977; Weingrod, 1977). However, in practice, this vertical relation is not always dominant, but a symmetrical relation is also possible in the form of mutual dependency based on kinship. Kinship generates mutual cooperation between the patron and client (Kahane, 1984).

In the patronage system in Aplaya village, Philippines, the relationship between *amo* (patron) and *tauhan* (client) is based on the obligations and responsibilities in fishery business (Siar, 2000). This means their relations are not always based on kinship, but the relationship is established through the necessity to obtain labour that can assist the patron in conducting fishery business. This relationship produces obligation and responsibilities for the clients to provide fish to the patron with certain agreements.

In Japanese societies, the patron-client is called the *oyabun-kobun* system (Kahane, 1984). In this patronage system, there are three types; hybrid, differentiated, and mixed. In the hybrid type, kinship dominates all functions and roles in patronage business. Meanwhile, the differentiated type is evolving from the hybrid type. This differentiated type is indicated by the participation of other persons that are not part of the family clan and who hold roles and functions in the patronage system because of specific skills. In this type of patronage system, each specific skill contributes to the business and all services are directed to the patron. However, in both hybrid and differentiated types, services and reciprocity are based on ritualistic customary regulation. Finally, the mixed type is a form of differentiated involvement in conditions where economic orientation is more important than family relations. In this type of patronage, both vertical and symmetrical mechanisms are used and kinship relations in the form of moral duties, fear, and shame are institutionalized. The *kobun* believes that serving the *oyabun* is a part of their religious faith (Kahane, 1984). The central element of this type of patronage system lies in the *oyabun*'s social and economic status and personal influence.

The social status of different social classes or of castes frequently put the patron as a person to rely upon together with the need to obtain livelihood security. This can be seen in India's villages (Kahane, 1984). The evolving process of the patronage system from hybrid to differentiated in Japanese societies may also be similar to the emerging changes of the patronage system in South Sulawesi.

Kahane (1984), Stein (1984), and Platteau (1995) pointed out that a hierarchical system in most of the patronage systems would produce an imbalance of equality

between the patron and the client. In this situation, patrons tend to establish more power over their clients and achieve benefits without considering the client's limited capabilities and the pattern of creating a safety net for the clients' livelihood security would change to personal benefits for the patron. However, through their relationships, the patron can economize on a variety of transaction costs (secure access and a compliant workforce), while the clients can obtain variety in assets for livelihood security (regular employment and flexible assistance from the patron), particularly when special needs arise (Platteau, 1995). Platteau (1995) further explained that the relationship between the patron and the clients traditionally benefits their family members. Therefore, the more the clients produce benefits for the patron, the more they receive services from the patron (Platteau and Nugent, 1992).

In relation to an imbalanced share from fishing, Stein (1984) suggested there is a need to analyze the patronage structural relationship and its dynamics, as well as factors that stimulate the formation of the structural relationship. Acheson (1981) described the ideal patronage system in fisheries utilization as the crews and those in command that generate more egalitarian mechanisms in the form of sharing. These include sharing in fishing operations, as well as in information about the migration and location of fish species.

Waterbury (1977) emphasized that the patronage system is a form of interpersonal relations between the patron and the clients and that logically the patron will monopolistically control the desired resources. He further states that the degree of equity mostly depends on the durability of the relationship. The durability of the clients dependent on the patron is also measured by the degree of the clients' need to obtain

livelihood security from the patron. Therefore, the patron must provide sufficient services for his clients in order to minimize the possibility of the clients seeking another patron (Waterbury, 1977).

Based on the discussions of different types of patronage institutions, it is revealed that there are some common characteristics of the patronage system, and these include hierarchical structure, command, obedience, reciprocity, and mutual co-dependency.

2.3. The Status of the Ponggawa-Sawi Institution

The *ponggawa-sawi* institution has been under enormous pressure from the coastal development processes and the uncertain status in government fisheries development and management policies. This system is further weakened by the lack of its recognition in fisheries management in the Indonesian Fishery Law No. 9 of 1985 and the Village Administration Act No.5/1979 which do not mention this as a traditional fisheries institution. However, this system is still used by certain social groups in facilitating their livelihood security (Huliselan, 1996; Mantjoro, 1996^a; Mantjoro, 1996^b; Nikijuluw, 1996).

The Village Administration Act No.5/1979 (Lakollo, 1996) has also weakened the *ponggawa*'s charismatic leadership. Even though this Act is not directly dealing with resource management, the image of *ponggawa* as a person that must be followed by his clients has been affected. For example, if the *ponggawa* requests his *sawis* to capture certain fish species that have been under government conservation measures then the *sawis* will face the options either to obey their *ponggawa* or to respect the government regulation, and this situation affects their value system. The challenge for this patronage system may be in the form of how to maintain kinship, and ethnic identity, as well as

related economic, and social benefits. In addition, the demand of outside wholesalers for certain fish species would also affect the *ponggawa's* decision-making process in resource utilization and sustainability. This then will lead to overexploitation of certain valuable or endangered species, for example, flying fish and grouper (Nessa *et al.*, 1977).

In South Sulawesi's coastal community, the *ponggawas* serve as a source of information, especially in relation to fish marketing strategies. It is believed that the *ponggawas* have a wider marketing network compared to other fishers (Mattulada, 1995). They have relations with the wholesalers both at local and regional levels. This situation then attracts local resource users, particularly independent fishers to establish business relationships with the *ponggawas*.

In some coastal communities, independent fishers need the *ponggawas* as a place to obtain loans and for local fish marketing although not in a consistent and long-term relations like the *sawis*. However, the government has emphasized that the *Koperasi Unit Desa (KUD)* or Village Cooperative is supposed to be a place for obtaining loans and selling fish, thereby usurping functions historically dominated by the *ponggawas*. The government considers that the roles of the *ponggawas* should be minimised because there is no provision in the *ponggawa-sawi* system to avoid a poverty trap for the *sawis* (Susilowaty, 1987). Practically, it is difficult for the *ponggawa* to set guidelines for his sharing system because the sharing system itself is set according to the investment, the type of fishing gear used, the amount of operational and maintenance costs, the number of *sawis* employed, and the amount of fish caught and sold (Nessa, 1981). This suggests that the government has not fully analyse factors that determine the sharing system and the patronage mechanisms. In reality, the government has never taken any action to

minimise the dominant role of the *pongawa* due to political considerations about the social stability of coastal communities and the need to continue local fish marketing activities.

The *pongawa* can provide immediate assistance to *sawis* at any time without collateral. Since they are from the poorest group in coastal communities, the *sawis* certainly cannot meet the collateral requirement of the bank if they want to obtain a loan. In addition, government loan or assistance is difficult to obtain because there is still a complexity of administrative procedures. The *pongawa* also provides social services to *sawis*, for example, protection and moral support if the *sawis* have difficulties. This social relationship may explain why the clients find it difficult to release themselves from the patron relationship even if this relationship is seen as unfair or imbalanced (Eisenstadt and Roniger, 1984; Kahane, 1984). Further, Eisenstadt and Roniger (1984) stressed that the patronage institution will enter the arena if there is a complex administrative bureaucracy connected to livelihood. In this situation, the patronage institution is seen as a “friend in need” for the local community in obtaining their livelihood (Scott, 1977).

2.4. Patron, Client and Governance

The social interaction between patron and clients, as well as with the local community has become broader as the heterogeneous ethnic groups, and dynamic changes in age, gender, and social class stratification, impact the governing of the patronage institution (Agarwal, 1988; Li, 1996^a; Nygren, 1999). The heterogeneity of the community will also produce complexity in governing the limited local fishery resources, particularly in relation to the increase of local resource users. These include who has

access, who should control, and who will obey the rules of resource utilization in order to achieve equity and fair resource allocation (Li, 1996^b).

In addressing the need to integrate the patron-client institution in sustainable resources utilization and management, there must be a clear understanding about its mechanism, as well as identification of the strengths and weaknesses of the patronage institution.

2.5. Ponggawa-Sawi and Common Property Resources

There is a possibility of governing the patron-client institution in relation to local resources exploitation, that is through common property resources management theory (Wantrup and Bishop, 1975; Costanza and Folke, 1996; Ensminger, 1996; Jodha, 1996; McCay, 1996; Ostrom and Schlager, 1996). This theory suggests that a specific ethnic group or community is given rights or authority to access and manage particular local resources. In this theory, the government functions in an advisory role, while the local community dominates and directs the planning and decision-making processes. In addition, local organizations and Non Government Organizations (NGOs) serve as a link between the community and the government (Fonseka, 1995; Korten, 1995; Sen, 1995; Pyle, 1997; Vanella, 1997).

This theory could be used as a basis for integrating the informal institution into a government system of fisheries co-management if the government is willing to recognize this institution. This would also mean that the transformation of administrative authority for local fishery resources to traditional fishers is being pursued as a form of democratization (Wapner, 1995; VanderZwaag and Johnson, 1997; Clark *et al.*, 1998).

The biggest challenge to incorporating the patron-client institution into fishery resources management is the absence of property rights or traditional resource rights. According to Hanna *et al.*, (1995), property rights are divided into four categories, namely, common property, state property, traditional property, and private property. Common property is not everybody's property, there are some regulations imposed. Theoretically, it is assumed that all people would obey the regulations because they have equal access to exploit the resources. However, in reality, as in the case of Indonesia, the regulations have been set without clear resource access for coastal fishing communities (Dahuri and Dutton, 2001). Most developing countries with high population density adopt this concept with an objective that all people would generate benefits from the resources (Kusuma-Atmadja, 1991). However, as Hardin (1968), Kusnadi (1998), and Saad (1998) warned, common property without any institution or group to take responsibility in resources management measurement would lead to ruin of the resources, and this is known as "the tragedy of the commons". This is a state of open access.

State property means that the resources are under government control. This is typical for authoritarian and centralized government. Traditional property is under unwritten law and created by local community or traditionally claimed as their resource. This property implies that a specified group or community with socio and cultural entitlement claim particular resources for the benefit of the group. Private property means ownership by named individuals or cooperating bodies for access and control over particular resources.

Common property resources are dominant in coastal areas in Indonesia with the expectation that all its people would gain equal access and benefits from the resources,

however, this is difficult and costly to enforce (Netting, 1997; Nielsen and Vedsmand, 1999). In order to eliminate the excessive fishing resulting from the common property regimes, Christy (1982) and Saad (1998) suggested implementation of Territorial Use Rights of Fisheries (TURF). Implicitly, the TURF can be accommodated into the territorial use rights of the land provided by *Undang-Undang Pokok Agraria (UPPA)* or Agrarian Reform Act. According to Sumardjono (1999) land and water cannot be separated in the context of use rights, and this can also be transferred into the right to maintain and to capture the fish (Article 4:2 of *UUPA*) and spatial use planning (Suryokusuma, 2000). However, territorial use rights should also represent the rights of all stakeholders, and this must be accompanied by government institutional support in order to achieve fair access and control over coastal resources.

There are a number of reasons for the unclear status of the *pongawa-sawi* institution in the government framework (Mantjoro, 1996^a; Mantjoro, 1996^b). The most obvious reason is that the legitimization of the traditional fishers and their institutions might lead to the creation of exclusive rights of a particular social group that might then trigger social instability in coastal communities. Meanwhile, if the government continues to adopt the concept of common property of coastal resources, it might result in the tragedy of the commons or "race for fish" (Hardin, 1968; Parsons, 1993; Pomeroy, 1993^a), as a result of limited opportunity for the local fishing community to participate in resource management and conservation. The government faces the dilemma of choosing between these two difficult paradigms resulting in social instability of coastal communities or rapid resource depletion.

Although the government has not yet officially recognized the patron-client institution in South Sulawesi, this institution continues to utilize the fishery resources. The government has established the exclusive fishing zone of up to three miles from the shore for small-scale fishers⁸ in coastal areas (DGF, 1975). However, these rights have not had significant impact on traditional fishers due to the pressure of medium-scale fishers who also want to exploit valuable aquatic species, for example, shrimps and groupers. The failure of these rights is further aggravated by the absence of government monitoring and enforcement of the three miles zone. Evaluation of this policy is important both for its impacts on small-scale fishers' income and local fish stocks; this could be enforced effectively if small-scale fishers are directly involved in this assessment.

It might be useful to note that some patronage or informal systems are directly associated with resource management, for example in Japan, India, Maluku, Bali, and Aceh (Indonesia) (Ruddle, 1985; Nikijuluw, 2001; Basuki and Nikijuluw, 1996). All these patronage or informal systems implement their resource utilization through self-claimed traditional rights. Therefore, whatever the type of the patron-client institution and its connection either directly or indirectly with resource utilization or management, the issue of traditional rights cannot be neglected. It is historically believed that there is a cultural relationship between coastal communities and coastal resources that is embedded in their traditional claims (Nikijuluw, 1996; Jentoft, 2000^a). Traditional property rights according to Article 15 of the Convention of Biological Diversity are perceived as the

⁸ In practice it is difficult to define the small-scale fishers or independent fishers in South Sulawesi because some of them are also receiving financial assistance from the patron for fishing, and later the catch will be sold to the patron.

rights of indigenous people to self-determination and to use their traditional knowledge and cultural practices in utilizing and maintaining the biological diversity of natural resources (Ostrom and Schlager, 1996; Posey, 1996). The patronage institution as a part of a local community's informal system in utilizing the resources should also be recognized as a informal institution, even though it has been changing over times.

In a system of authoritative government or a centralized government system, property rights are sometimes abandoned with the consideration that all the resources belong to the state and equal distribution of the resources would be achieved through government administration. In Indonesia, local resource management systems have been undermined because the central government perceived that all resources management and development have to be an intergal part of nation-building effort (Ruddle, 1993). However, lessons learned from centralized system of governing the coastal resources show us that central control can no longer hold the promise of equal distribution and sustainable use of the resources (Dahuri *et. al.*, 1996; Kusuma-Atmadja, 1991). An emerging coastal governance paradigm suggests that proper coastal resources utilization, management and allocation should be based on grassroots level initiatives (Kaufman, 1997^a). This means that there must be a revitalizing of informal governance institutions through generating cooperative resources management or participatory resources management involving community and government (Kaufman, 1997^a; Kaufman, 1997^b).

2.6. Socio-Economic Aspects

The economic base for the patron-client institution is a trust system based on trading basic commodities, such as, fish, rice, and other agricultural products that people obtain daily. In economic rationale, patronage institutions perform a traditional market

function in the local community (Sallatang, 1983; Mattulada, 1995). The market arrangement relies heavily on the patron's knowledge of how and when to market the products. In isolated fishing communities, many local people rely on the patronage relationship as the only means of fish marketing or for other fisheries economic activity. Because there is no fixed price on product nor any quality standards, several attempts have been made to eliminate this market system, for example, through the encouragement by the local government for the local fishing community to auction their product at established fish auction halls. The Malaysian government has tried to eliminate the dominant role of the patron in Serawak local markets, the result being that the local market dynamic slowed down, especially in isolated areas (Merlijn, 1989).

In South Sulawesi, the patron-client institution has made a significant contribution to local fish market activities in fishing communities. The *pongawas* can support the market mechanism because they know when and where the products should be marketed. This patronage institution is important for the income of the majority of a coastal community's households. In fishing seasons, children, women or the wives of the clients are frequently involved in local marketing through processing the catch into salted or dried fish, and this initiative adds to their household income (Gardiner-Barber, 1995; Siar, 2000). The question is then whether we need to revitalize the patronage's traditional market practices.

Given the reality of regional and global competition in fish marketing, as well as extension of local community preferences and knowledge about quality and price determination, some improvements should be initiated in the patronage market practices. These include improvements in product quality, market and price information, market

chain strategy and the expansion of and easier access to broader regional market networks. All these have been practiced in the Philippines and Japanese fishing communities (Shima, 1983; Pinkerton and Weinstein, 1993; Yamamoto, 1995; Siar, 2000).

Usually, the patron-client institution provides a mutual co-dependency with the local community because the patron needs income for continuation of his fishing, while the local community needs the fish product for their daily livelihood. There are some options to revitalize the economic performance of the patronage institution, for example, evaluating the function of fish auction hall and village cooperatives, tax reform, increased access to fisheries and database information (Menasveta, 1997), income arrangements, and the economic valuation of coastal resources (Penning-Rowse *et al.*, 1992). Fish auction halls and village cooperatives are supposed to encourage the growth of local market mechanism in the community, however, sometimes, the inappropriate location of fish auction halls and high administrative costs have resulted in reluctance of the patron and other local users to use those facilities. In this sense, there is a need to evaluate local market and village cooperative facilities.

The basic means of achieving better economic gain from the fishery and the patron-client institution is through income arrangements (Sallatang, 1982; Sallatang and Walinono, 1982; Sallatang, 1986). The sharing system is a pattern used by the patronage system in distributing the income, and this should be analyzed to understand its economic performance. However, in practice, the sharing system has given little room for the clients to gain sufficient income if the clients have a loan from the patron (Nessa, 1981). Actually, the Indonesian government has a guideline for the sharing system (Nessa,

1981), but it has rarely been applied partly because of the limited skills of staff to undertake the re-organizational work. The government guideline on the sharing system as mentioned in *Djuanda* Agreement of 1965, is that a sailing boat should have a share of 60 percent for the owner, and 40 percent for the crews, while engine powered fishing boat has a share of 75 percent for the owner and 25 percent for the crews (Nessa, 1981). However, in the patronage system, according to Nessa (1981), there is a flexibility in the implementation of the sharing system and this depends on the type of fishing gear used and its operational mechanisms. The complexity of operation of the fishing gear would reflect the complexity of the sharing system (Nessa, 1981; Mubyarto *et al.*, 1984).

2.7. Ponggawa-Sawi, System Compliance and the Challenge of Legitimization

The emerging paradigm of shifting resource management and development from centralized government system to local government or a decentralized system (Dennis *et al.*, 1989) is based on high administrative costs in central management and control of coastal resources, especially for wide-spread locations such as in an archipelagic state like Indonesia. It is proposed that the most effective resource management strategy can be achieved if the management framework directly involves local community and their informal institutions (IUCN/UNEP/WWF, 1991; Nikijuluw, 1996). Historically, any resource utilization and management mechanisms and their implementation have been according to unwritten law (customary law), and communal-property rights or traditional property rights that are created by the local community (Mantjoro, 1996^b). The practice of customary law as implemented through informal institutions, for example *sasi*, *subak*, and *panglima laut*, becomes a basis for resource utilization management activities in the coastal community (Nikijuluw, 1994; Lakollo, 1996). The system for compliance to

customary law includes sanctions, shame, punishment, exile, compensation, or even the death penalty. For example, in the *sasi* system in Maluku Province, Indonesia, the *kewang* is an enforcer of that system (Nikijuluw, 1994; Nikijuluw, 1996), or in some Pacific regions, punishment is from the Elders (Zann, 1985).

However, many coastal governments, such as in the South Pacific Islands, Caribbean regions, and Southeast Asian countries, are reluctant to officially recognize the practice of informal institutions (Fong, 1994; Graham and Idechong, 1998; Ruddle, 1998). If the patron-client institution is officially recognized by the government in fishery resources management, it would imply a recognition of other local fishery resource users' resources access and control rights.

The informal institution such as *Sasi* in the Maluku province, Indonesia (Nikijuluw, 1996), the elders in South Pacific countries (Zann, 1985; Fong, 1994; Johannes, 1998; Ruddle, 1998), and the *oyabun-kobun* in Japanese coastal fisheries (Ruddle, 1985) are examples of how the informal system has been effective in fisheries utilization and management. All these traditional rules of compliance and enforcement are aimed at maintaining equal and fair distribution of local fishery resources. The crucial question to address is what further legitimization is required in a legislative process in order to accelerate and to maintain equitable access and control over local resources. A number of governments have begun to initiate a framework that involves local communities directly in resource management in the form of cooperative fisheries management. This includes the recognition of the informal institutions and efforts to incorporate them into a legal framework of fisheries management. Theoretically, local users are most knowledgeable in resources management because they have been

interacting with their surrounding ecosystem for a long time (Jentoft, 2000^a).

Lessons learned from Japanese, South Pacific, the Maluku, Indonesia and Newfoundland, and Canada's informal systems in managing coastal resources, have provided useful insight into the importance of the informal institution in fulfilling and securing livelihoods in coastal communities (Matthew and Phyne, 1988; Parsons, 1993; Nikijuluw, 1996; Ruddle, 1998; Johannes, 1998). The legitimization of the patron-client institution as a part of informal institutions is not aimed at changing the whole structure of this institution, but strengthening its existence, through identifying and revitalizing the elements that can play a central role in addressing fair and equal access, resources allocation and benefits. Fishers would comply with any regulation if they were directly involved in their design and implementation and they respect the traditional fishers' strengths and weaknesses.

Legitimization of the traditional fishers and their institutions is crucial because they will continue to exploit the fishery resources. If they are not legitimized, they have less moral responsibility to conserve the local fishery resources, and they may seek to maximize their economic gain. If they are legitimized, they will have a moral responsibility to conserve the local fishery resources as they also consider other resource users' livelihood. The traditional fishers also may not be capable of handling the responsibility of self-governing their local fishery resources alone, but the legitimization should proceed with government assistance in the process of adaptation and cooperation with other local resource users.

Another issue is the level of access to resources and how the access will be used. Both the legitimization and access rights to local fishery resources are important but also

risky. It is important because legitimization of responsibility for traditional fishers to self-govern their local resources should allow them and other local resource users to improve their well-being with sustainable use of the resources. It is risky because giving responsibility for self-governing the local fishery resources to traditional fishers could create marginal resource user groups who may not be able to participate in local resource management, if the government is not monitoring the transformation processes. In this situation, the government should carefully consider ways of responding to the local community's demand to legitimize their informal institutional practices and their consequences.

In addition, the factors that will be involved in the legitimization process should also be considered, as well as the format or mechanism of legitimization. All these essential aspects should carefully be analyzed before the informal institution is legitimized (Pomeroy and Williams, 1994). The local community also should realize that the legitimization process might require adjustments. According to Chircop (1997), the problems of coastal fisheries management should be solved in a system of compliance that integrates spatial, environmental, social and institutional aspects. In South Sulawesi's coastal fishing communities for example, the existing conflicts between medium and small-scale fishers in the use of the three miles zone, the use of excessive light in mobile lift-net fishing, illegal or destructive fishing gear, the use of mangrove trees for household firewood, and conflict in the use of fishing ground between fixed gear and mobile fishing gear should be solved through a compliance system that integrates all aspects. All the conflicts should be discussed and solved through the compliance system that becomes the basis for understanding about the need to conserve the habitat, to sustain

the fish stocks, and to minimize conflicts.

Compliance systems can be practised if each of the fishery resource users understands and considers the dynamics of the fishing ground, interaction among fish species, and the life cycle of targeted fish stocks in order that they can benefit from the sustainable use of the resources. The strengths of the *pongawa-sawi* system could be used as an example of how the *sawis* fully respect the compliance system that generates the continuation of their livelihood. Another example of a compliance regulation that has been practised lies in the Coromandel coast of Tamil Nadu, India, where the ban of the local fishing gear known locally as *kachaavalai* was considered to have harmful effects for future generations even though short-term economic gain was clear (Bavinck, 1996).

2.8. Emerging Issues in Co-Management

Along with the need to carefully identify and analyse the emerging issues in South Sulawesi coastal communities with respect to the initiation of co-management, the following issues will be explored: community, gender, livelihood, equality, informal institutions, and the New Local Government Administration Act No.22/1999.

2.8.1. Community in Co-Management

The term community is often used in sense of a group of people in a defined area/location with a specified type of culture, tradition and behaviour. This suggests a strong solidarity basis and few existing differences from other societies (Li, 1996^a). However, according to Li (1996^b), the community is typically heterogeneous this is because community members move from one place to another in the search of better livelihood, cross-marriage, communication access, and for cooperative arrangements between communities. Community heterogeneity produces a mixture of different

attitudes, interests, and goals in achieving and securing livelihood. These differences are normally based on stratification by age, culture, social class, race, political, and religious persuasion, as well as ethnicity and gender differences (Li, 1993; Latief, 1995; Li, 1996^a; Parpart, 1996). However, if the definition of community is by cultural and ethnic identity (Argawal, 1997) there is the possibility of a dominant ethnic group which will control access to resources. The outcome would be the existence of disadvantaged and perhaps oppressed social classes and ethnic groups with limited resources access and control (Li, 1996^a).

McAllister (1996) pointed out that people immigrating to a community would change the community structure and its social relations sometimes leading to a change in the definition of community. The definition and understandings about “community” are important as this will determine who has rights, access, and control over coastal resources. If we adopt the assumption that only people who reside close to the coastal area and use this area as their main source of income or livelihood can be considered as part of coastal community, the terrestrial people who occasionally utilize the coastal resources cannot be considered in the coastal community. However, this is difficult to incorporate in a coastal resource management framework since there may be seasonal switching of occupations between fishers and farmers in securing their livelihood. Li (1996^a) in her study of terrestrial areas in Tinombo region, Central Sulawesi, Indonesia, found that when the sea is calm, the farmers also conduct fishing activities, while in the rough seas, the fishers sometimes farm or are employed as temporary farmers in order to maintain their livelihood.

Besides different social entitlements of the community members, education level is important in co-management, particularly with respect to the persons who will lead the local community, create alternative livelihood, and be in a bargaining position with government regarding the transformation of authority and responsibility. However, education may not become an essential factor to consider when all those issues are related to the traditional fishers in South Sulawesi. The *pongawas* with their years of experience in fishery utilization can use their traditional leadership and influence in co-management. But the essential issue is the willingness and ability of all resource users and local government to participate in defining the objectives and goals of co-management. In fisheries management and development, all parties whether they have direct or indirect interest in fishery resources should be considered as part of the community in co-management.

In this sense, the way community can optimally participate in co-management is important as a top-down approach to coastal fisheries management has proven to be of limited capability in generating household income (Agrawal, 1997). The ways in which the community can optimally participate in co-management are facilitated by the clear definition of objectives and tasks, and the consistency of both government and local community in implementing the agreed co-management. In addition, it should also be emphasized that all parties should have equal chances to express their needs and strategies and concern over benefits in the spirit of fair distribution of the coastal wealth among the coastal community members. The importance of community direct participation in co-management is based on the fact that the coastal users understand well

the dynamic and emerging issues in both their coastal resources and coastal communities (Matthew and Pyne, 1988).

2.8.2. Gender in Co-Management

Gender issues in natural resource utilization and management, especially for coastal fishery resources, are becoming better understood (Mehra, 1993; Shield and Thomas-Slayer, 1993; Nurland, 1995; Shield *et al.*, 1996). However, the significant role of women in fishing communities, as in the case Kerala, India and Bais Bay, Philippines coastal communities, are frequently underestimated (Nieuwenhuys, 1989; Gardiner-Barber, 1995; Abregana, 1997; Siar, 2000). Even though the women's roles are underestimated, such as in the Kerala, India and the Bais Bay, Philippines (Nieuwenhuys, 1989; Gardiner-Barber, 1995; Siar, 2000) and women produce handcrafts in South Sulawesi, Indonesia (Nurland, 1995), they continue to show substantial skill in household management strategies.

To consider what conceptual framework might be suitable for co-management and how to integrate gender relations, there should be an early step to recognize women's socio-economic roles, contribution, and responsibilities in coastal resource utilization and management. This leads to the need to define gender roles. Gender refers to the social differences that make women and men entitled to their proportionate share in their roles and responsibilities according to their capacity and potential (Moose, 1993).

In the context of co-management, it is not only important to address the mechanism of cooperation between the local community and the government for long term use of coastal resources, but it is the important to consider the effect of co-management on the household and on women and children. Co-management planning

should consider how women will be allowed to decide and manage the income from their livelihood contributions (Deere *et. al.*, 1997; Wolf, 1997). Within their household arrangements, women have the capability to manage their income properly (or their husband's income) either for childcare, household improvement, and future savings. While these concerns are not usually managed by men because they may fear a loss of their pride or they might just escape from responsibilities, men nonetheless manage to control such matters (Brenner, 1995), or they draw advantage through referencing male authority and female difference, for example “*Ibuism*” or motherhood normally the Indonesian ideal of a good woman/mother (Rachim, 2001).

However, there are various determining factors which should be considered in addressing gender issues in co-management. These include the roles of women and their type of work, plus any constraints on their participation in co-management. According to Brenner (1995), Gardiner-Barber (1995) and Forest (1996), the existing cooperation or partnership between woman and men should be analyzed. Further these authors also emphasize that if women are encouraged to take active roles and responsibilities in co-management activities, there should also be an initiative to encourage men to take more active roles and responsibilities in household labour arrangements. The potential roles of women should be taken into account and properly valued because in the continuation of livelihood strategies, especially during the rough fishing season, women search out and obtain alternative livelihoods. Such work and knowledge should not be jeopardized by new arrangements since women are more inclined than men to contribute cash and other resources directly to family expenses and well being.

In co-management, both men and women should work together in determining the decision-making, formulation, and implementation processes, while the existing differences of class, ethnicity, religion, educational background, skill, and age should be minimized. The partnership between men and women in co-management should be directed to achieve sustainable livelihoods. However, some cultural beliefs may inhibit women in expressing their needs and aspiration. For example, in South Sulawesi, there is a cultural belief that women should follow and obey what their husband requires and this cultural barrier may lead to the reluctance of women to directly express their opinion. In fishery utilization, the role of women is not only in managing the household income, but also supporting their husband's work, for example, making dried-fish, mending the nets, planting vegetable in the backyard, and in a broader context, women are even involved in resource conservation (Rocheleau *et al.*, 1996; Braidotti, *et al.*, 1997). Hence it becomes appropriate that interventions in communities address gender power differences through gender sensitive measures such as gender segregated meetings to empower women and educate men. Participatory activities in gender-balanced meetings led by gender-trained leaders can also prove effective (Gardiner-Barber, 2000^a; Gardiner-Barber, 2000^b).

2.8.3. Livelihood in Co-Management

One of the objectives in establishing co-management is to provide sustainable livelihood for coastal communities from the wealth of coastal fishery resources. The attainment of sustainable livelihood can be in the form of food supply or income generation. In this sense, livelihood is perceived as the provision of daily household necessities which may come through generating income from available resources

(Widjaya, 1995; Ishak, 1996). However, the continuation of livelihood should also consider the capability of the coastal resources in providing livelihood security.

According to Gardiner-Barber (1996), even though it is difficult to address livelihood without mentioning the economic aspect, the analysis should concentrate on sociological understandings of livelihood and then examine how culture and economic factors fit together. This would then lead to an understanding of the embeddedness of economy, culture and society. Gardiner-Barber (1996) stated that livelihood is built upon a set of social relations between people (within households, kin, and communities) and that of livelihood resources. Livelihood, therefore, includes not only goods and services, but also information about the availability of economic resources and other matters related to alternative livelihood. In a broader interpretation, livelihood can be seen as the social processes, involving all family members, in obtaining various livelihood securities. According to Ostergaard (1992), social relations in livelihood are important and this may become part of a strategy for particular people in securing and maintaining their access to the resources, including fishing gear technologies and fishing activities.

In co-management, the local community should be convinced that the utilization of coastal resources must be based on the sustainability principle in order to bring about sustainable livelihoods. Through sustainable livelihood, the problem of a coastal community's poverty may also be alleviated through two strategies: first, a survival strategy for household fulfillment of daily consumption needs, and second, a market oriented strategy for utilizing coastal resources for economic benefits. Both these strategies will be achieved if the local community has enough ecological and biological knowledge about the reproductive cycle of important fish species that can be exploited

interchangeably. However, all these efforts turn on the local community and market preferences. Therefore, in co-management, there are two objectives for livelihood strategies, namely, household necessity and household improvement (Elson, 1992). However, it is realized that it is difficult to measure livelihood with respect to how much is enough for one household to meet its welfare, the amount of resources required, and how to identify the indicators of livelihood. All these concerns should be analyzed when livelihood is to be considered as an essential issue in co-management.

2.8.4. Equality in Co-Management

The term equality may be perceived as the conditions where all people have consistency of livelihood and social and economic well being in their life (Asong, 1996; Parpart, 1996). Various interrelated factors may determine the inequalities and inequities, for example, historical background, socio-economic class, ethnicity, gender, age, and individual abilities and disabilities (Asong, 1996; Parpart, 1996). In relation to coastal fishery resources, there is a potential equal value regarding people's access to power, fairness, benefits and responsibilities over their local resources.

In fishery terms, this equality can be assumed as fairness in allocation or quota. If the principle of equality in fishery resources exploitation is not taken into consideration, the resource status could change from sustainable utilization to the tragedy of the commons (Hardin, 1968). It is difficult to achieve the objective of equal and proportionate share among local community members, and this can ruin the vulnerable resources and increase the social instability in coastal community.

In co-management, the issue of equality should rest on the principle that development and intervention in fishery resource utilization and management should

emphasize benefits for all local fishing community members. This also implies that equality in co-management should involve women in decision-making, implementation, benefit distribution, and evaluation processes for different sectors in all activities and programs that affect present and future livelihood.

Equality is one of the objectives of co-management, and it may be assumed that all parties involved in co-management would have equal opportunity to express their goals, needs, objectives, strategies, and expectations (Li, 1996^a). However, in reality, this desired expectation is difficult to achieve at once, and it may take time to establish. One of the crucial steps in addressing all these concerns is to clarify priorities in the work of co-management because sometimes the expectations and objectives are overlapping creating a complex formulation and implementation for co-management. The basic step in addressing the issue of equality in co-management is to start with clear identification and understanding about the essential information and formation of the social system in the community and about the structure and capability of the resources base.

2.8.5. Sustainability in Co-Management

Fishery resource sustainability is the major concern of any fishery development and management plan. Sustainability has various dimensions, for example, social, economic, and ecological. Sustainability of fishery resources itself is perceived as the capability of the resource to provide services to the users without jeopardizing future benefits (Serageldin, 1994). There are various perceptions regarding sustainability from various disciplines, for example, for the sociologist, human beings are the key to the success of sustainability (Cernea, 1994). Thus, social organization is a medium to achieve equity and poverty alleviation (Serageldin, 1994). The economist perceives the

sustainability as a way to achieve economic growth and efficiency through existing capital stocks and technologies (Munasinghe, 1994). Finally, the ecologist perceives sustainability as a way to preserve the integrity of ecological sub-systems or stabilizing the global ecosystem or maintaining dynamic adaptability of natural life-support systems (Rees, 1994).

However, it should be noted that the fishery resources can only be sustained if the resources are sufficient to support the number of users. This means that the number of resource users should not exceed the capacity of the available fish stocks. In the case of tropical fisheries in South Sulawesi, it is difficult to determine whether the growing numbers of resource users can be supported by the existing fish species in various habitats. According to Dahuri (1998) the development and the utilization of coastal resources should not exceed the carrying capacity of coastal resources. In practice, overfishing in many coastal areas can be used as an indicator of the need to find a strategy to sustainable use of the fishery resources. As co-management is initiated, the sustainable use of fishery resources is essential.

The fishery resources in South Sulawesi are various and the availability of the resources should not imply that the sustainability of fishery resources is less important compared to economic benefits. In order to establish the sustainability of fishery resources, a consensus should be reached among local resource users for a compliance system that regulates them in using the resources. This can be enhanced through careful control of the type of fishing gear. The use of destructive fishing gear would lead to the destruction of life-support system of the fishery resources, and this in turn would destroy the sustainability of the resources.

Leich (1995) emphasized that there should be an analysis of the social costs of the sustainability of the resources. Regulations should have few impacts on the distribution of income and equitable access to resources access. This then determines whether the sustainability would benefit future generations or not. In some levels, the traditional fishers, through their simple fishing technology, could better ensure the sustainability of fishery resources, because most of their catch is for household consumption, on the other hand, for the government economic benefits become the priority.

Further Leich (1995) pointed out that in order to address equity in sustainable resource utilization, the benefits and costs of regulation policies should be analysed. She realized that resource depletion and habitat destruction are often social problems that would effect the whole fishing community.

In co-management, the personal choice of lifestyle and living condition should be harmonized through collective objectives and cooperative solutions for sustaining the utilization of local fishery resources (Lejano and Davos, 1999). This could be achieved if the compliance system is in the form of norms, traditions, and reciprocity familiar to all the local resource users (Wairocana, 1995), such as has been practiced by local fishing community in Coromandel, India (Bavinck, 1996). Direct involvement of local fishery resource users in the design and implementation of their informal system in utilizing the local fishery resources would be of benefit if their compliance system is always attached to co-management processes. Conover (1995) acknowledged that sustainability is a part of governance that should be used as a basis for establishing any type of fisheries management. As a part of a governance system, there should be some regulations that are imposed without jeopardizing the income or livelihood security of local resource users.

Lejano and Davos (1999) stressed that if the resource users prefer to establish sustainability for long-term benefits, this must be in the form of a cooperative arrangement.

2.8.6. Informal Institution Roles in Co-Management

Informal institutions and local knowledge are the activities or behaviour of indigenous people that are entitled in their cultural heritage, for example, customs of access and control over their surrounding natural resources (Ruddle, 1988; Corsiglia and Snively, 1997). Traditional knowledge is embedded in collective experience, heterogeneous knowledge, practical, and strongly rooted in place (Geertz, 1983; Nygren, 1999) and it continuously evolves (Neis, 1992). Institutions configure social rules that are established by a particular society over time to guide the design of strategic linkages between natural resources and the society, and this assists the society to make decisions about living together (Hukkinen, 1998; Ostermeier, 1999).

Some coastal nations have initiated fisheries management through working together with existing local community social systems and traditions, for example, in the Philippines, Thailand, and South Pacific countries (Pomeroy, 1995; Carlos and Pomeroy, 1996; Alcala, 1998) through respecting the indigenous knowledge of local communities in resource utilization and management. Traditional knowledge regarding the prediction of fish migration and abundance of fish species are the foundation of co-management that may lead to the sustainable use of fishery resources.

However, if a patronage institution is to be incorporated into the government framework for fisheries management, there should be strong reason for the basis of integrating this informal institution, as well as the cooperation mechanism. This

integration does not necessarily mean that this informal institution will be given exclusive rights, but all parties should be involved in order to avoid marginalization of any social groups.

In the Philippines, there has been a grassroots movement demanding the legal rights of local communities in utilizing and managing their resources. The Philippines government responded to this demand through the establishment of the Local Government Code of 1991, that is destined to facilitate and to strengthen a local community's institutional capabilities to implement co-management (Abregana, 1993; Villacorta *et al.*, 1995; Noble, 2000). However, the establishment of this government code does not automatically guarantee success in the implementation of co-management (Abregana, 1993; Carlos and Pomeroy, 1996). Challenges include institutional arrangements, human resources development, inter-departmental cooperation, social relations, environmental pollution and limited evaluation of standing stocks in coastal resources (Carlos and Pomeroy, 1996).

Facing the reality of the dynamic changes of social interactions and limited coastal resources, co-management may become a hope for sustaining the fish stocks and a means of meeting livelihood security in coastal communities. The challenges of co-management's initiation in South Sulawesi include the means to include the patron-client institution and the lack of fishery resources inventories that are essential in the decentralization processes (Saad, 2000; Saad, 2001; Mallarangeng, 2001). It is believed that, if the patronage system and all local resource users are directly involved in the design formulation of co-management, they will comply because they are part of regulatory processes in which their expectations are included.

2.8.7. *The New Local Government Administration Act No. 22/1999 and Co-Management*

The New Local Government Administration Act No. 22/1999⁹ is a reaction to recent political reform in Indonesia that emphasized the need to transform some administration to local government. The emerging demand for transformation of authority also includes the self-management of fishery resources management. Susilo (2000) and Nirwandar (2001) emphasized that during the centralized system of fishery resources management, the slow bureaucracy, high administration cost, and centrally planned development patterns have ignored participation of users. The strong basis for decentralization is actually found in Act No. 18 of the National Guidelines 1945 (*UUD 1945*). However, the old New Order Regime¹⁰ used the Village Administration Act of No.5/1979 as a means to expand the central government dictatorship and control and made regional and village government dependent on central government (Ananda, 2001). The New Local Government Administration Act was produced in order to be able to accommodate a participatory approach to local community through revitalizing local

⁹ The New Local Government Administration Act No. 22/99 or popularly called as the New Local Autonomy Act is the replacement of Village Administration Act No. 5/1975 which has limited the local community participation in processes of development, including self-governing the local fishery resources. Politically, this new act was enacted when Habibie took over the presidency and resulted from the democratization demand to self-govern the local natural resources. However, the Habibie presidency was no longer in power, when President Wahid officially implemented this new act in January 2001. However, under the Megawati presidency, according to recent information (personal communication with Dr. Saad), the Ministry of Internal Affairs will consider withdrawing this new act, and it will be administered by central government. The reason is that some local governments are still not ready to handle the tasks. The debate is still underway. Some say that the government administration is different from governing the fishery resources, so that, this act should be under the Department of Ocean and Fishery instead of the Department of Internal Affairs, while according to the Department of Internal Affairs, governing of government administration and fishery resources is the same. This dispute seems to be about the interpretation of autonomy, and differentiating between governing the local government and governing the fishery resources. However, politically, this also reflects that the central government is reluctant to delegate some of its authority and responsibility for administration to local government or local communities with the common reason of the fear of possible disintegration of the nation.

¹⁰ This New Order Regime was under the authoritarian government of Soeharto Presidency from 1965 to 1997.

government, empowering local community, NGOs, and recognizing local informal institutions.

According to Pomeroy and Berkes (1997) decentralization means the power, authority, and responsibility are delegated systematically and rationally from central government to lower local institution. Thus, the option of delegating or sharing some of central government authority and responsibility is a central point in the co-management process. In the transformation there should be a clear commitment and consistency in central government (Tamin, 1996). This is important because once the central government is inconsistent, participation and cooperation in resources management with local communities may become a burden as the laws and regulatory mechanisms may not work properly. But, the local community should also be aware that decentralization is a continuous process that may require some revisions in order to reach the expected outcome (Pomeroy and Berkes, 1997; Pomeroy, 1998).

In this New Local Government Administration Act, there are some essential points that need to be clearly defined including; the degree of accessibility, participation, and social equality. Politically, the New Local Government Administration Act is a form of local community demand for self-regulation and self-management of their resources, and this is actually found in the *TAP-MPR*¹¹ No. XV (Ananda, 2001). It is realized that this New Local Government Administration Act is in an early stage as there have been many criticisms and responses from academicians, researchers and practitioners about the content of this Act. Even though this Act was officially verified on January 2001, this Act is still in the stage of clarification with local government. For example, in article 10,

¹¹ *TAP-MPR* is the highest House Representative decision that relates to the benefits of all people in Indonesia.

paragraph 2 it is still unclear which department or agencies have the authority to manage the exploitation and conservation of fishery resources. Therefore, there are still overlapping authorities. In addition, these are potential conflicts among central, regional, and local level governments, especially in relation to spatial use planning (Susilo, 2000).

In relation to the traditional rights of coastal communities to utilize their coastal resources, this Act further does not specifically mention the definition of traditional fishers and the role they may play and this may produce conflict among traditional fishers (Laude and Azis, 2001). The formulation of this New Local Government Administration Act, especially in its Paragraph 4, article 10, is similar to Magnusson Act that has been implemented in the US (Parsons, 1993). In this paragraph, the central government still has authority to intervene in the four-mile zone that is exclusively given to coastal communities. This Act is a clear indication that the central government gave extension of territorial fishing rights to local communities. Territorial waters up to four miles is given exclusively to coastal communities, while territorial waters from four to 12 miles are for regencies and regional provinces, and beyond 12 miles for the central government. The four-mile fishing zone given to local communities in the act is a change from the three-mile zone of fishing rights in previous regulations, but there are still potential conflicts among resource users considering the growing number of fishing gear and local resources users.

There is an opportunity for informal institutions to take on roles in the legal framework of this New Local Government Administration Act for co-management in South Sulawesi, and this opportunity also reflects the need to recognize all potential knowledge in local communities in local resource management. So that, self-governance

is an opportunity, and governance is perceived as the way in which the independent fishers, government, local community and informal institutions can create a new collective institution that has power, rights, and responsibilities (Hardjoeno *et al.*, 1996).

The introduction of this New Local Government Administration Act and co-management can be seen as an evolving process similar to that of decentralization based on the roles of government and the resource users (Pomeroy and Berkes, 1997). There is a similar pattern between the decentralization and co-management, that is, both transfer or share their power and authority to or with local-level institutions (Pomeroy and Berkes, 1997).

Recent expressions with co-management in Asia and the political changes in Indonesia along with consideration of patron-client institutions in general, and in particular the *pongawa-sawi*, suggest potential in a model of co-management for South Sulawesi. Before a co-management model can be proposed, it is necessary to examine the status and trends in the *pongawa-sawi* institution and the local fisheries. This will be done with field research information and will be combined with an examination of governance issues in the local fisheries.

Chapter III:

The Objective of the Research and Methodology

3. Objectives

This research is intended to develop an understanding of the emerging changes in the working relationship between *pongawa* and *sawi* in Buginese, Makassarese, and Mandarese in South Sulawesi, with respect to social, economic, ecological, and governance¹² dimensions of coastal resources utilization. An interdisciplinary analysis is used to develop a framework for integrating this patronage system in a model of cooperative fisheries management or co-management.

In this research, two central questions are examined.

- Can this patronage system be integrated with cooperative fisheries management in order to generate better coastal fisheries management leading to coastal community livelihood security, sustainable ecosystems, equitable access to resources, and good governance?
- What changes are taking place in the patronage system and how effective are such changes in improving the livelihood of *sawi* households, increasing women's roles in resource utilization (income and household strategies), and promoting equity among other stakeholders.

These research questions are analyzed through the emerging changes of the *pongawa-sawi* institution, and then the analyses are developed with the concept of cooperative fisheries management. In developing cooperative fisheries management, two

¹² Governance refers to self-management, empowerment, community involvement, participation, participatory management, or a system of government that is suitable for local conditions (Lipschutz, 1977; Borgese, 1995; Conover, 1995; Adams, 1998; Borgese, 1998; Chakalall *et al.*, 1998; Hviding, 1998; Ruddle, 1998).

analyses are conducted: the analysis of emerging changes of the *pongawa-sawi* system, and then the impacts of such changes on coastal community livelihood security, sustainable ecosystems, equitable access to resources, and good governance.

3.1. Significance of the Research

This research is useful in South Sulawesi since there has been no attempt to understand and to evaluate how the *pongawa-sawi* relationship works, how it changes over the time, its effectiveness and efficiency that ultimately affect the livelihood and distribution of access to resources among coastal communities, or the sustainable use of coastal resources. Once the *pongawa-sawi* institution is understood, it will be possible to evaluate its role in fisheries utilization, and to consider how it can be integrated into a management framework, notably into cooperative coastal fisheries management. It is expected that by understanding the interaction of social, economic, ecological, and governance factors affecting the *pongawa-sawi* institution, the local government in South Sulawesi will review and possibly integrate this patronage system into a framework of coastal fisheries management.

3.2. Methodology

3.2.1. Research Sites Selection

Considering the spread of coastal communities in South Sulawesi, as well as limited time and financial resources, three research sites were chosen based on the following criteria:

- One site was selected for each of the three ethnic groups in coastal regions of South Sulawesi (Buginese, Makassarese, and Mandarese). The location for the Buginese is in Sinjai regency, while Makassarese and Mandarese location are in Takalar and

Majene regencies.

- The research sites have some degree of similarity of ecosystem (coral reefs, seagrass beds, mangrove forests, and estuaries).
- The existence of various fishing gear and reasonable numbers of households of *pongawa* and *sawi* that are actively utilizing the coastal resources.

3.3. Description of Research Sites

3.3.1. Tongke-Tongke Village (Buginese Research Site)

Sinjai regency lies in the eastern part of South Sulawesi province or about 250 km from the capital city of Makassar (previously known as Ujung Pandang). Sinjai regency borders with Bone regency in the North, the Bay of Bone in the East, Bulukumba regency in the South, and Gowa regency in the West. Administratively, Sinjai regency is divided into seven Sub-regencies (West Sinjai, Borong, East Sinjai, North Sinjai, South Sinjai, Central Sinjai, and Tellu Limpoe), with one other village soon to become a district (Pattalassang), and 68 sub-districts/villages. Tongke-Tongke village is located in Samataring district, East Sinjai (Local Government of Sinjai, 1998).

As a part of East Sinjai sub-regency, Tongke-Tongke village is located about 5 km from the regency capital city of Sinjai regency, Mangarabombang. Like many fishing villages, Tongke-Tongke village has a variety of coastal ecosystems. To the east of the village, there are nine small Islands (Kambuno, Katindoang, La Reang-Reang, Kanalo I, Kanalo II, Kodingareng I, Kodingareng II, Batang Lampe, and Leang-Leang) that have extensive coral reefs. To the north and to the south, there are extensive mangrove forests, and to west there are number of government established brackish water aquaculture ponds. All these habitats are important for livelihood based on marine resources.

In this village, there are about 7985 people (3767 male and 4118 female), and the average household has five persons, and a population growth rate of 0.59 percent (BPS, 1998). The majority of men are fishers, while other occupations include the local merchants, government officials, assorted fisheries related occupations, including three *ponggawas*, 35 *sawis*, 2618 independent fishers, 12 local fish traders, eight regional fish traders, one inter-island fish exporter, and four local fish processors. In Tongke-Tongke village, there is one ice factory that helps ensure fish product quality, especially for transporting the catch to the neighboring fish auction hall in the Lappa district.

In Tongke-Tongke village, the fishing gear are various sizes and types, including pole and line, lift net, surface gill net, beach seine, traps, purse seine, bottom gill net, line fishing, and others. Fishers will use multiple gears, create and modify the gear for specified targeted fish species, for example, some independent fishers modify the trawl gear into other forms of fishing gear that do not fit formal classifications of fishing gear. The only way to identify the fishing gear modification is through identifying their fishing method and fish species caught. Frequently, local communities name their modified fishing gear according to the type of fish species caught, for example gill net *cakalang* (skipjack gill net).

To support fishing activities, there are 1463 fishing boats of various sizes, types, and tonnages (outboard, inboard engines, and sailboats). The independent fishers themselves create their fishing and transport boats using local materials. Not all of the fishing gears require a fishing boat for operation, for example stationary lift nets and traps. The design of the fishing boat is normally according to the fishing method used, and frequently the small hollow boat is created for fishing or sailing in the nearshore.

3.3.2. Aeng Batu-Batu Village (Makassarese Research Site)

Aeng Batu-Batu village is located at the South of Galesong sub-regency, Takalar regency about 7 km from the capital city of Takalar regency. Takalar regency is bordered by Makassar to the north, Jenepono regency to the south, Gowa regency to southeast, and the Makassar Strait to the west. Takalar regency itself is located about 25 km south of Makassar, and this regency consists of four sub-regencies: South Galesong, North Galesong, Mangarabombang, and Bontomanai. With the width of about 5 km² and as a part of South Galesong sub-regency, Aeng Batu-Batu village is bordered by Pakkaba village and Makassar regency to the north, the Makassar Strait to the west, and Bontolanra village to the east. The strategic location of this village, facing the Makassar Strait has made it an important fish producer, not only for the local community, but also for fish supplied to Makassar. Livelihoods in this coastal community are divided between the fishery and agriculture and there are 50 ha of brackish water ponds found in this village. Frequently, during the west monsoon seasons, the sawi and independent fishers work as temporary labour in the brackish water ponds and in agriculture or some of them practice temporary migration to Makassar to work as labourers.

In Aeng Batu-Batu village, there are two *pongawas*, 19 *sawis*, and 1325 independent fishers. There are also three local fish traders, two regional fish traders, one inter-island exporter, and one local fish processor. With 5 km of coastline, there are 963 fishing boats, both sail-powered and engine-powered. In addition, there is also an ice factory available to ensure fish quality, and an informal fish market.

The location of Aeng Batu-Batu village on the Makassar Strait attracts many people to live along the coast and use the coastal resources to ensure their livelihood

security. However, the increase in number of brackish water ponds has affected coastal habitats through the clearing of mangrove forests and the use of coral reefs for building material. During the peak fishing seasons, July - August (the west monsoon season) the *pongawas* with larger boat increase their fishing trips. At the same time, the independent fishers are frequently unable to fish far from shore due to their limited financial capital and smaller boats, so, the resources around the nearshore would be their main option. During the low fishing season (around November - March), the *pongawas* anticipate the environmental changes through shifting their fishing ground to neighboring regencies, for example, to Bantaeng and to Bulukumba. Meanwhile, the independent fishers reduce their fishing rate.

In Aeng Batu-Batu village, there are extensive seagrass beds (about 1 km²), and a mangrove forest to the north (about 1 km²), and these habitats are also used by local fishers and their family members. The increase in local fishery users and the existence of illegal fishing gear, such as mini trawls, have resulted in the destruction of some habitats. Coral reefs have been hurt the most. In addition, mangrove trees are cut for firewood. During the most recent economic crisis of the 1990s, members of this community were forced to sell these trees in order to buy rice.

3.3.3. Banggae Village (Mandarese Research Site)

Banggae village is located within the capital city of Majene regency. Majene regency itself is located about 600 km northwest of Makassar. Banggae village is known as a center of fishing activities and has the most fishery stakeholders in the regency because of its proximity to the regency's capital. The village itself is located along the coast of Mandar Bay, and also serves as a main provincial transportation port for Central

Sulawesi Province. On the east side of the village, there is a hilly mountain with coconut trees which contributes to agricultural production in the local community.

Banggae village is too hilly for paddy fields. On the village's west side is Mandar Bay. As a village, Banggae is known for its concentration of Danish-seine, as well as the fish market activity for skipjack and little tuna. Among the sub-regencies, Banggae has 1916 fishers, while others have around 1000 fishers. In Banggae village, there are informal and formal fish markets and several fish landing sites used by the local community.

The primary means of livelihood for coastal community households are fishing and agricultural products. The deep water of Banggae village also limits many in the coastal community from using simple fishing gear, for example, cast net and traps along the coast. Strong current and deep waters in this village are reflected in the fish species caught, for example, skipjack, little tuna, scad, flying fish, squid are most common. The dominant species caught being skipjack and little tuna. This is also reflected in the dominant fishing gear used, Danish-seine, which is operated quite a distance from the shore and is specialized to capture migrating, schooling fish species. To operate this fishing gear, a fish aggregating device (*rumpon*) is set at the fishing ground. This device is frequently used by independent fishers to catch fish using some simple fishing gear.

In Banggae, there are two *pongawas*, 22 *sawis*, 1867 independent fishers, 20 local fish traders, two regional fish traders, two inter-island exporters, and one local fish processor. In addition, there are 3789 fishing gear (Danish seine, hand-lines, gill nets, encircling gill nets, vertical long-line and other unclassified fishing gear), and 1800 fishing boats. There is one ice factory in the village, which is important, especially during

the peak fishing seasons, for transporting the catch to neighboring regions, such as to Palopo and Polmas regencies.

Due to the oceanographic condition of Majene's deep waters, the majority of fishing grounds are located far from the shore. So the *pongawas* themselves throughout all fishing seasons conduct fishing activities quite far from the shore. During the west monsoon season, the independent fishers work near the shore using simple fishing gear.

Among the three research sites, Tongke-Tongke village has the largest number of independent fishers followed by Banggae and Aeng Batu-Batu villages, reflecting the availability of more coastal ecosystems in Tongke-Tongke village. Tongke-Tongke village also has the largest number of *sawis* compared to the other villages. The number of *sawi* actually depends on the fishing gear used, for example, in Tongke-Tongke village, *pongawas* use pole and line, lift nets, and beach seine which require more than ten *sawis* for each fishing gear. However, the number of local fish traders in Banggae village is the largest because of the location of Banggae village close to the city and the strategic location for transit to Central Sulawesi and to Kalimantan province.

3.4. Demographic and other Supporting Databases

Demographic databases of the villages' and coastal areas were obtained from regency and provincial offices (number of independent fishers, fishing boat and gear). Other data were also obtained for example the areas of mangrove, coral reefs, seagrass beds, estuarines, and areas of coastal aquaculture (fish species found, the area covered, and fishing gear used). All of these databases were obtained from direct observation and from local community, local and regional offices of Central Bureau of Statistics, the Regional Agency for the National Development Planning Board (*Badan Perencanaan*

Pembangunan Daerah or Bappeda), and the Regional Department of Internal Affairs in South Sulawesi. Meanwhile, supporting data such as, numbers of fish auction halls, fish landings, and local markets were obtained from the local and regional fisheries department at the research sites.

3.5. Sampling Methods

My Buginese ethnic background and familiarity with South Sulawesi's coastal communities have provided valuable insights into fishing communities. Interviews with *sawis*, *pongawas*, independent fishers, other local resources users, and government staff were conducted, including reliable local prominent community leaders whose work relates to the coastal resources utilization and management strategies. All the active *pongawas* were interviewed (three Buginese *pongawas*, two Makassarese *pongawas* and two Mandarese *pongawas*). The *sawis* were selected based on their fishing gear: in the Buginese group, four *sawis* from pole and line, three *sawis* from mobile lift nets, and four *sawis* from beach seine patronages. In the Makassarese group, four *sawis* from trammel nets, and five *sawis* from purse seine patronages, and in the Mandarese group, four *sawis* from one Danish seine group, and three *sawis* from another Danish seine group. A summary of persons interviewed is in Table 1.

Table 1. Number of Persons Interviewed.

Respondent/villages	Tongke-Tongke	Aeng Batu-Batu	Banggae	Makassar	Total
<i>Ponggawa</i>	3	2	2	-	7
<i>Sawi</i>	11	9	7	-	27
Independent Fishers	3	3	3	-	9
Local Government Staff	2	2	2	-	6
Wives of <i>Ponggawas</i>	3	2	2	-	7
Wives of <i>Sawis</i>	4	3	4	-	11
Wives of Independent Fishers	3	4	3	-	10
Local Prominent Leaders	2	1	1	-	4
University Researchers	-	-	-	3	3
Regional Government Staff	-	-	-	2	2
Total	31	26	24	5	

Information regarding the amount and species of fish landed was collected in informal markets, fish auction halls, and formal and informal landing sites. In Tongke-Tongke village, there is one informal fish landing, one informal market, and one fish auction hall in Lappa sub-district. Meanwhile, in Aeng Batu-Batu village, there is one informal market, one fish auction hall (near Tamalate village), and one informal fish landing. In Banggae village, there is one fish auction hall, one informal fish landing, and one formal fish landing. In addition, two local and regional fish traders were also interviewed. Questionnaires and semi-structured interview techniques were used.

Interviews with local and regional government staff and university researchers involved in fisheries research, management, and enforcement were also conducted. Considering the low level of literacy and inability of some respondents (e.g., *sawis*) to write and to speak Indonesian, for these respondents a qualitative approach for this research was used relying largely on participant observation. Some respondents only spoke a local language or dialect. Qualitative methods were based on Coastal Fisheries Participatory Appraisal and Social Participatory methods (Chambers, 1987; Townsley,

1993; Ahrentzen, 1996; Pido *et al.*, 1997; IIRR, 1998).

3.5.1. Interview Procedures

The interviews with the respondents were conducted separately, using codes in representing the source of information in order to protect confidentiality. Throughout this thesis, no names of respondents are mentioned.

3.5.2. Data Collection

The interview questions explored perceptions of the respondents about the *ponggawa-sawi* institution and its effects, independent fishers, other local resource users, coastal fisheries management, the value of coastal resources, and current government institutions with respect to local fishery resources. Information regarding the past, current, and future role of the *ponggawa-sawi* institution in resources utilization, equitable access to resource, and livelihood security of coastal community was obtained not only from active *ponggawas* and *sawis*, but also from retired *ponggawas*, *sawis*, and local government officials. The information includes the *ponggawa-sawi* structural institution, procedures and relationships, effectiveness, and efficiency, what has changed, and their expectations.

Moreover, information about the impacts of the *ponggawa-sawi* system on the household-livelihood, and equitable access to resources was obtained from local communities (local prominent leaders and wives). Questions here include data about income distribution, women and family members' roles, and strategies for obtaining livelihood generated from coastal resources. This information leads to an understanding of the way this patronage institution works and has changed, as well as the impact of government policy on coastal resources utilization and management. In addition,

information sought also included the types of fishing gear and methods that were used and are currently used, targeted fish species, informal and formal compliance systems (including the difference between informal and formal compliance systems of the *pongawa-sawi* and the government), and past, and current methods of conservation. Other important analyses were also carried out, notably, the perceptions of both active and retired fishers, *pongawa*, *sawi*, independent fishers, and reliable local informal leaders of the impacts of social changes, resource dynamics, and coastal fisheries management and development upon the:

Patronage system use of the resources

Decision-Making Process in the *pongawa-sawi* institution

Overall welfare of the family and income

Overall welfare of coastal fishery resources

Access to and control over coastal resources

User conflicts and compliance with regulations

Kinship and family values

The changes of coastal habitat systems and fishing patterns and methods

In order to collect biological and social information on coastal resources and its utilization, the following assessments were conducted.

3.5.2.1. Biological

Biological information includes the fish and shellfish species that are caught by independent fishers and the *pongawa-sawi* with different fishing gear. This information was collected once per day at various fish landings both informal (shore sites) and formal fish landing sites (fish auction halls). This information then was categorised according to

type of species and the amount of landings by type of fishing gear in each coastal habitat.

Other biological information that relates to local ecological knowledge of fish resources was also obtained through interviewing the *pongawa*, *sawi*, and independent fishers regarding their perceptions/observations about changes in time and space, and reasons to target certain species, areas covered, and any fluctuation in fish catch.

3.5.2.2. Fishing Gear, Boats, and Methods

Information on the number of fishing gear and boats that are currently used by independent fishers and the *pongawa-sawi* was collected. Information on fishing boats was categorised according to the length, tonnage, and by engine or sail. Information on the types of fishing gear includes stationary and mobile methods of deployment. Other information was obtained regarding the source of fishing gear and boat investments, the amount of investment for each type of fishing gear and boats, and the mechanisms/options involved if the *pongawas* received capital from outside their village or region.

3.5.2.3. Social, Economic, and Institutions (Governance)

Information was also obtained in relation to social, economic, and institutional perspectives, using semi-structured interviews and questionnaires.

3.5.2.3.1. Social

Information for social variables includes age, gender, other sources of income, education, and kinship relations of the *pongawa* or *sawi*. Social relations between the *pongawa* and the *sawi*, *pongawa* and independent fishers, type of their relations, type of social assistance/protection from *pongawa* to the *sawis*, and type of social obligations of *sawis* to *pongawa* was also obtained. The reasons why fishers become independent or

are involved in the patronage system, and their perceptions about the *ponggawa-sawi* system was sought. In addition, the number of years of experience of the *ponggawa*, *sawi*, and independent fishers in dealing with coastal resources utilization, and the direct involvement of the *sawis'* wives and their family members in this patronage system was determined, including skills that may support their household income. In this sense, gender relations were assessed including gender division of labour for obtaining and managing the household income, who decides the allocation of income, and what overall strategy is used to maintain livelihood.

3.5.2.3.2. Economic

Information on economic variables was obtained in two ways. First, knowledge about investments of fishing gear, boats, engines, and operational costs for fishing operations was obtained. In addition, operational costs provided solely by *ponggawa*, for example, gasoline, food, and live-bait was obtained separately.

Second, based on the sharing system in the patronage system, economic information was obtained regarding the allocation of the catch according to equipment, the *ponggawas*, and *sawis* that are involved in any fishing operation. When the catch is fish of small size, information is noted as price per box or basket, while for large fish, the price is noted as price per fish. Then, economic variables were obtained through separating the portions allocated to *ponggawa*, fishing master, *sawis*, and costs for fishing boats and gear. Information regarding the changes of target fish species or pressure on fish stocks that may affect the sharing system and the type of decision-making was also obtained, and this included information about saving strategies of both *ponggawa* and *sawi*.

In addition, information was gained on what type of obligation is created if the *pongawa* agrees to contribute to the daily economic needs of the *sawis* in addition to the sharing system, and what type of decision-making is involved in this matter.

3.5.2.3.3. Institutions (Governance)

Information on institutional frameworks and governance of the *pongawa-sawi* was obtained from the interviews with *pongawa*, *sawi*, independent fishers, NGOs, local government staff, and local informal leaders. In this institutional information, the work is divided into two parts: first, the *pongawa-sawi* relationship itself, and its compliance system (customary laws), and the decision-making processes of the *pongawa*, or between the *pongawa* and the *sawi*; and second, government institutions in coastal resources management and policies. This includes related departments and agencies that are currently involved in resource management and policies. In addition, information also covers the types of rules, compliances, and decision-making processes about the type of prohibited or permitted fishing gear, and fishing method in different types of coastal ecosystems.

3.6. Analysis

All data obtained from three research sites were then compared in order to identify any similarities and differences of the *pongawa-sawi* institution and its system among the ethnic groups. These comparisons also identify the similarities and differences about access, production, resource control, and the strategies of *pongawa-sawi* institutions in resources utilization. This includes alternative policies, incentives, and earnings that may be used later in designing the integration of this patronage institution in a coastal resources management strategy. An analysis was done of possible responses of

the *pongawa-sawi* institution in anticipating the changes of socio-economic relations, government roles, and the ecology of coastal resources. In this analysis, the strengths and weaknesses of both the *pongawa-sawi* relationship and operations and government management and policies on coastal resources can be identified in order to design an integrated model of coastal resources management in South Sulawesi.

3.7. Implications

This research is believed to have a wide range of implications for various aspects of coastal resources and community. This cannot be explained through a single disciplinary approach, but requires an interdisciplinary study. This study is perceived as a new paradigm of learning and understanding about the *pongawa-sawi* institution in utilizing the coastal resources. So far, the study of the *pongawa-sawi* institution has been conducted as a single disciplinary approach, for example, based upon social, economic, gender, and historical analyses. In fact, this patronage system, especially in relation to its effectiveness, efficiency, and impacts on utilizing coastal resources, can only be rationally explained using an interdisciplinary approach or a holistic approach.

It is believed that this patronage system has impacts upon social, economic, ecology, and governance (political) and legal perspectives in South Sulawesi. In order to be able to present the effectiveness, efficiency, and impact of this patronage system in utilizing resources, this study integrates all field of studies in its analysis of the *pongawa-sawi* relationship and its operations.

Chapter IV:

The Analysis of the *Ponggawa-Sawi* Systems

In this chapter, the results of field research on the *ponggawa-sawi* system in the three ethnic groups will be presented in two sections. The first section is a description of the gear and fishing methods used by the *ponggawas* based on field information. In the next section the patron-client relationship is presented in two sections. First, the *ponggawa-sawi* in the Buginese and Makassarese groups, and the second, the *ponggawa-sawi* in the Mandarese group. This separation is justified on the basis of the similarity of the Buginese and Makassarese findings.

4.1. Fishing Gear, Methods, and Boats

Various fishing gear and boats are currently used by *ponggawas* and independent fishers. These also include various sizes, dimensions, and tonnages of fishing boats. However, it is difficult to describe all the existing fishing gear and boats in these three ethnic groups. The fishing gear and fish aggregating device currently used by *ponggawas* will be described in the following sub-sections.

4.1.1. Rumpon and Danish Seine

In the use of Danish seine, *rumpon* is always placed at the fishing ground before the Danish seine is operated. Thus it is necessary to describe the *rumpon* as essential component for Danish seine fishing.

4.1.1.1. Rumpon

Rumpon is a fish-attracting device designed to attract pelagic schooling species to lay their eggs or to hide from predatory fish species, and is usually set to gather schooling pelagic fish before the Danish seine is operated. The main material for *rumpon* is from

the thickest and finest bamboo locally called *bambu betung* (big bamboo), which are stacked in three layers. Then, pieces of coconut stalk and leaves are attached to every layer, and rattan is used to tie them together. Beneath the *rumpon*, a series of coconut leaves (locally known as *rambe*) are attached, and in the center, there is a big plastic rope twisted with rattan connected to an anchor for fixing the *rumpon* position. In addition to gathering schooling fish and protecting them from predators, the coconut leaves are a medium for the growth of bacteria and microalgae as a source of food for the fish. In order to be able to identify the *rumpon*, a small house is built in the middle of the *rumpon* which is also used as resting places for fishers. The life span of the bamboo is one year, the anchor rope is seven to nine years, while the replacement of coconut leaves is needed every month. During strong waves and wind they are replaced more frequently. In South Sulawesi, *rumpon* is grouped into two types (Subani, 1972; Ayodhya, 1981; Pobela, 1993):

- Shallow *rumpon*, in a depth of 50 - 100m;
- Mandar *rumpon*: this gear is placed at a depth of more than 100m, and is found in the north part of the Makassar Strait, Mandar Bay, and Bone Bay, in the form of a compound raft.

4.1.1.2. Danish Seine

Danish seine (locally known as *payang*) is a fishing gear used to encircle pelagic fish. *Payang* consists of three main sections: the wings, the body, and a bag or dead end. In the wings section (each wing is about 40 - 45 meters long), six floats are attached to the upper section, while at the lower section sinkers are attached for stabilizing the net. The length of the net is about 55 - 65m, while the bag is about 15 – 20m. The type of

fishing boat used for this gear is designed for various sea conditions, for example, in strong currents and waves, the fishing boat has high stability, especially during the hauling process, and at high speed for encircling the schooling fish. The boat is equipped with 10.5 HP outboard engine. Danish seine is often used with *rumpon* to gather schooling fish.

4.1.1.3. Fishing Methods

The *pongawa* and his *sawis* leave the fishing port around 5 - 6 am and it takes about three hours to reach the fishing ground. Fishing operations occur between 7:30 and 10:30 am with the tasks consisting of the following: preparation, monitoring the schooling fish, net setting, and net hauling. The first operation is arranging the nets, then the *sawis* inspect the nets, and any torn nets are mended. Then, the *sawis* lay out the main rope that later will be used in the fishing operation. Before setting the nets, the fishing master (the *pongawa*) observes the condition of the waters around the *rumpon*, for example, current, wind direction, and waves. After the schooling fish are identified, the *pongawa* then observes the swimming direction of the fish. After all water conditions and swimming behaviour of fish are known and considered suitable for fishing, the nets are set, and the boat circles the *rumpon*. Then, the *sawis* work together to pull the nets to the boat. The average time used for net setting and hauling is about 15 - 20 minutes depending on the water condition.

In Majene regency, the *pongawa* and the independent fishers identify two fishing seasons: north and west monsoon seasons. The north monsoon season is August - February and is the peak fishing season as indicated by the peak of sardinella

(*Decapterus* sp), skipjack, and little tuna especially at the end of August until September (Pobela, 1993).

4.1.2. Purse Seine

Purse seine is rectangular shape with the main bag at the middle and wings at the sides of the net. The length of this gear is about 400m and width 40m with the material of multifilament nylon at the wing and bag (bunt or belly) of the nets, and the mesh size of 2 cm at the bag and 2.54 cm at the wing. More than 1500 plastic floats (10.5 cm diameter) are attached along the upper part of the net (buoyancy line), and along the bottom there are 240 lead sinkers of one kg each. In order to close the net and to pull it to the boat, the main rope along the bottom part of the net is pulled out, and the net becomes a bag.

4.1.2.1. Fishing Method

Purse seine is operated in the morning and at noon which according to purseiners, is the time of the appearance of schooling fish. Two boats are used in this type of fishing gear, one boat for fishing, and another for transporting the catch. The second boat is needed to quickly transport the catch to the market, while the fishing is continued on other fishing grounds. During the fishing trip, *sawis* check the net and if the net is torn, they will mend it before fishing. When the boat arrives at the fishing ground, one *sawi* climbs the mast of the boat to locate the schooling fish. The schooling fish are located using local knowledge, for example, the existence of small bubbles at the water surface, the birds flying around, and different water color.

As soon as the schooling fish are located, the fishing master increases the speed of the boat. While the speed of the boat is increased and the boat follows the swimming direction of the fish, some *sawis* throw small stones in the front of the schooling fish, so

they will turn towards the boat. The speed of the boat continues to increase (around seven to nine knots) running along side the schooling fish. If the fishing master considers that there are enough fish to be caught, he will move the fishing boat slightly away from the fish, while at the same time the fishing master orders the *sawis* to start throwing the float indicator or main float. However, if the fish are too numerous to be caught, the fishing boat will cross the schooling fish in order to break the school into a number of smaller schools.

According to the fishing master, if they catch all the schooling fish, the net may be torn and the fish will escape. While the speed of the boat increases, the boat starts to encircle the schooling fish and the *sawis* continue to set the net. The speed of the boat is gradually slowed as it reaches the main float, and then the boat will stop. As soon as the boat is stopped, the winch engine is started to pull the main rope, while at the same time, the *sawis* pull the nets and the sinkers to the boat. The time needed to encircle the net is approximately three minutes. During the collection of the catch, some *sawis* observe the net, and if the net is torn or damaged, they will repair it for the next fishing operation.

4.1.3. Pole and Line (Huhate Fishery)

Pole and line in Indonesia called *huhate* fishery, requires the largest investment compared to other fishing gear used by local fishing communities in South Sulawesi. In this type of fishing, two boats are used, one boat for fishing, and another for transporting the catch. Before fishing, the fishing master has to buy the live-bait from the local independent fisher (normally, the live-bait consists of silver and red anchovies). According to fishing masters, the best live-bait have high speed swimming, silver color, suitable sizes, and can live when on board a boat.

During the fishing trip, the *sawis* prepare the hook and line and vertical long line, while the fishing position is fixed. Meanwhile, the fishing master monitors the schooling fish, and after the schooling fish are located, the boat is driven to the fish. And at the same time, the *sawis* (as live-bait throwers, called *bouy-bouy*) throw the live-bait to attract the fish to the boat. When the fishing master considers that the distance between the boat and the fish is suitable to engage fishing, the boat engine will be shut down. Then, the anglers start fishing and work together with other *sawis* who release the fish from the hooks. The release of the fish from the hook should be fast as the schooling of fish will not stay beside the boat very long, when the fish start to decrease, other *sawis* will throw out live-bait again.

4.1.4. Mobile Lift Net

This fishing gear consists of two main parts: the fishing boat (28m, width 2m, and the height 2.5m) and a bamboo construction (locally known as the *bagang* house) to which the net is attached. The *bagang* house is built on the fishing boat. The lift net platform is constructed from wood and bamboo and is 30m long, 30m wide, and 2m high. In order to strengthen the *bagang*, steel wire is used. These wires are attached collectively to the main mast of the boat. The net material is the smallest mesh type (known locally as *waring*) and is a rectangular shape with the length 30m, width 30m, selvage 1.2m, and mesh size 0.5cm.

In order to lower and to lift the net, a big rope 60m long (diameter 2cm) is used as a hauler on the edge of net. There are two additional engines for hauling attached at the left and right sides. In the middle of *bagang*, there is a house used as rest place, generator house, fuel storage, kitchen, and for other equipment storage.

Each lift net has 27 mercury lamps with 250 watt/lamp. In addition, there are about 40 other lamps on board to attract fish. The main power is a generator with 12,500 watts power. There are two anchors attached, 100 kg each tied with rope 4cm diameter and 600m long. These anchors can be pulled with an engine at the front of the boat.

4.1.4.1. Fishing Conditions

Generally, this fishing gear is operated 22 days in a month, but during the west monsoon season, the operation is only around eight to 13 days. During the west monsoon season, most of the lift nets are operated around the Nine Islands of the Sinjai regency, while during the east monsoon season, they will operate farther away off the coast of Bulukumba and Bone regencies. Normally, it will require seven to ten days to reach the fishing ground in Bulukumba and Bone regencies. During the west monsoon strong waves and currents as well as heavy rain cause the schooling fish to move or drift to the shore. Therefore, there is a considerable amount of fish that can be harvested, however, the majority of fishers prefer not to fish at this time because strong waves and currents cause instability of the mobile lift net.

4.1.4.2. Fishing Method

The fishing operation starts at 6 pm and the net is set to a depth of 60 m by rolling down both hauler ropes. Then all the lamps are switched on in order to attract the maximum amount of schooling fish to gather around the lights. While the lamps are on, the fishing master carefully observes the behaviour of schooling fish. Hauling is conducted after the fishing master considers that there is enough schooling fish at the main lamps. Before hauling the net, the lamps are switched off from the outermost lamps to the main lamps, so that, at the end, only one lamp is on. At this stage, the roller engine

is turning on and the net is lifted slowly by eight *sawis*. As soon as the net appears on the water surface, all the lamps are turned on, while the fish in the nets are directed to the dead-end, then the fish are taken by scoop net. Next, the catch is sorted and graded according to fish species by two to three *sawis*, and the catch is placed in the rattan boxes and the small boat takes the catch to the shore. Normally, 30 minutes are needed during the hauling. In a night, this gear can be operated two to four times. The target fish species of this fishing gear are pelagic schooling fish species (normally anchovies), but other fish species are also caught due to the appearance of small schooling fish that attract bigger fish as a feeding ground.

4.2. Emerging Changes of the Buginese and Makassarese Ponggawa-Sawi

The *ponggawa-sawi* in Buginese and Makassarese in small villages like Tongke-Tongke and Aeng Batu-Batu continue to face challenges, including the increased number of local resource users, the dynamic changes of fishery resources, and the social and economic conditions of the villages. These local changes result from such external and internal forces as: increase in expenditure for fishing equipment, market changes, increased number of fishers, fish stocks interactions, inter-ethnic relations, the shortage of local *sawis*, and increases in fishing operation and maintenance costs. In the Buginese and Makassarese cases, there are several *ponggawa-sawi* groups in each village who are not necessarily connected by family or kinship, and each *ponggawa-sawi* group creates its own way of conducting business. This situation eventually creates competition among *ponggawas* to provide better services to the *sawis*. In most cases, the fishing master is in high demand. There is no direct working relationship between the various *ponggawas* in the villages, except in relation to transferring the *sawis* and associated compensation

mechanisms if the *sawis* have debt from their previous *pongawa*.

In Tongke-Tongke village, there are three *pongawas* who have sufficient capital and *sawis* for their fishery business. This includes the *pongawas* that currently use large boats, employ seven to 12 *sawis*, and use pole and line, lift-nets, and beach seine. In Tongke-Tongke village, the *pongawa* pole and line employs 12 *sawis* with different fishing skill and position in the fishing operation, the *pongawa* lift-nets employs eight *sawis*, and the *pongawa* beach seine employs 11 *sawis*. Meanwhile, in Aeng Batu-Batu village, the *pongawas* use purse seine and trammel-nets, where the *pongawa* purse seine employs 12 *sawis*, and the *pongawa* trammel-nets employs seven *sawis*. According to the *pongawas*, the number of *sawi* employed depends on the labour and specific skills needed in operating the fishing gear. Number of *pongawas* and *sawis* in research sites is in Table 2.

Table 2. Number of *Pongawas* and *Sawis* in Research Sites.

Number of <i>pongawas/sawis</i>	Tongke-Tongke	Aeng Batu-Batu	Banggae	Total
<i>Pongawas</i>	3	2	2	7
<i>Sawis</i>	35	19	22	76

4.2.1. The *Pongawa* Pole and Line

The *pongawa* pole and line in Tongke-Tongke previously used lift-nets during the 1980s until mid 1997 in the waters of the neighbouring regency of Bulukumba. However, this produced conflict with Bulukumba independent fishers. According to Bulukumba fishers, lift-nets from Tongke-Tongke village used excessive illumination (normally around 5000 watts) and rapidly reduced the fish stocks, especially juvenile

pelagic fish species. Furthermore, this gear also captures almost all sizes of the fish due to the small mesh size (0.5cm). The excessive use of illumination could directly kill most juvenile pelagic fish species and the fish stocks would be affected (Laevastu and Favorite, 1988).

The *pongawa* eventually changed his fishing gear to pole and line. According to the *pongawa*, there are several reasons why he changed his fishing gear to pole and line, even though this gear was not known in his village, but comes from a Mandarese source. First, the catch from lift-nets did not cover the operational and maintenance costs for both fishing gear and boat. Second, the catch was dominated by small anchovies which frequently did not have a good market price, even though bigger fish such as sardinella were also caught. Third, there was fear of continuous conflict between the *pongawa* lift nets and neighbouring independent fishers in Bulukumba regency about the use of excessive light. This change of gear forced the *pongawa* to increase his investment and required using capital from his other occupation (as a local fish trader) and from his other fishing income (gill nets). Besides the changes of fishing gear, the capacity or the tonnage of his fishing boat for a distant fishing operation was also upgraded. The decision of the *pongawa* to change his fishing gear also changed the target fish species and the fishing ground. The target fish species have changed from small, schooling pelagic fish species (anchovies) to bigger, schooling pelagic fish species (skipjack and little tuna), and this change forced the *pongawa* to fish further from the shore and travel to the waters of other several regencies (Bone, Bulukumba, and Selayar).

One thing that the *pongawa* pole and line did not explain was that his decision was probably also influenced by market preference for skipjack and little tuna¹³ and the high price, as well as the availability of post harvest facilities in Tongke-Tongke. The ice factory is owned by the *pongawa* pole and line. According to this *pongawa*, he had to apply for a loan from the local *BRI* (*Bank Rakyat Indonesia* or Indonesian Rural Bank) in Sinjai in order to develop his fishery business, and he obtained 10 million Rupiah with an interest rate of 12.5 percent per month, he used the loan not only for upgrading his fishing gear, but also to finance his small ice factory. According to the *pongawa*, he has repaid more than 50 percent of his debt from the local bank, and is optimistic that within the next five years he will be able to pay all his debt. Meanwhile, a local fishery officer pointed out that the *pongawa* pole and line obtained the loan from the local bank because the local government recommended him as an eligible person. They did this because the *pongawa*'s presence would allow people in this community to obtain cheap block ice.

The change of fishing gear from lift-nets to pole and line then affected the composition of *sawi*, as the *sawis* from other ethnic groups and other clan members had to be employed. During the use of lift-nets, the *pongawa* obtained *sawi* from his clan because this gear was familiar in this village and required minimum skill. The *pongawa* pole and line in Tongke-Tongke employs his 12 *sawis* as follows: eight *sawis* as pole and liners, two *sawis* as live bait arrangers, and two *sawis* as catch releasers. Among *sawis*,

¹³ At the local wholesaler called the *Lapawawoi* Company the highest demand is for skipjack and little tuna. Moreover, this wholesaler is also a *pongawa* has pole and line. The ability of *KUD Mina* (Village Cooperative that specialize in fishery products) to buy skipjack and little tuna caught is less compared to this wholesaler.

there are four Mandarese *sawis*, three Makassarese *sawis*, and the rest are Buginese including the fishing master.

In conducting the fishing operation, the *pongawa* is not directly involved, but his fishing master is responsible for operations, including the search for live bait before fishing. The fishing master's function is vital in mediating between the *pongawa* and the independent fishers in the arrangement of live bait. One of the reasons why the *pongawa* pole and line does not directly contact the independent fishers regarding the arrangement of live bait is that he does not have enough knowledge about the quality, the size, and the type of fish species that are suitable for live bait. Even though the *pongawa* has five years experienced in the patronage system, it does not necessarily mean that he knows all the details of his fishing operation. Thus, the fishing master is key to the success of the fishing operation.

In preparation for fishing, the *pongawa* authorizes his fishing master to buy live bait from independent fishers who have working relation with them. Normally, this pole and line boat goes fishing three or four times per day in fishing grounds in Bone, Bulukumba or Selayar regencies. The expenses for live bait is about 44 \$ CAD¹⁴. This means the fishing master must have a good relationship with the independent fishers in order to obtain good quality live bait. Frequently, in order to reserve the live bait, the fishing master gives money in advance with full payment after the catch is sold. The strategy of giving the independent fishers an advance is aimed at gaining the trust of the independent fishers in Tongke-Tongke village, and this strategy indirectly produces a mutual dependency among them. Some local community members commented that this working relationship has had a positive impact on independent fishers' income and it can

contribute to their livelihood security.

The fishing master is the brother-in-law of *pongawa* pole and line creating a strong family tie. There is a strong mutual dependency between the *pongawa* and the fishing master because all daily operational costs and the arrangement of *sawis*' performance in fishing rely on the fishing master. Meanwhile, the fishing master relies heavily on the *pongawa* because this is his main occupation and means of livelihood security.

Besides having the pole and line operation, the *pongawa* also has other sources of income that are related to fishing, including local fish trading and the small ice factory. This additional income is essential during the low fishing seasons and is sometimes useful as financial assistance for his *sawis*. Meanwhile, the relationship between the fishing master and independent fishers in providing live bait is a form of working relationship, where independent fishers frequently need financial assistance for fishing, while the fishing master needs live bait for pole and line fishing. It can be said that, the *pongawa* is a central financial provider for investment, operational, and maintenance costs.

In practice, the *pongawa* serves his both non-clan *sawi* and clan *sawi* in different ways in obtaining loans, but other services, such as in fishing operations and the sharing system depend on the *sawis*' function. For *sawis* from his clan, the *pongawa* does not actually treat them simply as labourers, but the *sawis* are considered family members that should be protected in their livelihood. This means that clan *sawis* would be allowed to return loans gradually (through instalments). Flexibility on debt return results in a moral obligation for *sawis* to assist *pongawa*' family in social events such as weddings. The

¹⁴ Calculation for currency rate used as of 1999 where 1 \$ CAD = Rp. 7,400s.

flexibility of returning the loan would occur if his *sawis* have problems and they temporarily cannot work during the fishing operation, for example, with death or sickness in the family. Sometimes the *pongawa* even releases the debt of his *sawis* in such unexpected situations for both his clan and other ethnic group *sawis*. According to this *pongawa*, there is a moral obligation for him to maintain his clan's livelihood security, as long as this policy does not jeopardize his patronage system.

Non-clan *sawis* serve as labourers only and they should return their loan immediately. If they fail to do so their loan is deducted from their share or income. Nevertheless, *sawis* with specific fishing skill, whether the *pongawa*'s clan members or non-clan *sawis*, can obtain loans more easily and with more flexibility than unskilled *sawis* due to their vital functions in fishing operation. If the non-clan member obtains a loan from the *pongawa* because of low income received during the low fishing seasons, the *sawi* then must return the loan through deductions of income received.

The non-clan member may have on average an income of Rp. 300,000 monthly, and for example a debt of Rp. 900,000 could be returned monthly with Rp. 75,000 plus five percent interest. The Rp. 300,000 is the basic income received by the *sawis* per month and with added incentives because of excessive catch the *sawis* could return the debt monthly as long as their income is carefully managed.

However, at the end of *Ramadhan*¹⁵ or festival Ied, all *sawis* receive equal incentive without considering their ethnic group or role in fishing. This indicates that the *pongawa* not only concentrates on increasing his revenue, but also on social services. Giving to someone during *Ramadhan* or festival Ied is an act of religious devotion.

¹⁵ *Ramadhan* is a month where Moslem conduct fasting, and at the end of fasting month there is a celebration that called as Ied.

Nevertheless, it is often a difficult choice for the *pongawa* who has a moral obligation to protect and maintain his image as a prominent leader in his clan, while at the same time the *pongawa* has to serve his skilled *sawi* for the continuation of his fishing business.

However, the different ways the *pongawa* serves his *sawis* results in an imbalance of satisfaction and protection between the skilled *sawis* and unskilled *sawis*. Concern was expressed by the *sawis* because according to them, a fishing operation is supposed to be a working group where they are equal with respect to *pongawa* assistance. This imbalance may motivate the unskilled *sawis* to seek another *pongawa* that may provide better service for livelihood security. This may in turn weaken the family relationship between the *pongawa* and clan members without the necessary fishing skills and this situation might result in changes in the original objective of the *pongawa-sawi* institution.

Changes to the Buginese patronage system are indicated by the willingness of the *pongawa* pole and line to accept *sawi* from other ethnic groups. This may also change the perception that the *pongawa* is always prioritizing and protecting his clan members under any circumstances. According to this *pongawa*, allowing other ethnic groups to work as *sawis* is intended to use the incoming *sawis* as a means for transferring fishing skills. This suggests that the change may be temporary until the *pongawa* is confident that his clan members have obtained the needed skills. The success of transferring the fishing skill to unskilled *sawis* could be assessed by the increased number of clan members who become anglers. This mode of transferring fishing skill from non-clan *sawi* to clan *sawi* members has not produced a significant increase in the size of the catch.

The *pongawa* claimed that this acceptance of Mandarese *sawi* has resulted in a significant increase in the catch and he is optimistic that his investment will soon return. The optimism of the *pongawa* is based on the amount and the value of fish landings, which during the peak fishing seasons average about 24 boxes (the price per box is about Rp. 50,000), with the total revenue Rp. 1.2 million. However, some *sawis*, both clan and non-clan members said that, after two or three years working with this fishing gear, there was only a slight increase in the catch, which contradicts the *pongawa's* statement about a major increase. If the catch is used as an indicator of the success of fishing operations, there must be further comparative analysis regarding the relationship between the price of the catch, investment, and operational and maintenance costs.

4.2.2. The Pongawa Lift Net

Historically, the lift-net gear (locally known as *bagang*) was introduced to South Sulawesi by Buginese and Makassarese fishers (Pobela, 1993), and almost all fishers are familiar with this type of fishing gear. The *pongawa* recruits all his *sawis* from his own and other clans because of familiarity with this fishing gear. Another reason is that *sawis* are familiar with the fishing grounds for this gear.

Mobile lift net require two fishing boats: one carrier boat for fishing, and another for carrying the catch to the shore or fish auction hall. In the Tongke-Tongke *pongawa* lift-nets, there are eight Buginese *sawis* and of these four *sawis* are from his clan, while the others are from Bone and Bulukumba regencies. The acceptance of other Buginese clan members in this patronage system is not an obstacle because of the similarities in ethnic identity and cultural behaviour. In this type of fishing gear, the *pongawa* owns all the fishing equipment, so the sharing system will be calculated as the *pongawa* receives

two-third portion, and the rest will be divided among *sawi*. The two-third portion for the *pongawa* covers his equipment share because he is solely responsible for maintenance and operational costs, while the *sawis* just work as labour during fishing operations.

The sharing system used is based on the price of fish landings, and as an example, the composition of one fish landings was 28 boxes anchovies (Rp. 980,000), 16 boxes decapterus (Rp. 800,000), 8 boxes flying fish (Rp. 210,000), eight boxes squids (Rp. 320,000), 12 sardines (Rp. 24,000), and 12 little tunas (Rp. 36,000). The total price of the catch was Rp. 2,370,000. In this case, the *pongawa* will get two portions shared (one portion for owning fishing gear and boat, and one portion for maintenance and operational costs) with totalled shared portions of Rp. 1,580,000. The rest of the Rp. 790,000 will be shared among eight *sawis*, and each *sawi* will get Rp. 98,750.-, and the *sawis* who have specially arranged the light illumination will get an additional Rp. 60,000 from the *pongawa*'s portion.

The most skill required in operating lift-nets is in managing the illumination, and two *sawis* are responsible for this. The illumination is used to guide the schooling fish to concentrate in the middle of the net. Four *sawis* are responsible for net hauling, while two other *sawis* are responsible for hauling the catch. Coordination among *sawis* is needed in order to synchronize the net hauling and lights aimed at minimizing the loss of catch.

All of the fishing strategy, investment, and maintenance costs are the responsibility of the *pongawa*, while the *sawis* just function as labourers. The *pongawa* also provides loans to his *sawis* with a flexible rate of return. The *pongawa* does not deduct payment from the *sawis*' share, but he allows the *sawis* to repay the loan in instalments. This means that the *sawis* cannot move to another *pongawa* until the whole

debt is returned which is a strategy used for maintaining *sawis*. In reality, all of the *sawis* that have debt to the *pongawa* are not able to return the debt in the time given, leading to a long-term contract.

Other aspects of *pongawa-sawi* relations of the *pongawa* lift net are similar to those of *pongawa* pole and line, except that in *pongawa* lift net all the *sawis* are Buginese. They have similar ties of social relations based upon kinship. With four years of experience using mobile lift net, the *pongawa* is still able to support his *sawis*, because the *pongawa* in his social life with his *sawi* is always positioning himself as the best source for obtaining loans. In addition, in social life, the *pongawa* places himself as a protector when his *sawis* have financial and social difficulties.

There are several reasons for the *pongawa* to accept *sawi* from other clans: first, the shortage of *sawi* from his clan, and; second, the recruitment of *sawis* from other Buginese clans, i.e., from Bulukumba and Bone regencies, is based on the assumption that with no clan relation, these *sawis* will work hard to obtain livelihood security, while clan members have at least clan relations to use in obtaining livelihood security. Some clan members felt that this type of fishing does not promise a good livelihood because the majority of the catch are red and silver anchovies that have lower prices compared to other species, even though the catch includes some other valuable fish, for example, sardinella, small tuna, squid, flying fish, and scad. This suggests that uncertainty in obtaining livelihood security from the *pongawa* might occur in this clan, and then that this is transformed into a decision to recruit other clan members into his patronage system. Even though the income for the *sawis* is quite low, additional social services from the *pongawa* provide a reason for *sawis* to continue to work with *pongawa*.

The acceptance of other *sawis* from the Bulukumba regency does not automatically guarantee that the *pongawa* can safely conduct fishing in Bulukumba regency's water. Actually, not all local fishers in Bulukumba regency oppose the lift-net operation, but this depends on the location of the fishing ground and the ability of *pongawa* to select fishing grounds. According to independent fishers in Bulukumba regency (especially in Tana Lemo village), they are willing to cooperate with the *pongawa* lift-nets from Tongke-Tongke village if that *pongawa* is willing to reduce the illumination and reduce fishing rates in order to conserve young fish stocks, especially the schooling pelagic species. In Bone regency, there is no restriction for lift-nets by local fishers.

Livelihood security generated from lift-net fishing may be less secure compared to other sources of income, for example in agriculture. However, both fishing and terrestrial work have risks and benefits. Some *sawis* who have been working with this *pongawa* for two to three years expressed that with the average monthly income of 200,000 - 250,000 Rupiah (equal to 37,5 \$ CAD), they feel secure for a month's living expenses in the village. Some local people said that even though the sharing system seems to be unfair, the continuation of livelihood and social protections becomes important. Sometimes they are given an incentive from their *pongawa*, especially when there were more sardinella, decapterus, and squid in the catch. In addition, they also pointed out that its better to have income from their *pongawa* (even though sometimes they have to ask for a loan from him), because of his policy to give incentives, especially during the low fishing season. This provides continuous livelihood security compared with working in terrestrial areas with uncertainty of livelihood security. In this situation,

there are different perceptions of livelihood security, one person assumed that livelihood security is measured by the amount of income received, while others perceived that livelihood security arises from a continuation and protection of income from the patron.

The young generation of clan members commented that its better to work in the city because their education promises better income than fishing. The perceptions of the young generation may be an expression of social change in the village which is no longer isolated from other regions, and has an increased level of education of the young clan members. In addition, the availability of work in agriculture and aquaculture, may provide a more promising livelihood security compared to fishing, even though these forms of employment offer no incentives and immediate financial loans provided by a patron (Sallatang, 1982; Sallatang, 1983; Sallatang, 1986).

4.2.3. The Ponggawa Beach Seine

In beach seine patronage, the *pongawa* normally fishes to the north of the village (close to Mattoanging village) where estuaries and some coral reefs and established brackish water aquaculture are found. In this type of fishing, the *pongawa* employs 11 *sawis*. This fishing gear is designed to utilize the nearshore resources using a fishing boat to carry the edge of the net and encircle the fishing ground. After the net has fully encircled the fishing ground, the net is pulled to the beach by *sawis*.

In this patronage system, the relationships between *pongawa* and his clan and non-clan members is similar to the *pongawa* pole and line and mobile lift-nets. In the beach seine patronage system, the only fishing skill needed is the ability of the *pongawa* to navigate the fishing boat for the encircling process. This skill is important because once the net is set, if the swimming behaviour of the fish changes, the fishing operation

could fail. In other words, the time for encircling the net and the ability to anticipate the swimming direction of targeted schooling fish are crucial. The role of the *sawis* in this type of fishing gear is to throw the net, pull it, and collect the catch. In this sense, the *pongawa* is directly involved as the fishing master with the assistance of four *sawis* for net throwing.

The *pongawa* beach seine divides his *sawis* into two groups: four *sawis* to assist the *pongawa* in setting the net while the *pongawa* encircles the fishing ground while the rest of the *sawis* wait on the beach to pull the net to the beach. In most cases, the *sawis* that have assisted the *pongawa* in setting the net are also involved in the net hauling, and later they receive an additional share. Thus, the sharing system gives two thirds of the catch to the *pongawa* and one third is divided among *sawis* plus an additional share is received by the *sawis* that have assisted the *pongawa* during the net setting.

Similar to mobile lift-nets, the *sawis* depend heavily on the *pongawa* for both income and loans. In social life, the *pongawa* frequently relies on his *sawis* (both clan and non-clan members), especially when the *pongawa* has a family party, for example, a family wedding. In this case, the wives or the families of the *sawis* take on a significant role in maintaining the continued relationship between *pongawa* and *sawi*. The *sawis*' wives or families may even ask for a loan through the *pongawa*'s wife, so the role of *sawis*' wives or families is actually significant even though their efforts are not visible.

4.2.4. The Pongawa Purse Seine

In Aeng Batu-Batu village, there are two *pongawas*: *pongawa* purse seine and *pongawa* trammel-nets (three layer nets). In *pongawa* purse seine, 12 *sawis* are

employed with different roles during the fishing operation. These include four *sawis* for setting the net, two *sawis* for throwing small stones in order to reverse the swimming direction of the schooling fish, one *sawi* for identifying the shoaling fish, two *sawis* for arranging the setting of the sinkers, and three *sawis* for releasing the catch from the net and mending the net if it is torn. After the fishing boat has completed the encircling process, the net hauling starts using a small roller engine for the main rope, while at the same time, all the *sawis* pull the body of the net until all the sinkers have been pulled to the fishing boat.

The purse seine was introduced to Takalar regency by some *pongawas* from Bulukumba regency in the 1980s. The *pongawa* purse seine employs some *sawis* from Bulukumba regency (this is also part Buginese). According to the *pongawa*, there are several reasons that motivated him to allow other clan members to work as *sawi* to his patronage system. First, the difficulty to recruit *sawi* from his clan due to the increased number of young clan members that prefer to work as labour on land. Second, the *pongawa* attempts to use skilled and experienced non-clan *sawis* because he needs to return investment quickly. However, his expectations are uncertain because the catch fluctuates and the fish price is unstable. According to the *pongawa*, 20 percent of his capital has returned recently and he expects that his fishing gear could continue to produce a better catch.

In the relationship between the *pongawa* and his fishing master, the *pongawa* relies on the fishing master's strategy and planning for a better catch, since the *pongawa* is not directly involved in the fishing operation, except for marketing the catch. The fishing master plays a central role both in coordinating the *sawi* during the fishing

operation and in selecting or anticipating the fishing ground. Even though the fishing master is the *pongawa*'s brother-in-law, there is no guarantee that the success of fishing or the report of the catch is always valid. It was reported that since the fishing master and the *sawis* felt the sharing system was unfair, they sold some of the catch at sea to another buyer. Other sources indicate similar illegal trading in Tana Lemo village, Bulukumba regency by purse seine crews when the *pongawa* is not directly involved in the fishing operation. The fishing master with agreement of the *sawis* selects some valuable fish (for example, skipjack and little tuna) and sells them to a wholesaler at sea. Previously, this was not known by the *pongawa* until one day the share appeared to be unfair, and one *sawi* reported the illegal transfer to the *pongawa*.

Even though this *pongawa* has alternative sources of income as a local fish trader, this other income is not enough to return the investment on his purse seine fishing, or even to finance all his *sawis*. The proximity of Aeng Batu-Batu village to Makassar city makes it easier for independent fishers to sell directly to the market and they do not need a wholesaler. According to the fishing master, not all the catch is sold illegally at sea, but it depends of the value of the fish species and the price. The fishing master said that he believes the value of the catch should be higher and it affects his share. However, this situation is temporary as he realises that his family's long-term livelihood is important, and the illegal sales at sea have stopped. Unfortunately, there was no direct discussion between the *pongawa* and the fishing master regarding this illegal selling of the catch. According to the *pongawa*, he is reluctant to ask directly about the reason for the illegal selling of the catch because he believes that discussing this problem might result in an unsolved problem and his fishing master might move to another *pongawa*.

Furthermore, the *ponggawa* might be jeopardizing his brother-in-law's household income which would be culturally shameful. Thus, a cultural barrier may sometimes become an obstacle in solving problems, and this may later become a burden for the patronage system.

Since the *ponggawa* relies heavily on this type of fishing gear as his main source of income, as well as the need to return his investment quickly, the *ponggawa* cannot fire his fishing master. This fishing master has experience and knowledge regarding the appearance and behaviour of pelagic schooling fish species. In fact, the *ponggawa* realized that the cost of obtaining a qualified fishing master is more than can be gained by openly discussing his sharing system, and the costs to overall social and family relations. There are lessons that can be drawn from this case. First, the *ponggawa* is no longer considered as an authoritative person; and second, the *ponggawa* does not always have sufficient capital to cover all his problems. Instead he depends on the performance of fishing and his alternative source of income. Currently, it is not easy to find a trusted fishing master for this type of fishing gear because this gear is in popular use in South Sulawesi.

Even though the problems between the *ponggawa* and the fishing master are not discussed, the *ponggawa* provides some loans for his *sawis*, especially during the low fishing season. In this patronage system, there is no different treatment of *sawis* in the arrangement for obtaining loans. The *ponggawa* sets a policy that all loans plus interest at four percent should be returned either in cash or in instalments. If the loan is returned in cash in a short time, the *sawi* then has easier access to another loan from the *ponggawa*. But if the loan is returned gradually, the *sawi* must provide reasons to satisfy the

pongawa. For example if immediate expenses are required for illness or death in the family, the *pongawa* frequently erases all his *sawis*' debt.

4.2.5. The Pongawa Trammel-Nets

The *pongawa* trammel-net recruits *sawis* from his clan and non-clan members around the village. The gear is operated in nearshore areas. In this *pongawa* trammel-net, the roles include one *sawi* as a fishing master to navigate the boat (the fishing master must identify the water current used by the schooling fish); three *sawis* for net arrangement, and three *sawis* for net setting. However, during the net hauling, all six *sawis* work together to pull the net to the boat under the guidance of the fishing master.

In this patronage system, the *pongawa* is not directly involved in the fishing operation, but relies on his fishing master. However, the marketing of the catch and the maintenance of fishing gear and boat are all done by the *pongawa*. The *pongawa* trammel nets also has a public transportation business that seems to provide a promising income. In terms of loan arrangements, the *pongawa* trammel-net uses flexibility in the return of loans. The *sawis* usually ask for a loan with a promise to return the loan within six months. However, if the *sawis* do not return the whole amount within six months, they are obliged to return the loan plus three percent interest.

The policy of this *pongawa* trammel-net is more flexible than other *pongawas* regarding interest. The *pongawa* trammel-net relies more on his public transportation business than his fishing business for income and consequently does not need to charge high interest rates on loans. In contrast, even though the *pongawa* purse seine has other sources of income, such as a local fish buyer, these produce less income than fishing. The

non-fishing sources of income gives a *ponggawa* more flexibility to respond to the needs of *sawis*, especially during the low fishing season.

4.3. Emerging Changes of the Mandarese Ponggawa-Sawi

Previously, the *ponggawas* and their *sawis* in Majene regency generated significant income from utilizing red anchovy (locally called *penja*) and flying fish in the 1970s until the mid 1980s using small Danish seine gear. During that period of time, the *ponggawa* used a hierarchical structure in his patronage system where the sharing and financial mechanisms were flexible for his clan members. The shares were fair and there was only a small amount of interest on debt payment imposed by the *ponggawa* due to the large catches and good prices. During this time, the *ponggawa* benefited from the fishing gear, as well as the satisfaction of sharing income with his *sawis* and he was not concerned about the sustainability of local fish stocks.

In the late 1980s, the Danish seine *ponggawas* increased the size of their gear using capital generated from their previous fishing business. However, not all fishing equipment required for this type of fishing could be upgraded with the financial resources of the *ponggawas*, for example, the creation of a bigger *rumpon*. In order to cover additional investments, the *ponggawas* asked their *sawis* and local investors to participate in the fishing business through different kinds of agreements. In one case, a local investor agreed to participate if his person (a *sawi*) was allowed to join the fishing operation to monitor the condition of the *rumpon*. Meanwhile, a carrier boat for transporting the catch is owned by some *sawis* collectively. In this case, the *ponggawa* owns the fishing boat and fishing gear, while the *rumpon* is owned by a local investor, and the share is set as

two portions for *pongawa*, a half portion for *rumpon* owner, a half portion for the *sawis* who have capital, and a half portion will be divided among the other *sawis*.

The modification of fishing gear and boat allowed expansion to fishing grounds farther from the shore, but this also required an increase in operational and maintenance costs, and an increase in the number of *sawis*. At the same time, the *pongawas* had to familiarize themselves with the new fishing ground. The change of fishing gear did not automatically increase the *pongawas*' catch because the fishing ground is quite far from the shore, and the migrating fish species (skipjack and little tuna) are not constantly available.

The willingness of the *pongawas* to offer cooperative investment in the fishing operation resulted in a change in the hierarchical *pongawa-sawi* relationship to a more horizontal relationship or cooperative fishing. *Sawi* participation in a *pongawa*'s patronage system was possible because some of the *sawis* had collected capital or they owned other fishing equipment needed in the fishing operation. In considering this change the *pongawas* had to decide whether to continue the structured *pongawa-sawi* relationship and maintain *sawis* from their clan with the consequence that the *pongawas* themselves had to provide all the financing or to open business up to other investors including the *sawis*. The involvement of *sawis*' capital would mean the replacement of some of the *pongawas*' clan members if they did not have capital to invest. In this cooperative mode, not all the investors are directly involved in the fishing operation, but some *sawis* represent investors, as in the case where the provision of *rumpon* included the involvement of a skilled *sawi* in the fishing operation. Not all the *sawis* have sufficient capital to become involved in this cooperative fishing, thus, in this patronage system,

there are two types of *sawis*: *sawis* without capital and *sawis* with capital. This then led to the modification of the sharing system.

In Banggae village, there are two *pongawas* currently using Danish seine. *Ponggawa* Danish seine A employs 10 *sawis*, and *pongawa* Danish seine B employs 12 *sawis*. In this section, both *pongawas* are analysed together because of similar patterns in their patronage system. In *pongawas* Danish seine, two *sawis* are responsible for setting the *rumpon* at the designated fishing ground¹⁶, while other *sawis* only work during the fishing operation or in checking the *rumpon*'s position. Normally, the *rumpon* is set for the first time at least two or three months before actual fishing. This is aimed at allowing the microalgae or some juvenile fish species to attach or to use the device as a hiding place from predatory fish species, for example, skipjack or little tuna. In deciding when to fish, normally *pongawas* use information received from their *sawis* about the feasibility of starting to fish around the *rumpon*. In the fishing operation, four *sawis* prepare the nets before setting the Danish seine, and four *sawis* set the net.

In spite of the changes to the Mandarese patronage system, the role of wives or family members has not changed. Their role is still to handle the share of the catch received. This is because the *pongawa* sets the sharing system by sharing the catch as such; it is not converted to cash. So the *sawis*' wives or family members sell their portion or process it, for example, as salted or dried fish. In this ethnic group, it is believed that women are better able to manage the fish catch either for household consumption or in the market. They know about the quality and price of the fish in the local market and they

¹⁶ In this case, the *pongawa* is directly involved in selecting the fishing ground together with *sawis* that have capital (the *sawis* have fishing boat used to pull the *rumpon* to the fishing ground; the capital is a form of collective capital among three *sawis*), while *sawis* that do not have capital are not involved in the decision-making processes.

also bargain with wholesalers. In reality, local gender ideologies suggests that after the *sawis* return from fishing, they do not have time for marketing, they have to rest for the next fishing trip. As the gender studies literature points out, male fishers tend to perform one income generating task whereas women's working days are typically longer and involve a greater variety of tasks (Gardiner-Barber, 1995).

There are two basic explanations with respect to the emerging changes in the patronage system. First, the *pongawas* have changed their patronage system in order to expand their fishing grounds and obtain a bigger catch of skipjack and little tuna, and to do so, the *pongawas* with limited financial capability had to encourage *sawis* or others to invest in a form of cooperative fishing. Second, the decrease of nearshore fish species forced the *pongawa* to fish farther from the shore, and this required an increase in investment, operational and maintenance costs. It is not clear whether these emerging changes in the Mandarese patronage and class system will be short or long-term. According to *pongawas*, it depends on the availability of fish stocks and investors. The first explanation may be true considering the preference for skipjack and little tuna when prices are higher. However, the second explanation is also reasonable, merely that changes are due to the decreases in stocks of red anchovies resulting from excessive fishing. In addition, the changes in the Mandarese patronage system may have been influenced by the entry of other clan members who commenced fishing for skipjack and little tuna.

There are three types of Mandarese *pongawa-sawi* relationships. First, the relationship between *pongawas* and *sawis* that have capital; second, the relationship between *pongawa* and their *sawis* who have no capital; and third, the relationship

between *pongawa* and local investors. In the relationship between the *pongawas* and *sawis* with capital, both *pongawas* and *sawis* have agreed upon the portion of *sawis*' investment or fishing equipment in the operation. In this relationship, the economic motives tend to dominate the relationship rather than family relations. For example, if the *sawis* have financed the carrier boat, then the *sawis* receive an additional share for their boat besides their catch share as *sawis*. In the relationship between *pongawas* and their *sawis* that do not have capital, the *pongawas* share the catch according to their role in the fishing operation. Finally, in the relationship between *pongawas* and the local investor the amount of capital becomes a measure of the catch share.

The biggest portion of the catch is received by the *pongawa*, followed by local investors, *sawis* with capital, and finally *sawis* with no capital. For example, in Danish seine A, the *pongawa* owns the fishing gear and boat (shared portion is 50 percent), the local investor owns the *rumpon* (shared portion is 20 percent), the *sawis* who own the carrier boat (shared portion is 10 percent), and the remainder (20 percent) is divided among *sawis* without capital. This means that the patronage institution has emerged from a mode of protection for members of the kin group to one based on economic motives. This also suggests that the *pongawas*' roles have changed from single investment provider to coordinating investments in fishing. Another important relationship between *pongawas* and *sawis* with no capital is the loan arrangements which are similar to those used by Buginese and Makassarese *pongawas*.

In some respects, the *pongawas*' strategy to offer cooperative investment in his patronage system sustains his income from fishing and continues to serve his *sawis*. However, the involvement of local investors for economic benefit only jeopardizes the

pongawas' patronage institution and the fish stocks. For example, if the *pongawas* for some reason can no longer provide capital for fishing, the local investors would have a larger capital investment and role in the patronage system. Then, sooner or later, the local investors could take over all the arrangements of the patronage system, and the *pongawa* may no longer control the patronage. In effect, they would be replaced by the local investors. Or, local investors would find another *pongawa*.

4.4. Some Reflections on the Emerging Changes

From the analyses of the patronage system in these three research sites, one can see some factors that underlie changes in the *pongawa-sawi* systems. The hierarchical structure of Buginese and Makassarese patronage system has not changed, but the structure of the Mandarese patronage system is shifting to a cooperative fishing model. It is unclear whether this change will be short or long-term. This depends on the availability of fish stocks, market preferences, the availability of better sources of livelihood, and the capability of local fishery staff to promote other fish species that also have high economic value.

In the relationship between *pongawa* and *sawis*, there are two changes emerging internally: the acceptance of Mandarese *sawis* into the Buginese patronage system (as in the case of *pongawa* pole and line), the acceptance of *sawis* from other Buginese clans into Buginese *pongawa-sawi* and acceptance of Buginese *sawis* in Makassarese *pongawa-sawi*. There are a number of reasons for this acceptance. First, the reluctance of young clan members to be *sawis* because of their perceptions about the limitations of livelihood generated from the fishery (as in the case of *pongawa* lift-nets). Second, the need to optimize the performance of fishing gear for which specific fishing skills are

required (as in the case of pole and line, purse seine, and lift nets). Thus, skilled *sawis* could ultimately replace clan members who did not have the skill needed.

There is a clear indication that the *sawis* depend on the *pongawa*, especially in relation to loans. However, in some aspects, the *pongawas* also depend on the *sawis*, especially fishing masters for fishing success, particularly for the *pongawas* who are not directly involved in fishing. This suggests that the structural dependency between the *pongawa* and the *sawis* has moved more toward mutual dependency, and even this is broadened to independent fishers (in the case of pole and line fishing) who are technically not part of the patronage system. Overall, these seem to be changes from a patron-client system characterized by ethnic identity and social relationships to one more characterized by a business relationship through establishing cooperation with other people without considering ethnic identity.

In this analysis of the patronage system, there are different functions given by the patronage system to wives or family members. For Buginese and Makassarese, the significant roles of the wives or kin are unseen, and this occurs because working relations between the *pongawa* and the *sawis* result in a share given in cash, while the share of the catch received by Mandarese *sawis* is fish. These different share methods also reflect differences in how the share is perceived. If the share is given in the form of cash the *sawis* control the income. Thus, the wives said that they remain dependent on their husbands for any household expenditures. Meanwhile, if the *sawis* receive the share in the form of fish, they give the fish to their wives who then have various options (to market, process, or consume). The roles of wives or kin also seem to be important, in relation to loan arrangements. Frequently the wives or kin of the *sawis* approach the

pongawa's wife in obtaining loans, which is effective because of their social relations. In addition, during the low fishing season, the roles of wives or family members are important and they frequently engage in fishing using simple fishing gear such as traps around the mangrove forests or collecting clams at the beach. In this sense women in this group are actually fishers despite gender claims to the contrary.

4.5. Pongawa-Sawi and Fishery Resources in the Research Sites

The utilization of fishery resources by *pongawas* and other local resource users with various fishing gear and fish species landed in the three research sites suggests that the coastal environments around the Makassar Strait, the Flores Sea, and the Bay of Bone are still able to support the livelihood of the fishing households in coastal communities. These include, the fishery resources in various type of coastal ecosystems, for example, seagrass beds, coral reefs, estuaries, lagoons, open water, and mangrove forests ecosystems (Nurkin, 1994; Tomascik *et al.*, 1997). All these coastal ecosystems have significant impact on fishing communities as a whole because some have limited capabilities to exploit distant coastal waters. Even though the majority of the *pongawas* now exploit fishery resources at a greater distance, the nearshore coastal resources are still under fishing pressure from the majority of resource users (independent fishers and local communities). It is difficult to determine whether local fishery stocks are over or underexploited because of the absence of comparative fishery data either in regional and local government levels, and their ability to continue to support local communities is uncertain. During the low fishing seasons, the demand for fish by *pongawas* tend to increase, and this demand also contributes to increased fishing pressures, especially for the fish species of high economic value (crabs, shrimps, lobsters, anchovies and other

shellfish species). This means that the *pongawas* are indirectly contributing to the increase in fishing pressure for certain species. This condition also results from the weakness of local government in imposing rules for resource management.

In the three research sites, it seems that some of the *pongawas* are exploiting areas outside of the village waters, except for the *pongawa* beach seine and mobile lift-nets. However, this does not necessarily mean the *pongawas* are not concerned with sustainability of nearshore fish stocks. The sustainability of anchovies, for example, would have an affect to the *pongawa* pole and line in Tongke-Tongke village. However, the sustainability of this live-bait depends on the *pongawa*'s demand, and this demand would eventually affect the rate of fishing by independent fishers. The involvement of *pongawas* in environmental or habitat protection in the three research sites in Tongke-Tongke and Aeng Batu-Batu villages has indicated that the *pongawas* are also concerned about the nearshore resources and the livelihood security of their families and the local communities. This is rational since the *pongawas*, especially during the low fishing seasons, cannot just rely on their distance fishing, but they also market local fishers' catch. In addition, the local fishers need continuous income during the low fishing seasons. This situation then creates interdependency between the *pongawa*, the *sawis* and others in the local fishing community.

4.6. Socio-Economic Roles of Pongawas

A *pongawa* was historically a nobleman or a charismatic person who clan members believed would secure their livelihood. According to some *sawis* interviewed, they prefer to work for *pongawas* because they receive additional social services besides income from fishing. Furthermore, even though the income received may not be

sufficient to cover their household necessities, the social services received maintain the willingness of *sawis* to continue to serve the *pongawa*.

The difficulty of local fishers in obtaining loans from the local government bank and the complex administration of fish auction halls makes the *pongawas*'s social roles stronger. These roles reflect the entitlement of the *pongawa* as a traditional leader and the person that is capable of providing income and loans, market the fish caught, and motivate local resource users in local habitat conservation in the community. These roles form the "power" of *pongawas* in the community. In this sense, "power" is in the form of social and economic relations. Meanwhile, the social status of *sawi* and some independent fishers could be seen as similar in terms of their dependency upon *pongawa*. Both of them can be considered as user groups that have lower social status because of their lower income.

In the three research sites representing ethnic members of Buginese, Makassarese, and Mandarese, even though the *pongawas* are small in numbers compared to independent fishers, their average catch from a sample of 10 trips was around 7377 kilograms while independent fishers landed around 279 kilograms. Furthermore, the unit value of the catches of the *pongawas* was higher than independent fishers because the majority of *pongawas* caught skipjack and little tuna, while independent fishers' caught mostly sardine, herring, and scad which are of lower price. In addition, many of independent fishers' catch is sold to the *pongawas* because these independent fishers always received direct payment from *pongawas* compared to fish auction hall where various administrative costs reduce independent fishers' income. The dominance of *pongawas* in fishery activities can be seen in the continuation of fishing activities and

marketing during the high and low fishing seasons when independent fishers frequently reduce their fishing trips or work seasonally in upland areas as temporary labours. This indicates that there is still a significant economic role for the ponggawas in these research sites.

The social status of both sawis and independent fishers cannot be separated from their economic status. The lower income of sawis and independent fishers from fishing reflects a lower social status. In everyday life, the social status of sawis and independent fishers is similar, but in terms of livelihood, the sawis are better off than the independent fishers. Thus, the ponggawa is an informal leader or respected person in local fishing community, the benefits also affect the livelihood of both sawis and independent fishers. Even though historical roles of ponggawas in the three research sites may be changing as a result of changes in the communities, there seems to be a continuation of the social status of the ponggawa as reflected in the respect shown by sawis and independent fishers.

There is an indication of the willingness of local government to recognize the important roles of *ponggawa* in both resource and habitat conservation and in enhancing fishery activities in the village. Furthermore, there is a chance for strengthening local institutions and local resource utilization and management through the implementation of the New Local Government Administration Act No. 22/1999. All of this suggests that the presence of the *ponggawa* and the interdependency between *ponggawa* and local resource users can be used as starting point to initiate cooperative fishery management with local government.

The analysis of the patronage relationship in these three research sites reveals a number of opportunities and challenges to be integrated into co-management in South Sulawesi. However, this analysis alone is not sufficient to construct a co-management model. It is also necessary to review the government approach to coastal fishery management and the traditional fishing rights of local communities. Combining these analysis will lead to an understanding of the strengths and weaknesses of user groups involved in local resource utilization and lead to the development of co-management model for South Sulawesi.

Chapter V:

Government Approaches to Coastal Fishery Resources Management and Traditional Fishing Rights

5.1. Government Approaches to Coastal Fishery Resources Management

Fishery resources, particularly in the coastal areas, are a major source of fish and are within easy access for the coastal communities in Indonesia. Thus, many coastal communities are dependent on this rich ecosystem. Coastal fishery resources in Indonesia are multi species and inhabit various coastal ecosystems. A growing number of fishers seek benefits from these resources, either for economic benefit for daily livelihood, and have created a complex array in Indonesian coastal communities.

In practice, the coastal areas are the most accessible and the most vulnerable fishing grounds to be exploited because of the low investment needed and the variety of valuable fish species found. As a result, resource overexploitation, coastal environment destruction, and conflict among users occur particularly when the government is unable to cope with coastal fisheries management. Any attempts to review or to propose fishery resources management in Indonesia, particularly in South Sulawesi, must first address the nature of the fishery resources, type of fishing gear, characteristics of the coastal habitat, ethnicity and social interaction of fishers, the informal institutions, and government policies on fishery management.

A centralized national government system of fisheries management in Indonesia is still in place where maintaining a fair distribution of the wealth to all Indonesian people, generating national and regional revenue, and achieving social stability of coastal communities are still the main objectives. This is found in the National Guideline of Act 33, article 1 (Kusuma-Atmadja, 1991; Sloan and Sugandhy, 1994; Dahuri *et al.*, 1996;

Dahuri and Dutton, 2001). In addition, the government regulates the resources in order to maintain socio-economic and biological functions of coastal areas, to minimise the complex problems in coastal areas (pollution, resource depletion and resource users' conflicts), and to generate and enhance sustainable livelihood of coastal communities.

The need to conserve fisheries resources in Indonesia is clearly understood by the government, as can be seen through fishery regulations that have been established. The majority of Indonesian fishery regulations and the management framework are derived from the Dutch colonial era, for example, the Ordinances of 1916, and the Coastal Fisheries Law of 1927 and 1939 (Yasamina, 1976). These ordinances were conceived to accommodate the rights of traditional fishers to exploit the resources, and to prohibit the use of poisons and explosives in fishing (Bailey *et al.*, 1987). Compared to the Fisheries Law created by the government of Indonesia during the 1970s to 1990s, the Ordinances of 1916, and the Fisheries Law of 1927 and 1939 still provide better protection for small-scale fishers¹⁷. Article 44 of the Coastal Fisheries Law of 1927 clearly acknowledged the fishing rights of the local community according to their tradition and custom (Saad, 2000). However, it is not clear whether these were ever effective in recognizing traditional fishers and their system in utilizing the fishery resources because of the difficulty in obtaining case studies regarding the implementation of Fishery Ordinance 1916 and Coastal Fisheries Law of 1927 and 1939. It is believed that since the independence of Indonesia in 1945, the government reviewed regulations left by the colonial nation with the aim to hold all potential assets centrally for development. Thus, at that time, all resource utilization and management came under government authority

¹⁷ Small-scale fishers are also referred as traditional fishers.

for the benefits of all Indonesian people, and this was the beginning of the centralized system of fisheries management.

The substantial changes in fisheries management continued, and under the New Order regime (1965 – 1997) all aspects of economic livelihood become strongly centralized, including the management frameworks. For example, the government modified the content of article 3 of the Ordinance 1916 from decentralization to deconcentration of fishery resources management (Saad, 2000). As a consequence, the plurality of traditional rights of the coastal community was ignored, and fishery resources and habitat destruction were inevitable. The configuration of centralistic fishery law also ignored traditional law or *Adat*¹⁸ Law. The adoption of a centralized system of fishery development and management cannot be separated from the interpretation of article 1 of Act 33 of the National Guideline. Through this National Guideline, the government strongly believed that the centralized system could fairly distribute the wealth of the fishery to Indonesian people, as well as for the nation. This can be seen throughout the fishery regulations produced by the government during the 1970s where all the regulations were characterized by a centralized system and continuing ignorance of informal systems and *Adat* law. The mission of the government in fairly distributing the wealth of fishery resources as mentioned in the Act 33 article 1 has failed as the majority of small-scale fishers are still in persistent poverty, but the wealth has only benefited a small number of user groups.

¹⁸ *Adat* law is the traditional law created by rural communities in Indonesia according to their specific needs and conditions. This law is used to facilitate all the compliance system in utilizing the common use of the resources (Sumardjono, 1999), and this law is then used as a basis of local communities in using the *ulayat* rights or traditional rights (Saad, 2000).

Bailey *et al.*, (1987) noted the need for sustainable use of fishery resources in Indonesia since the adoption of more productive fishing gear such as the trawl in 1966. The sustainable use of fishery resources concept became an urgent issue at that time with the rapid depletion of valuable coastal fishery resources such as shrimp resulting from the operation of trawlers, and the need to continue to protect the interest of small-scale fishers. However, the government proposed the sustainable use of fishery resources without evaluating the impact of the centralized system and in the absence of resource user participation in fisheries management but it has been totally ineffective.

Most government regulations on fishery resources came from the Ministry of Agriculture. The following Ministry Decrees/Presidential Decrees¹⁹ did impact traditional fishers and their coastal fisheries resources.

1. Ministry Decree No. 561/Kpts/UM/11/1973 of the Utilization of Post Harvest.
2. Ministry Decree No. 01/Kpts/UM/1/1975 of the Guidance for the Sustainable Use of Fishery Resources.
3. Ministry Decree No. 123/Kpts/UM/3/1975 of the Determination of Mesh Size of Purse Seine for Scad, Mackerel, Yellowstrip, Herring, and other Pelagic Fish Species.
4. Ministry Decree No. 607/Kpts/UM/9/1976 of the Type of Fishing Grounds.
5. Ministry Decree No. 609/Kpts/UM/9/1976 of the Fishing Ground for Trawlers.

All these decrees were centralistic and the role of government was dominant, even for the determination of mesh size or fishing seasons. Further, the political control of the

¹⁹ All these Decrees are taken from the collection of the Directorate General of Fisheries of Ministry of Agriculture (DGF, 1996).

centralized system of fisheries utilization and management continued throughout the 1980s, as reflected in:

1. Ministry Decree No. 503/Kpts/UM/7/1980 of the Step for Removal of the Trawl at First Stage.
2. Presidential Decree No. 39/1980 of the Removal of Trawl.
3. Presidential Decree No. 85/1984 of the Use of Fish Traps.
4. Ordinance No. 9/1985 of Indonesian Fishery.
5. Ministry Decree No. 769/Kpts/HK.210/10/1988 of the Guidance for the Use of Bottom Gill Net.

Politically, all these decrees were designed to achieve optimal benefits of the fishery resources for the nation, and later the benefits would be used for loan repayment from international donors and agencies. As Allsopp (1985) stated, frequently international donors and agencies pursued the recipient countries to increase their fishery landings in order to be able to repay loans.

Among the decrees, the removal of trawlers in coastal areas in Indonesia became necessary after a number of conflicts and violence occurred in coastal areas (Setyohadi, 1996). It has been commonly known in Indonesia that the trawler owners have political access to government. Therefore, the removal of trawlers from coastal areas was not done at once, but after the trawlers considered that no more benefits could be gained from these areas due to overfishing, the government issued the decrees. Again, the government issued the decrees under the umbrella of “social justice and social stability or protecting the interest of small-scale fishers” (Dahuri and Dutton, 2001).

The global urgency to recognize the traditional fishing rights, derived from the

conference of the United Nations on the Law of the Sea in Montego Bay, Jamaica in 1982, has led Indonesia to ratify its Ordinance No. 17/1985. In article 1 of this ordinance, besides the need to develop and to manage fishery resources sustainably, the need to recognize traditional fishing rights is also acknowledged (Saad, 2000). It is not easy to define the traditional fishers. However, according to Djalal (1989), there are some criteria that can be used to determine traditional fishers and their rights. These include:

1. The traditional fishers have historically fished in certain fishing grounds for their whole life.
2. The traditional fishers have used specified fishing gear for a long time.
3. The traditional fishers always captured specific fish species.

In these criteria, the characteristic of traditional fishers would be determined by area of fishing ground, fishing gear and boat, and species fish caught.

Ordinance No. 17/1985 marked a significant shift in fisheries utilization and management policies in Indonesia as the traditional fishing rights were recognized. In addition, the configuration of Indonesian fishery development and management became broader to address social, economic, and sustainability concerns, and all these were derived from the Agenda 21 of UNCED (United Nations Conference for Environment and Development) 1992 (Kuswartojo, 1996). In relation to traditional fishers' rights, article 3 of the Agenda 21 of Indonesia also recognizes the need for the traditional fishers to confront their poverty through self-governing their local fishery resources. In addition, women are also given a responsibility to manage their local resources for fulfilling their household necessity.

In protecting the interest of small-scale fishers and minimizing the conflict among

user groups in coastal areas, the government divided the fishing ground jurisdiction based on the fishing boat gross tonnage (GT) categories. Fishing boats with GT below 10 and sailing boats are allowed to operate within three miles. Other fishing boats with over 10 GT are not allowed to exploit nearshore resources, and fishing boats over 10 GT are encouraged to exploit offshore areas through provision of government incentive programs such as soft loans for obtaining more powerful engines (DGF, 1975).

From this Decree, it can be seen that there will be potential conflict among small-scale fishers in the use of fishing grounds that are allocated to them. This decree provides the smallest fishing ground area to the largest number of fishers, the small-scale fishers, thus increasing competition among resource users in areas of the most productive and diverse fishery resources. However, government attempts to reduce fishing pressure in coastal areas were not respected by medium-scale fishers because of limited capability for monitoring and enforcing the regulations. As a result some small-scale fishers with limited fishing technology and unable to obtain government loans have become a marginal group. Other small-scale fishers with government's credit assistance intensified the utilization of the three miles zone and caused a race for fishing among fishers.

In this situation, the government should re-evaluate the policy of protecting the small-scale fishers, especially in relation to the three miles zone, and how effective this zone has been in generating fishers' income and protecting the fish stocks. However, since the issue of this decree, there has been no attempt to evaluate government policy in the face of the growing number of resource users and increase in fishing gear in this zone.

In South Sulawesi, government zoning has frequently been rearranged in order to take maximum advantage of the high world price of shrimp (Bailey *et al.*, 1987). In

practice, the government also allowed the trawlers to re-enter the three mile zone with the consideration of the high fuel price in the 1980s with the condition that they not impede the fishing ground of small-scale fishers (Bailey *et al.*, 1987). However, lack of monitoring has led to conflict between traditional fishers and the trawlers. The most severe conflict around the trawlers operation in this area occurred with small-scale fishers using fixed gear, such as stationary *bagang* or lift net, and bamboo traps (locally known as *seser*).

The government policy of authorizing the utilization and management of mangrove forests under the Department of Forestry (Presidential Decree No. 32 of 1990) has also created confusion. The confusion derives from the different perception between the Department of Forestry and the Department of Fishery and Ocean regarding the suitability of the 200m green belt and the management strategy for coral reefs. The Department of Forestry concentrates on the mangrove trees and coral reefs for environmental protection, while the Department of Fishery and Ocean argues that management of these habitats should consider the interactions between fishery resources and the habitats. A holistic approach should be implemented; for example, the general policy on 200m of green belt should be evaluated for specific areas because sometimes the fishing areas in estuaries become reduced, or have an impact on transportation.

The most significant shift of Indonesian fisheries development appeared in the 1990s when the government began to delegate some of its authority to regional and local governments in some aspects of small-scale fisheries. There are a number of reasons for shifting; first, the need to simplify the bureaucracy of administration; second, the central government has realized that there has been a substantial cost in centrally administering

the utilization and management of fishery resources; third, continuous demand from NGOs, researchers, local fishing community, and other user groups to the government to delegate some its administrative authority and responsibility to local communities. Among government fishery regulations that have been transferred to local government are:

1. Government Regulation No. 8/1995 of the Delegation of Some of Government Administration to 26 Local Government for the trial of Decentralization.
2. Ministry Decree No. 375/Kpts/IK.250/1995²⁰ of the Forbidden to Catch Napoleon (*Cheilenius undulatus Ruppe II*) Fish Species.
3. Ministry Decree No. HK.330/s3.6631/1996 of the Size, Location, and Procedure for Catching Napoleon Fish.
4. Ministry Decree No. 51/Kpts/IK.250/1/1997 of the Development and the Utilization of Seaweed.
5. Ministry Decree No. 41/Kpts/IK.210/2/1998 of Integrated System for Quality of Fish Captured.
6. Ministry Decree No. 1251/Kpts/KL.420/II/1998 of the Guidance for the Implementation of Joint Enterprises in Fishery Using People Oriented Pattern.

Theoretically, all these decrees are supposed to increase the traditional fishers' income, especially in relation to Ministry Decree No. 1251/Kpts/KL.420/II/1998 that the

²⁰ Actually, this decree created controversy in its implementation, especially in the case of Napoleon fish in Takabonerate National Marine Park in Selayar regency, South Sulawesi. The government set the areas of protecting this valuable fish species with limited consideration of alternative livelihood for the majority of small-scale fishers who traditionally utilize the protected areas. In addition, the government is also not active in informing the Japanese to consider sustainability of this fish species (Laude and Azis, 2001). As a result, the program of creating a Marine Park for tourism eventually affected the livelihood security of

medium and large-scale fishers have to perform a foster parent program for them. But again, the lack of specific roles of the *HNSI (Himpunan Nelayan Seluruh Indonesia* or Fishers Organization) to pursue the medium and large-scale fishers to implement that decree and limited government monitoring of the program have left most of traditional fishers in persistent poverty.

The government configures the objectives of fisheries development and management under the *Repelita (Rencana Pembangunan Lima Tahun* or a Five-Year of National Planning). The multiple objectives in the *Repelita* frequently create conflicts; for example, increasing fish consumption versus increasing fish export for national revenue; increasing income from fishery resources versus increasing job opportunity from fishery resources; and increasing coastal habitat restoration versus encouraging the private sector to develop coastal aquaculture. These would then create a dilemma for government, whether primarily to continue to protect the interest of coastal communities or to enhance national revenue from these limited resources, while at the same time maintaining the ecological balance of the resources.

During the first twenty-five year development plan or *Pembangunan Jangka Panjang (PJP) I* of 1969 - 1993 (Long-term National Development Plan Phase I of 1969-1993) and the *PJP II* (1993 - 1998) there were two significant objectives set, namely, the use of geographical information systems and the integrated coastal and marine management. These objectives then were implemented through a number of projects, for example, Coral Reef Rehabilitation and Management Program (COREMAP), Canadian Collaborative Environmental Project in Indonesia (CEPI), and *Proyek Pesisir* (Coastal

traditional fishers. To respond this situation, the government then issued other related decrees with regard to Napoleon fish (No. HK.330/s3.6631/1996).

Resources Management Project) (Dahuri, 2001). The aims of these projects were to re-empower traditional ecological knowledge and to revitalize the existing informal institutions in coastal fishing communities. However, Dahuri and Dutton (2001) noted that once these donor funded projects ceased, there was little initiative to continue these efforts; in fact these projects have not yet made significant impacts on the quality of life of coastal communities or the coastal ecosystem.

Some points in the *Repelita VI* (1994 – 1998) on fishery development are important for traditional fishers considering human resources and institutional development. The development of human resources particularly traditional fishers is important, and this is to be done through empowering their fishing strategy and ecological knowledge integrated with the concepts of fishery management (Adams, 1998). These strategies, however, have not yet touched the substantial problem of small-scale fishers: their access to the fishery resources. According to Saad (2000) conflict between traditional fishers with fishery business, for example, in March 1998 in Bagan Percut and July 1998 in Gabion Belawan, North Sumatera, and the riot in Cilacap, Central Java, in August 1998 have shown the weaknesses of traditional fishers' access to coastal fishery resources.

Institutional development is important in any fishery development and management, especially in relation to the initiation of direct involvement of traditional fishers (Lawson, 1984). In order to revitalize the government and informal institutions to function properly, at least four formal institutions should be directly involved. These include the Directorate General of Fishery, the Regional/Local Government, *HNSI*, and Fishers Cooperatives. According to Ismail (1993) and Saad (2000) the *HNSI* was

established in 1973, and this is the only fishers organization acknowledged by the government after the fusion of six previous fishers organizations: *Golkar* Fishers organization, *Sernemi*, Islamic Fishers Association of Indonesia, *Marhaenis* Fishers Movement, *Pancasila* Fishers, and *Gensi* or Indonesian Fishers Movement. All these previous fishers organizations were connected to various political parties. Politically, this fusion was intended to dismantle all fishery organizations that were not affiliated with the ruling political party at that time. The *HNSI* came under total control of the *Golkar*, but the programs were not based on the actual needs of the majority of small-scale fishers.

Theoretically this fishers' organization is capable of improving the living condition of the fishers based on its accessibility to the government and its legal authority, for example its rights to engage the auction of fish products at fish auction halls and providing some necessities for its members. The fishers' organizations in Japan and Indonesia are different in nature. Fishers' organizations in Japan were created by the local fishing community and later their government recognized these organizations as the only organizations that can legally engage in fishing and auction the catch in fish auction halls (Pinkerton and Weinstein, 1993). While fishers' organization in Indonesia was created by the government, the members of its the advisory board do not have fisheries backgrounds, and its decision-makings was dictated by central government rather than voicing its members' needs and aspirations. In addition, this organization has been used as a political vehicle of government. This history of *HNSI* explains why many traditional fishers are reluctant to join.

A similar condition also exists in the village cooperatives specialized in fishery

products, known as *KUD Mina*²¹. The *KUD Mina* in Indonesia was established on the initiative of the Fishery Department rather than from local fishing communities. Again, this cooperative was supposed to be able to handle all the fishers' catch, but the limited facilities, for example ice storage and the low price, made the cooperative not a preferred choice for selling fishery products. In addition, this cooperative only concentrated on saving and loan rather than receiving and auctioning fish. In this cooperative, however, the complex administrative procedures savings and loans for fishers explain why most fishers prefer private lenders who provide loans at any time without collateral and buy the fishers' catch with direct cash. According to Bailey *et al.*, (1987) most small-scale fishers in Indonesia prefer to receive cash directly at first buyer rather than adding the cost to bring the product to a fish auction hall.

Since the 1990s the government in South Sulawesi has established a regional program called *Tri Konsep: perubahan pola pikir, pewilayahan komoditas, dan petik, olah, jual* (three concepts: the change of thought, regional commodity, and harvest, manage, and market) for all natural resources, including the fishery (Amiruddin, 1995; Laude, 1996). With this program, the coastal communities were encouraged to increase their fish capture of high value species in order to generate regional and regency revenues. The main target species are shrimp, grouper, crabs, lobster, skipjack, little tuna, and other pelagic species. In achieving this assessment, the soft loan program through *KIK (Kredit Investasi Kecil* or small investment credit) was provided that unfortunately caused excessive capital accumulation. From an economic point of view this program was intended to increase regional and village revenues, as well as the income of small-

²¹ *KUD Mina* is a village cooperative specifically established by the government to deal with fishery products. The word "*Mina*" is means of the integrated culture of fish (mostly gold fish) in paddy fields.

scale fishers, but in resources sustainability, this program rapidly decreased the available of fish stocks. This occurred because the program did not address the need to consider the sustainable use of fishery resources for long term benefits.

In addition, the government also encourages the private sector to establish fishponds that have deteriorated the coastal ecosystems (Zerner, 1994). The most dramatic coastal environmental changes in South Sulawesi occurred when the local government in the 1980s encouraged coastal communities and investors to develop aquaculture along the coastlines because of the high price of the shrimp at that time (Nurkin, 1995). As a result, a number of mangrove forests were converted into aquaculture fish and shellfish ponds, and soft-loans were provided by the government (Sloan and Sugandhy, 1994). Local communities thought that the mangrove forests were the best location for aquaculture.

According to Nurkin (1995), there are around 39,000 ha of mangrove forests remaining in South Sulawesi, compared to 112,000 ha in 1950s. From the figure of 39,000 ha, 37,000 ha are found in Luwu and Mamuju regencies, and the rest are scattered around the Province. The major reductions of mangrove forest areas were for the coastal aquaculture construction and the use of mangrove trees for household firewood. In terms of ecological balances and interactions among coastal habitats, the loss of mangrove vegetations could disrupt the whole coastal ecosystem (Tomascik *et. al*, 1997). Feeding and nursery grounds were changed which affected food webs and ecological systems that integrate the coastal habitats and their species (Dickie, 1993; O'Neill, 1993^a; O'Neill, 1993^b).

It is difficult to control the amount of small-scale fishing gear that impact on fisheries management. For example, in South Sulawesi, most small-scale fishers create their fishing gear for specific fish species and these gear frequently are not classified by the government. In addition, small-scale fishers are often highly mobile and may migrate seasonally according to target fish species. The ability of most fishers to design or make their nets further complicates the difficulty of enforcing mesh size regulations and prohibiting the use of destructive fishing gear.

Theoretically, all government fishery regulations are supposed to protect the sustainable use of fishery resources. However, past experience, such as the trawl ban case (Sardjono, 1983), shows that regulations implemented by the government without the involvement of local communities have only met with limited success. Moreover, even though traditional fishers provide a dominant contribution to the food supply of the country as well as to the national and regional revenue, their position in terms of the preparation, formulation, and the decision-making process in resource management is still weak. These failures of central government suggest the need to initiate cooperative fisheries management through recognizing the access rights of traditional fishers and their institutions and directly involve them in monitoring and implementing fisheries management.

5.2. Traditional Fishing Rights

Some coastal nations have integrated the local fishing community into their fisheries management framework, for example in Japan (Shima, 1983; Pinkerton and Weinstein, 1993; Yamamoto, 1995), in Philippines (Ferrer *et al.*, 1996), and in Vietnam (Pomeroy and Berkes, 1997; Chircop and Torell, 1997). The integration of local

ecological knowledge of traditional fishers into government frameworks of fisheries management is aimed at strengthening the local community in resource management. The informal systems and values are still viable in controlling local access over local fishery resources. However, as the traditional fishers and their traditions are evolving, so must the capability of traditional fishers to anticipate the changes of both local fishery resources and local community dynamics.

The Japanese government has authorized traditional fishers in administering the fishery resources because the government believed that the local community through their Fishers Cooperative Association (FCA) can solve their local resources problems (Pinkerton and Winstein, 1993; Yamamoto, 1995). The delegation of local fishery resource administration to traditional fishers is beneficial because they implement regulations based on their social and traditional values, and these become a basis for coastal resource exploitation and management (Lamson, 1986; Matthews and Phyne, 1988; Ruddle, 1985; Ruddle, 1988).

In spite of the rapid changes in fishing technology, as well as the evolution of social and community values in Japanese and Newfoundland fishing communities, their traditional fishery systems still contribute significantly to fisheries management (Ruddle, 1985; Ruddle, 1988; Matthew and Pynes, 1988). For example, Hokkaido and Fermuse fishing communities traditionally prohibit the use of some fishing technologies that they consider detrimental to fishery resources.

There is a strong belief in some coastal communities that their informal systems and community values are effective in maintaining the sustainable use of fishery resources, preventing overfishing, and promoting resource conservation (Ruddle, 1986).

For example, in Newfoundland, Canada, some coastal communities even argued that the government approach to fishery resources has led to a tragedy of the commons, but the government assumed that the tragedy of the commons would occur if the fishery resource were solely under the communities' control (Matthews and Pyne, 1988). Coastal communities are dynamic in their socio-economic relations, culture identity, and the degree of dependency on fishery resource (Li, 1996^a). Some coastal fishing communities have proven that the traditional practices are capable of maintaining the sustainable use of common property resources. Under the informal system, almost all the regulations and enforcement have been set up in accordance with religious practices, customs, and taboos. For example, in Japan (Ruddle, 1985; Ruddle, 1988), in Oceania (Hooper, 1985; Johannes, 1998), in Newfoundland, Canada (Matthews and Pyne, 1988), and in the Asia-Pacific region (Ruddle, 1993).

There has been wide spread documentation of the capability of Indonesian coastal communities to utilize fishery resources in a sustainable manner, for example, the *sasi*, *panglima laut*, and *subak* systems in Indonesia (Nikijuluw, 1996; Basuki and Nikijuluw, 1996; Novaczek and Harkes, 1998; Novaczek *et al.*, 2001). *Sasi* is a traditional fishery management used by local coastal communities in Maluku Province, Indonesia. The *sasi* is the prohibition to harvest certain type of the resources, for example, trochus, scad and sardine. The principal implementations of the *sasi* are based on resource conservation and sustainable development in a defined region or area (Basuki and Nikijuluw, 1996; Huliselan, 1996; Kissya, 1996; Nikijuluw and Wenno, 1996; Evans *et al.*, 1997; Novaczek and Harkes, 1998; Novaczek *et al.*, 2001). For example, in Haruku village, *sasi* are divided into four types: sea, customary, forest, and river; while in Nolloth village,

there are two type of *sasis*: *sasi* church and *sasi* customary (Huliselan, 1996). Especially to fishery resource utilization, the *sasi* is implemented for certain periods of time (three to six months, or even for a year based on type and maturity of the resources to be harvested).

In the sea *sasi*, there are two types of traditional management: the fishing ground of the *sasi*, and the type of the resource. The fishing ground areas of *sasi* are then divided into two types: fishing ground under the *sasi* (*labuhan sasi*), and fishing ground non-*sasi* (*labuhan bebas sasi*). Meanwhile, the type of the resource under the *sasi* include trochus, sea cucumber, scad, and sardine (Kissya, 1996). Under the *labuhan sasi*, all type of marine resources are conserved, while under the *labuhan bebas sasi*, the resource can be exploited, but all fishing gear must be approved by *kewang* board (enforcers). For example, all types of fishing nets are prohibited from use in the *labuhan bebas sasi* because the nets are considered to be destructive to the marine environment (Nikijuluw and Wenno, 1996). This informal system is accepted and respected by the local communities because the local prominent leaders support the *sasi* as a way of securing livelihood. The *kewang* board itself consists of local prominent leaders and influential persons in the villages. However, various factors have caused the degradation of this *sasi*, either from the government and the incoming fishers, for example, *bagang* fishery (Kissya, 1996).

Panglima laut or sea commander is an informal system of fishery management used by coastal fishing communities in Aceh province, Indonesia (Basuki and Nikijuluw, 1996). According to Nurasa *et al.*, (1994) the *panglima laut* specifically manage types of fishing gear and fishing time allocation among its members. The type of fishing gear and

fishing time allocation under the *panglima laut* is Danish seine both engine and sail powered. The management of Danish seine in this area is the major concern because of the popular use. *Panglima laut* is divided into two types: local and regency *panglima laut*. The local *panglima laut* or known locally as *lhok* (river or bay) *panglima laut* is subordinate of the regency' *panglima laut*.

According to Basuki and Nikijuluw (1996), the functions of this informal system are: to support local and regency governments in fishery development and sustainability through the informal fishery management system, to sustain and to monitor the implementation of the *adat* law, to coordinate fishing activities, to mediate conflict among its members, and to protect mangrove forests. Among these functions, the significant role of this informal system is a medium for connecting fishers and government at both the local and the regency levels. Further Basuki and Nikijuluw (1996) explained that, in the implementation of the *panglima laut*, there is a respect among the fishers, especially during fishing. For example, if fisher A has first identified schooling fish, others will respect through waving their hats. However, if fisher B engages fishing species that have been identified by fisher A, the catch of fisher B will be divided into: half for fisher A with additional five percent for gear rights maintenance, and the rest belongs to fisher B. In order to monitor the amount of fisher B's catch, one crew of fisher A accompanies fisher B to fishing port.

In the *panglima laut*, there are certain forbidden fishing days for local communities, for example, Friday night, Ied day, Independence Day, and the day of sea disaster (the day in which a fisher had disaster at sea), when all fishers will take 1 day off. If fishers disobey the regulations, all their catch will be confiscated by *panglima laut*

enforcer and they are not allowed to fish for three days. In addition, this informal system also imposes prohibition on the use of destructive fishing gear and chemical substances, such as dynamite and poisons.

The strength of this informal system lies in the recognition of local and regency governments and inter-coordination between *lhok panglima laut* and regency *panglima laut*. However, Nurasa *et al.*, (1994) pointed out that the social relations and the need of local and regency governments to increase their revenue have changed the objectives of the *panglima laut* system. For example, this informal system changed its original objectives from generating its members' livelihood to heavy orientation on obtaining fees from its members to contribute to village and regency revenues.

The informal system of *subak* in Bali (Indonesia) is primarily managing the natural resource, particularly managing irrigation water supply allocation for rice fields for its members (Department of Public Work, Bali, 1997). The principal implementation of *subak* is based on strong relationship between human life, religion, philosophy, and practice. The Balinese is a religious community where their everyday life is always according to religious philosophy. Therefore, in the *subak* system, there are three causes of happiness or three harmonious relationships (*Tri Hita Karana*) implemented. The *tri hita karana* include the relationships between human being and their environment; among human being; and human being and God. The strong legal basis of this informal system is accommodated into legal framework of Balinese government through local regulations No.02/PD/DPRD/1972. In order to implement and enforce the *subak* system, an *awig-awig* board that consists of local prominent leaders is created.

According to Costa-Pierce (1988), the Balinese concentrate on traditionally

managing the terrestrial resources because, in their belief, coastal areas are sources of evil that would bring disaster to human life. However, social and economic relations are changing, as this has impacted the *subak* system. This changing perception can be seen in Jermuk village, Bali, where local fishing community transforms the *subak* principal into management of their local fishery resource, especially to coral reefs fishery (Nikijuluw, 2001). The initiation of self-management of the coral reefs fishery was based on the ineffectiveness of Provincial Decree No. 02/PD/DPRD/1973 regarding the prohibition to collect corals for building materials and capturing ornamental fish. This initiation is then further developed into co-management called *Tunas Mekar* Fishers Association (TMFA).

Regarding the practice of these systems, only *sasi* is not yet supported by the government, but the role of local prominent leaders are significant in maintaining informal management systems and securing the livelihood of their local communities. Among all these systems, *panglima laut* is the only informal system that requires its members to pay fee, while others are unclear.

Before involving the traditional fishers as a substantive group, resource access for them must be clearly acknowledged and allocated by the government. In Indonesia, their access rights have been acknowledged through Ordinance 17/1985 and Agenda 21 of Indonesia and strengthening these rights and institutions can be initiated through the New Local Government Administration Act No.22/1999. The important point in this act is that the utilization of fishery resources within four miles from the coastal line is under the authority of local government. This also means that all potential of local fishery resources will be under local government administration, and they have an opportunity to establish cooperative fisheries management. However, one-third of the administration authority of

fishery resources is allocated to local government, while two-third is under the provincial government. According to article 10 of this Act, the smaller portion received by local government is based on the assumption that local government staff have limited capacity to handle the task compared to the provincial government.

However, this Act does not consider having traditional fishers and the local community as a whole handle local fishery management tasks. Therefore, the benefit of this Act to local communities or to traditional fishers could be increased if the government recognized their traditional access rights to utilize and manage the fishery resources. Allocation of traditional access rights actually has been made for a long time through traditional fishers through their *ulayat* rights (Saad, 2000).

According to traditional fishers, their *ulayat* rights are also sea tenure rights (Imron *et al.*, 1993). This perception may derive from past experiences that the lands and the sea belong to the commons. However, if the perception that sea tenure comes under the traditional fishers' bundle of rights and ownership (Suda, 1973), it means there are exclusive rights and ownership that certain people or user group have. According to Saad (2000) the sea tenure rights are use rights and a social group has the right to utilize the coastal area, manage the level of exploitation, and protect it from over exploitation in a responsible manner (Lawson, 1984).

The practice of *ulayat* rights in South Sulawesi can be seen in Mandarnese where marking the border of territory is done by various means; for example, the colour of the sea, the state of current and wave, and the type of fishing gear used (Lopa, 1982). Further Imron *et al.*, (1983) stated that in *ulayat* rights there is a social unit regarded as owner of the rights which may be an individual, kinship group, or a certain community. However,

one aspect of *ulayat* rights may be seen as a weakness in that rights to exploit fishery resources can be transferred to other people, even if they are not part of the kinship group or community. If the rights are transferred to people who do not have a moral obligation to conserve the resources, but use them for maximum economic gain, the fishery resources may be threatened. This then would affect the traditional fishers as a whole.

Ulayat rights at a certain level may provide an alternative to the common property policy in most tropical countries that leads to degradation of fishery resources (Smith, 1983; Panayotou, 1985). *Ulayat* rights have been practised by coastal fishing communities in South Sulawesi in a form of Territorial Use Rights in Fisheries or TURFs (Saad, 2000). Legitimization of *ulayat* rights should be done with clear framework of how TURFs are legalized and what kind of rights should be given to traditional fishers, who will receive benefits and who will be marginalized. From an ecological viewpoint, the TURFs can only bring benefits if the majority of fish resources are sedentary.

The problem in Indonesian fisheries is not whether common property is suitable or not for traditional fishers, but whether there is the political will and consistency of the government to provide more resource access to traditional fishers. This would be beneficial if the traditional fishers were also consistent with their resource access, sustainable use of resources, and management. This is important because the common property regime also demands full responsibility of the community to maintain and to utilize fisheries resources on a sustainable basis and with equitable access.

When the government decides to give resource access to traditional fishers or the local community, it will be important to evaluate the capability of traditional fishers to manage distribution mechanisms, how well their informal institution functions, their

ability to formulate sanctions and rules, as well as their capability to anticipate the social and economic changes in the community. Frequently, when the local community is given access rights to resources, they may overestimate the capability of the resources in the first stage of management. Thus, the long-term benefits of the resources or sustainable use of the resources may not be achieved.

Examples of informal systems have shown the ability of local community to formulate rules and to impose sanctions or even to protect their traditionally claimed resources through their institutions, and these may still be viable. However, it is also realized that with changes in the informal systems and fishing technology, these institutions face challenges in protecting and regulating a wider range of fishing grounds and increased education and the social change of community members may weaken their potential in resource management. This means that the traditional fishers cannot rely solely on their informal institutional capability to manage their local fishery resources, but support from the government is needed, especially in relation to enforcement mechanisms.

Co-management involving small-scale fishers will be new in Indonesian fisheries, but the social and political context may be changing in favourable ways. It is uncertain how the government of Indonesia might implement local management fisheries but a model for co-management will be developed specifically for South Sulawesi. It will incorporate the social and cultural context, the current working relationships among fishers and the legal and policy context.

Chapter VI:

Analytical Framework for Integrating *Ponggawa-Sawi* into Co-Management

6.1. Rationale

In this chapter, a co-management framework is proposed which is based on the *pongawa-sawi*'s role in the utilization of fishery resource, the need to directly involve the resource users in fisheries management, the historical or traditional fishing rights claimed by local fishers and the opportunity provided by recent policy and legal changes in Indonesia. The integrated fisheries management will be in the form of co-management based on the strong legal basis of traditional fishers' rights in the newly established of New Local Government Administration Act No. 22/1999. The co-management of local fishery resources management is expected to produce benefits for local fishery users and local government, as well as the achievement of sustainable use of fishery resources.

The effective implementation of local fishery management is still largely dependent on traditional fishers's participation (Huliselan, 1996; Kissya, 1996; Johannes, 1978; Lam, 1998; Ruddle, 1998). However, if fishery resources management is solely dependent on the natural capability of informal institutions, there may be some obstacles. For example, *kewang* or the enforcer in the sasi system in Maluku province stressed

- *"we cannot enforce the regulations when illegal users use advance fishing technology, for example, high speed fishing boat, as we just have simple motorized boat to patrol them, so we desperately demand government to help us in this matter"* (Kissya, 1996).

Thus, the *kewang*'s perspective suggests the informal system cannot be implemented without government involvement. Recognition of traditional fishers' rights has evolved from total disregard of traditional fishers in the Local Village Administration

Act No. 5/1979 to having their rights recognized in the New Local Government Administration Act No. 22/1999 (Van de Hoff, 2001) and Ordinance 17/1985. Even though this new act does not specifically define traditional fishers and their institutions, at least there is an expectation to include them in local fishery management. Thus, based on the reality of two fisheries management options (traditional and government-based fisheries management) with all their problems, and the need to actively involve all the resource users in South Sulawesi, the introduction of the co-management concept may provide an alternative solution. One of the core elements of co-management is to empower or revitalize the local community institution. The *pongawa-sawi* institution is one of them, as well as the *ulayat* rights with respect to a wide range of biological and social perspectives. Even though the *pongawa-sawi* institution is small in terms of number of people involved, its role in fishery utilization and local economic activities is significant. In this analytical model, all the local fishery resource users have equal rights to express their ideas and expectations in co-management. It is also implied that all of them are equal in the decision-making processes.

Tang and Tang (2001) pointed out that fishery resource utilization can be sustained effectively if the resources are under self-governance, with significant contribution of local ecological knowledge and informal institutions in co-management processes. The provisions of the New Local Government Administration Act are a positive signal of the political will of the government to accommodate traditional fishers and their informal institutions in local fishery resources management. Lessons learned from Malaysia indicated that the government's ignorance of the significant roles of informal system in resource management and marketing has led to a slow down of local

fishery market activities (Merlijn, 1989). Further Tang and Tang (2001) emphasized that once the traditional governing mechanism breaks down, the resources would be depleted rapidly. The traditional fishers and their institutional practices in utilizing the coastal resources have proven to have potential impacts on local fishery resources and local community livelihood security. However, influences of external factors such as market information, government intervention, and migration of fishers eventually affect the informal institution in fishery utilization.

The introduction of co-management to South Sulawesi is possible, but this may depend on the willingness and readiness of the ponggawa-sawi institution, other local resource users, and local government to establish the co-management. Pomeroy (1998) emphasized that co-management is not an ultimate model of fisheries management, but is a process of fisheries management that will include familiarization in accommodating aspects of empowerment, power sharing and decision-making. Further Pomeroy and Williams (1994) and Mulekom (1999) emphasized that co-management is not a panacea or the best option for solving the fisheries management problems, but is a management strategy that structurally involves action, participation, rule making, conflict management, leadership, dialogue, and knowledge sharing. Pomeroy and Williams (1994) also pointed out that it is not an easy task to encourage the local community to change their livelihood security arrangement, considering the long dependency of local fishing communities in most Southeast Asian countries, including Indonesia, on their central government in managing the fishery resources.

6.2. Analytical Framework

Based on the performances of the *pongawa-sawi* institution in the three ethnic groups, this analytical framework is intended to integrate this informal institution into co-management together with other local resource users, and local government. Based on the difficulties in implementing the centralized system in South Sulawesi (Chapter V), the emerging changes of the *pongawa-sawi* relationship (Chapter IV), review of fisheries co-management (Chapter II), and current transformation of authority and responsibility to local government, an analytical framework for integrating the *pongawa-sawi* institution into the co-management is proposed here. However, there is no guarantee that the integration of this patronage institution into local fishery resources management will automatically resolve all the existing issues in coastal fishing communities in South Sulawesi. In the concept of co-management, two groups are involved, namely, the local community and the local government. But in this analytical framework of co-management the *pongawa-sawi* institution is a “new group” that is expected to bring the additional insights to co-management.

The layout of the integration of the *pongawa-sawi* institution, together with other local resource users into the co-management can be seen in Figure 1.

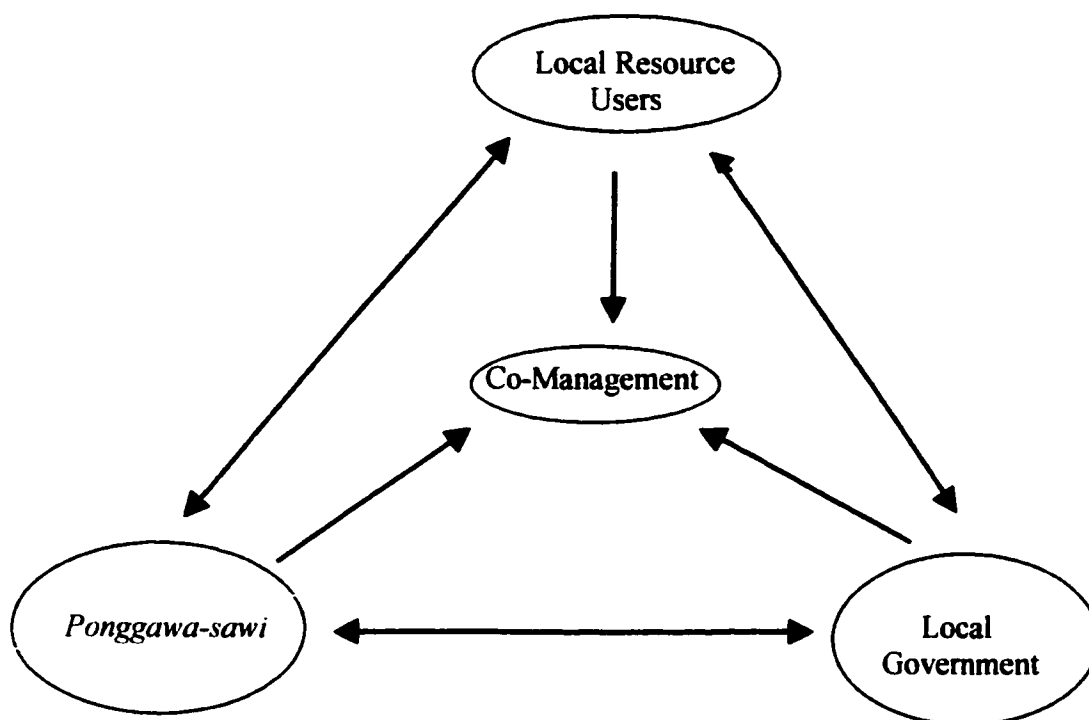


Figure 1. The Layout of Proposed Co-Management

In Figure 1, there are three main groups involved in the co-management, and it is assumed that all of them have the same objective: success of co-management in maintaining a sustainable fishery. These include the *ponggawa-sawi* institution, the local stakeholders (independent fishers, part-time fishers, women and families, the local community organization²²), and local government with all its related institutions. The *ponggawa-sawi* institution is separated from local resource users group on the consideration that this patronage institution has a different strategy and decision-making process in resource utilization. In addition, the position of *sawis* in the same group with

²² Local organizations in this case include both those created by local government and by the local community, for example the *PKK*, *ACI*, and *Karang Taruna*. Theoretically, the NGOs have potential roles in accelerating, channeling, and mediating different perception about issues, ideas, and expectation among groups, but in the absence of NGOs in the research sites, their roles in this analytical co-management model are not analyzed.

the *pongawas* may put the *sawis* under pressure and make them reluctant to express their thought. Therefore, in this analytical model it is difficult to say whether the *sawis* are fixed in the *pongawas*' group or the *sawis* may prefer to join other local resource users who in some degree have similar social status. Furthermore, it is not assumed that each of these three groups will have equal weight in decision-making. The details of decision-making cannot be specified. A framework is proposed but the participants must determine how they can work within this framework.

Analysis of Figure 1 will entail two strategies: complementary and systematic approaches (Béné and Tewfik, 2001). The complementary approach is used to understand the linkages between groups, and then the systematic approach is used as the basis for analyzing the interactions within the groups and to analyze results of interactions that may later influence co-management framework (Béné and Tewfik, 2001).

In Figure 1, independent fishers dominate in terms of numbers of other local resource users. Even though the traditional fishing rights are clearly acknowledged in the New Local Government Administration Act No. 22/1999, recent weaknesses of these groups in exercising self-government of the local fishery resources mean they will need support of the *pongawa-sawi* institution and the local government in achieving better local fishery management. If the territorial fishing rights or the *ulayat rights* and Ordinance 17/1985 are then put into the practice by traditional fishers, for example, how Mandarese mark their territorial rights with their *rumpon* (Lopa, 1982; Saad, 2000), there would be a potential for inter-village conflicts as the fish resources are mobile. In addition, the complexities of inter-ethnic group relations in the coastal fishing

communities in South Sulawesi also contribute to the difficulties in implementing and enforcing traditional use rights for fishing.

Implicitly, the traditional fishing rights of all local resource users, including the *pongawa-sawi* institution, have been set out in the New Local Government Administration Act and become the basis for establishing co-management. However, whether the traditional fishing rights are legally recognized or not, co-management can emerge, and the concerns of traditional fishers rights can be addressed. This will depend on clear understanding of how such use rights for fishing will be given to the local community, and what will be the level of authorization and responsibility given by central government to local government (Li, 1996^a).

The need to empower, to revitalize, and to integrate the traditional fishers and their institutions with government fisheries management has recently been discussed in the regional conference on “*Decentralization of Coastal Regions and Their Resources*” in 2001 in Makassar, South Sulawesi. At the conference, the participants debated the importance of traditional fishers and their institution in designing, implementing, and controlling their local fishery resources. Even though the debates concluded that there should be an official recognition of the potential of the traditional fishers and their institution in local resources management, the debates failed to further propose which informal systems can play potential roles in resources management. The marginalization of the *pongawa-sawi* institution in local fishery resources management may produce unexpected outcomes, and therefore, in order to minimize these, the integration of this patronage institution into co-management is included in order to avoid having marginal resource users.

Each of the groups in Figure 1 has interactions or linkages among each other. These three groups are assumed to have the same objectives in achieving the sustainable use of local fishery resources, equitable resource access, and living conditions of all local resource users. The following discussion of the strengths and weaknesses of each group is intended to identify factors that may affect co-management.

6.3. Strengths and Weaknesses of the Ponggawa-Sawi Systems in the Three Research Sites

6.3.1. The Strengths:

- *Decision-making.* Among the Buginese and Makassarese, the *pongawas* are willing to share the decision-making about fishing strategy (as in the case of the *pongawas* pole and line and purse seine). In addition, among the Mandarese, the *pongawas* share the fishing investment with their *sawis* and local investors.
- *Local fishery market domination.* Among local fishery resource users, the *pongawas* have significant roles or impacts in encouraging or slowing down the local fish marketing.
- *Women and family members' role.* The roles of women and family members in patronage among the Mandarnese are significant in determining their household income.
- *Local participation.* The *pongawas* also participate in local habitat restoration and the provision of infrastructure like a local small ice factory in Tongke-Tongke village.
- *Mutual fishing relationship.* The *pongawa* provides financing to some independent fishers in search of live-bait. This indicates that there is interdependence between the *pongawa* and independent fishers in their livelihood.

- *Community members.* *Ponggawas* are established members of the fishing communities.

6.3.2. The Weaknesses:

- *Dominance in decision-making.* Some *pongawas* still maintain a hierarchical patronage structure (among the Buginese and Makassarese) that may later impact on decision-making processes in co-management.
- *Profit motivation.* Some recent changes have led *pongawas* to put more emphasis on profits which may weaken their social responsibility.

6.4. Strengths and Weaknesses of Local Government

6.4.1. The Strengths

- *Legal basis.* It will provide a legal basis for the initiation of co-management of local fishery resources, especially in relation to the enforcement of agreed regulations.
- *Mobilization.* The local government has the capability to mobilize and to encourage the local community and other local resource users to participate in local resource management.
- *Linkages to other levels of government.* The local government can transmit the local community's needs and expectations to higher levels of government, for example for alternative livelihood and market access.
- *Alternative livelihood.* The local government may be able to provide alternative livelihood for the local resource users involved in co-management.
- *Supporting facilities.* The local government can provide supporting institutions that facilitate co-management, for example fishery data and technical assistance.

6.4.2. The Weaknesses:

- *Limited information and control.* The local government is still unable to provide updated information about local fish stocks as well as its limitation to control the market price at fish auction hall.
- *Overlapping functions.* The local government still has overlapping inter-agency function and authority.

6.5. Strengths and Weaknesses of Other Local Resource Users

6.5.1. The Strengths:

- *Interaction with local environments.* The local resource users have long been interacting with their local environment.
- *Many fishers.* With their numbers, they can have significant impact on co-management, especially in relation to the roles and compliance aspects.
- *Local knowledge.* They have various levels of ecological knowledge that can significantly contribute to co-management.
- *Timely information.* They have the capability to regularly provide information about the fishing ground dynamics and fish behaviour that are useful for co-management with respect to fish stocks and coastal environmental dynamics.
- *Local advocacy.* Local grass-root community organizations and family welfare organizations are believed to have the capability to mobilize and to motivate local community members to actively participate in local resource management.

6.5.2. The Weaknesses:

- *Organizational challenge.* Because they are numerous, it may be difficult to organize them with the specific objective of local fishery resources management. Some of

them may not be familiar with organized or collective action and prefer to decide their own ways of utilizing the fishery resources.

- *Diversity of knowledge.* They have various level of ecological knowledge regarding local fishery resources, but this may in turn become complicated in selecting the appropriate traditional knowledge to use in co-management.
- *Spread out.* They live in dispersed places so it may be difficult to coordinate and to monitor them.

6.6. Interactions of the Groups

The strengths and weaknesses of the major groups reveal useful insights and problems that may arise in co-management. An earlier understanding about the strengths and weaknesses of each group involved in co-management is aimed at narrowing the underestimation or overestimation about their roles. However, these strengths and weaknesses of groups would be more valuable if the internal interactions of each group is known as well as the interactions among them. The interactions among the groups will be presented next with respect to their impacts on co-management.

6.6.1. The Interactions between the Ponggawa-Sawi and Local Resource Users in Buginese and Makassarese

There are some interactions between the *ponggawa-sawi* institution and the local resource users in their social and fishing relations. The interactions between these two groups are derived from Chapter IV. These include:

- *The provision of live-bait.* Especially for the *ponggawa-sawi* pole and line, there is mutual dependency between the *ponggawa* and the local independent fishers in the provision of live-bait and the loans.

- *Financing.* In many cases, the independent fishers ask for loans for fishing, especially during the low fishing seasons. As a result of these interactions, independent fishers sell their catch to the *pongawa*.
- *Preference for selling the catch.* There is a tendency for independent fishers to sell their catch to the *pongawa* (also a wholesaler) either for minimizing additional maintenance cost of the catch or the need for the local stakeholders to obtain cash immediately. This can be seen among the Buginese and Makassarese where the administrative tax in fish auction halls is high, and the *pongawa* encourages local resource users to sell the catch to him with the promise of a better price compared to other buyers.
- *Interaction with local community organization.* The *pongawa* and the *sawis* also interact with local community organizations, for example among the Buginese both *pongawa* and the *sawis* are working together with *ACI* group and the *Karang Taruna* to replant mangrove trees. The *pongawa* provides seeds, while the local community organization provides labour for replanting.
- *Social interactions.* The interactions among *pongawa*, *sawis*, and local resource users cannot be separated from their interactions as neighbours.

Their social relations as neighbors are formally conducted weekly or monthly through a local organization created by the government called *PKK* (*Pendidikan Kesejahteraan Keluarga* or Family Welfare Organization). This social meeting normally relates to empowerment of the local community regarding family education, household management, childcare, and “*arisan*”, which is a social gathering whose members contribute to and take turns at winning an aggregate sum of money. The latter activity is

intended to save some income of the members and later they can use it for specific purposes.

The interactions between the *pongawa-sawi* institution and the independent fishers, including their family members, reveal some opportunities or new problems in the co-management. In order to understand the cause of interactions among the groups, the internal interactions may provide additional information. Each group's internal interactions also influence the interactions among groups that later affect the co-management. The internal interactions of the Buginese and Makassarese *pongawa-sawi* are different from those of the Mandarese.

6.7. Internal Interactions of Buginese and Makassarese Pongawa-Sawi

A diagram of my understanding of the internal interactions of the Buginese and Makassarese *pongawa-sawi* relationship is presented in Figure 2.

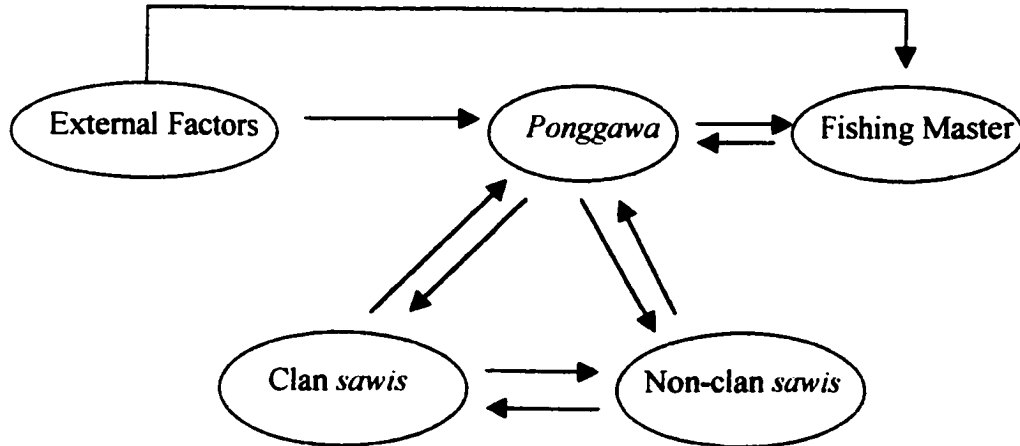


Figure 2. Internal Interactions of the Buginese and Makassarese *pongawa-sawi* relationship

Internal interactions among the *pongawa*, the *clan sawis*, *non-clan sawis*, external forces, and fishing master are as follows;

- *Hierarchical interactions among ponggawa, clan sawis, and non-clan sawis.* These interactions come mostly in the form of the sharing system, loans and additional social services provided by *ponggawa*, while the *sawis* have to remain loyal to the *ponggawa*. The interactions between the *ponggawa* and the clan *sawis* are dominated by family relations, while the non-clan *sawis* are dominated by a working relationship. However, both these relationships produce loyalty by means of their family members who have a moral obligation to serve the *ponggawa*'s family on special occasions. Among the Buginese and Makassarese, the internal interactions between the *ponggawa* and the *sawis* become more intense during the low fishing seasons.
- *Horizontal interactions between the ponggawa and the fishing master.* Even though the fishing masters in the *ponggawas* pole and line and purse seine are included as *sawi*, there is sharing of decision-making regarding the fishing strategy, and target fish species.
- *Interactions between the ponggawa and external forces.* Interactions between the *ponggawa* and external forces also exist. For example, market price and preference, regional wholesalers, and the price of fishing material would affect the decision-making in the patronage system. This further influences the decision-making between the *ponggawas* and their fishing masters as well as the sharing system with the *sawis*. All these interactions influence whether the *ponggawa* will or will not accept non-Buginese-Makassarese to work as *sawis* in his patronage system.
- *Indirect interactions between the fishing master and local wholesalers.* Actually this interaction is not regular but this interaction occurs if the fishing master feels that the

pongawa is not implementing a fair sharing system, as in the case of the *pongawa* purse seine. This means that the more the *pongawa* negotiates with his fishing master and *sawis* about the sharing system, the less the interaction between the fishing master and external forces, in this case the wholesalers at sea.

6.8. Internal Interactions of Buginese, Makassarese, and Mandarese Independent Fishers

There are similar interactions among independent fishers in the three ethnic groups. They mostly interact in the form of sharing information about fish stocks, fishing ground, the price of the fish and social life. Their interactions include mutual understanding and reciprocity among them in fishing. This means that if one is fishing, others will not try to fish in the same location, but they will move to other locations or they will wait until the fishing is completed. As a part of local resource user groups, the local community organization indirectly interacts with fishers, particularly the family members in contributing to household livelihood.

6.9. Interactions between Mandarese Ponggawa-Sawi and Local Resource Users

The interactions of the *pongawa-sawi* institution with local resource users are similar to the other two ethnic groups, particularly in relation to loans and social relations. The main difference of the interactions between the *pongawa-sawi* and independent fishers involves cooperation with use of the *rumpon*. Permission to use the *rumpon* is given to the independent fishers who have helped the *pongawa* to construct and to place *rumpon* at a fishing ground.

6.10 Internal Interactions of Mandarese Ponggawa-Sawi

The understanding of the internal interaction in the Mandarese *ponggawa-sawi* relationship (Figure 3) is different from the interaction of the Buginese and Makassarese *ponggawa-sawi* relationship.

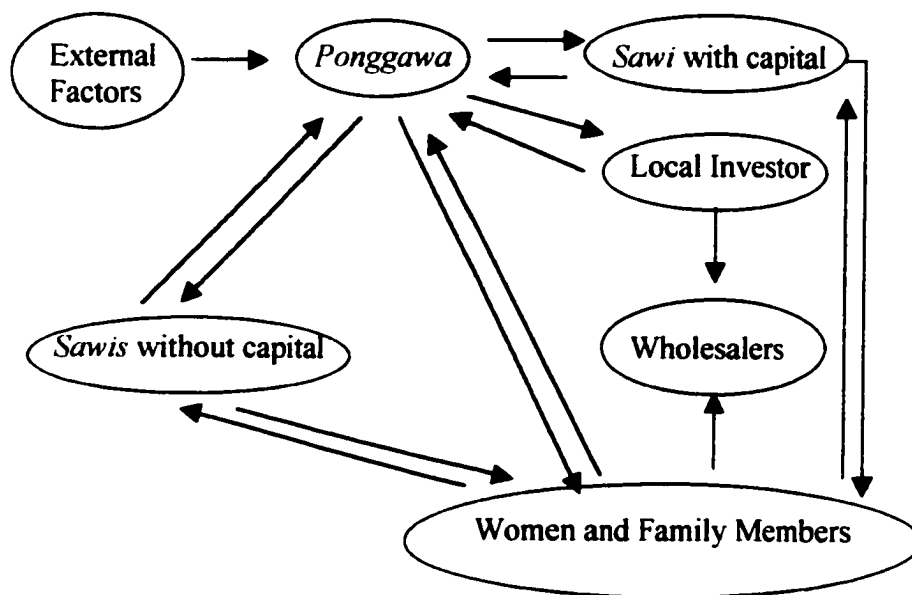


Figure 3. Internal Interactions of the Mandarese *ponggawa-sawi* relationship.

In Figure 3, the internal interactions between *ponggawa* and the *sawis* is more complicated than those of the other two groups. This is due to the significant involvement of women and family members in the share of the catch among the Mandarese. The internal interactions of the *ponggawa-sawi* institution among the Mandarese are as follows:

- *Interactions between the ponggawa and the sawis.* There are two types of interactions between the *ponggawa* and the *sawis*: between the *ponggawa* and the *sawis* that do not contribute capital, and between the *ponggawa* and the *sawis* who contribute capital. The relationship between the *ponggawa* and the *sawis* with capital is

symmetrical in terms of negotiating about the amount of capital and the catch share, while the relationship between the *pongawas* and the *sawis* without capital will be in the form of catch share according to their roles in fishing.

- *Interactions between the ponggawa and local investor.* In this interaction, both the *ponggawa* and the local investor maintain an investment relationship. In the case of *ponggawa* Danish Seine, the investor includes his fisher as a *sawi* in order to monitor the actual catch.
- *Interactions between the ponggawa, the sawis without capital, and the sawis with capital with their family members.* All shares of the catch of the *ponggawa* and the *sawis* are given to their family members, and then the family members arrange both for household consumption and marketing to local or regional wholesalers.
- *Interactions between ponggawa and external forces.* These interactions are mostly related to the market price and the preference of wholesalers. In this ethnic group there is a belief that the women or the family members are better able to predict the market price and preference for fish products.

6.11. Interactions between Ponggawa-Sawi and Local Government in the Research Sites

The interactions between the *ponggawa-sawi* institution and the local government are limited. The fact that the *ponggawa-sawi* do not use destructive fishing gear shows an indirect interaction between them. The use of fish auction halls and fish landings created by the local government would also indicate some interactions between them. The provision of land by local government for the ice factory in Tongke-Tongke can be understood as an indication of the recognition of potential role for the *ponggawa-sawi*

institution in enhancing the village economy and supporting the local resource users in the provision of ice blocks for their catches.

6.12. Interactions between Independent Fishers and Local Government

The interactions between independent fishers and local government are not two way. The local government mostly provides various facilities for the independent fishers for their activities. These range from the series of regulations that protect their interest, for example, the four mile fishing zone, to various local government fishery infrastructures, for example *KUD*, *KIK*, market outlet, *HNSI*, and fish landings. As a result, the independent fishers are quite dependent on local government for most of their activities. The independent fishers sometimes offer feedback to local government through a communal meeting (once a month depending on the local government program) or locally known as *Kontak Tani/Nelayan* to discuss their problems. In addition, some local government staff also hold group meetings with independent fishers to discuss specific programs, for example, the mechanisms for loans.

Under the current reformation government of Indonesia, the interaction of local government with the local community organization such as the *ACI* and *Karang Taruna* has become more intense. The local government has started a number of environmental restoration programs, particularly in relation to mangrove restoration, while these organizations provide labour. Meanwhile, these organizations also voice or channel the needs and aspirations of the local fishing community, for example, the transport and communication facilities that are useful for their economic activities. In a broad sense, this interaction is important, as the government will be able to save administration costs of development. At the same time, these local community organizations will use this

interaction in addressing the process of transformation of local fishery resources management.

6.13. Problem Identification resulting from the Interactions and Expectations in Co-Management

Interactions among the groups and internal interactions within each group are important in assessing new roles they might play in co-management or in assessing new problems that may result from the interactions. Pinkerton and Weinstein (1993) stated that the analysis of interactions among groups provides an effective way of communicating and minimizing misinterpretation or misunderstanding about the objective of co-management. Among all the strengths, the expectation of the willingness of the *pongawas* to share the decision-makings can be seen as the most positive sign for success of co-management. This means that they are willing to evolve their patronage system into a symmetrical one. According to Eistenstadt and Roniger (1977) and Kahane (1984), the shift of the patronage system from hierarchical to symmetrical would limit exploitation of the clients by the patron. The sharing of decision-making in co-management is essential, but new problems may also arise regarding how far the *pongawas* will share the ideas of local fishery resources utilization and sustainable fishing strategies without jeopardizing their own benefits. For example, the ecological and fish market knowledge of the *pongawas* is essential to them and has been gained through experience. Even though the *pongawas* have shown a tendency to share in decision-making, the social status and their roles in local fishing community are still the major factors that influence the decision-making.

In Mandarese patronage for example, the involvement of local investors in cooperative fishing would allow these investors to increase their demand or pressure on

the *ponggawas* to increase fishing rate if they perceive that the *ponggawas* could take a dominant role in co-management. The dominant role of Buginese and Makassarese *ponggawas* in decision-making processes (even though the fishing masters are also involved) may continue in decision-making processes in co-management. In these ethnic groups the *ponggawas* have never shared decision-making in their patronage. Any sharing of decision-making in these ethnic groups results from the inability of the *ponggawas* to handle alone the internal and external problems of their patronage systems.

Co-management should avoid the dominance by one group in formulating the rules and in decision-making processes. Cooperative decision-making in fishing and management strategies of Japanese fishing communities provide insight about mutual understanding and respect of each members' ideas and expectations which form the spirit of their co-management (Pinkerton and Weinstein, 1993; Yamamoto, 1995). However, Pinkerton and Weinstein (1993) acknowledge that even though the Japanese fisheries co-management is considered successful, there are problems, for example changes in the social relations and fishers' behaviour. As an example, suppose the *ponggawas* propose regulations in co-management, like the restriction on certain fish species for sustainability reason. The local government would be concerned about the social stability of independent fishers that depend on the restricted fish species. The independent fishers may leave the co-management because they exploit the fish species as their main source of livelihood that the co-management intends to manage and they will disobey the rules (Jentoft, 1999; Karlsen, 2001). Therefore, care is needed to avoid having one group force their own interest in the negotiation process, but all groups should accommodate all interests to minimize frustration. Even though the *ponggawas* and local government have

strong profiles in the fishing communities, they should collectively design and formulate all decision-making and accommodate all local resource users' ideas and expectations.

There are two reflections regarding the dominant role of the *ponggawa-sawi* institution in local fish marketing. First, the dominant role would directly only benefit the *ponggawas* and the local wholesalers. In this case, the local fishery resource will continue to experience pressures, as the fishing rate will increase for preferred fish species. Second, the monopolistic resource user group would lead to increase income differences among local resource users. These conditions may continue if the co-management initiative does not anticipate this undesirable situation. This situation could be balanced if the *ponggawas*, and representative of local government and independent fishers were actively involved in controlling the activities in fish auction halls and local fish markets, as is practiced in Japanese fishing communities where their FCA function effectively (Pinkerton and Weinstein, 1993). Even though FCA and *HNSI* (Fishers organization) are different in nature, FCA is created by local fishing communities, while the *HNSI* is created by government, through local government commitment, the *HNSI* could function properly. All groups represented in the model of co-management can use the *HNSI* to enter the fish market mechanism, and to do this, the local government should provide a legal framework for their involvement.

In South Sulawesi, the *HNSI*, fish auction hall, and the *KUD Mina*²³ should be revitalized during the process of co-management. In addition, if the *ponggawas* and the independent fishers' representative are to take significant roles in the *HNSI*, they also need to be revitalized or empowered as they do not have organizational experience, and

this is crucial when they are dealing with the local government in negotiation processes. Fellizar (1993) stressed that re-organizing community is important for achieving effective and efficient community institutions or organizations.

From the local government perspectives, the local *HNSI* should be used as a means to negotiate many aspects of local fishery utilization and management. However, the local fishing communities would only join the *HNSI* if the local fishing community runs this organization without too much government intervention. The local fishing communities in South Sulawesi may be reluctant to join the *HNSI* if the government still dominates or dictates its roles and functions. Therefore, for an effective co-management, the *HNSI* should be managed by local fishing communities.

The new roles of the *pongawa-sawi* institution in co-management are promising but have potential problems. There may be concern about the possibility of the *pongawas* using co-management as a means of prioritizing their clan members. This is unlikely since the *pongawas* themselves have recently faced a shortage of *sawis* from their clan. The willingness of the *pongawas* among the Buginese and Makassarese to accept the Mandarese in their patronage system should be perceived as the willingness of these *pongawas* to assimilate with other resource users. The important question is what will be the level of decision-making and negotiation that is suitable for the *pongawa-sawi* institution, other local stakeholders, and local government in co-management, with respect to equitable resource access allocations among local resource users.

The strength of the *pongawa-sawi* institution in co-management lies in the position of leadership, trust, and the strong image of the *pongawa*. Meanwhile the

²³ This *KUD Mina* has made less progress compared to other *KUDs* because the government prioritizes agricultural product over the fishery (Kusuma-Atmadja, 2000). According to Pasaribu (2000) the

strength of independent fishers is their ecological knowledge and ability to monitor the implemented regulations. The strength of the local government would be in providing facilities and enforcing the regulations. All these are expected to bring about the obedience and reciprocity among all groups in compliance with regulations.

Trust among the *pongawa-sawi*, independent fishers, and the local government is important in avoiding misunderstanding and misinterpretation during the process of co-management. In the Newfoundland fishery, both traditional fishers and local government were blaming each other for the depletion of fish stocks. Each party claimed their system of fisheries management was better than the others (Matthews and Pyne, 1983). In co-management, there should be an agreement to minimize the possibility of group superiority in the fisheries management strategy and undervaluing others' inputs. Co-management is a medium where all potential fisheries management strategies produce the best available option for the local fishery resources (Pomeroy, 1998). If the concern is related to possibility of more local fishing communities becoming dependent (especially in relation to financial and social services) on the *pongawa-sawi* institution in co-management, the local government itself should find methods²⁴ to reduce dependency on the *pongawa*. From the *pongawas'* perspective, the dependency of many local fishing communities on them actually does not always produce benefits, but it may be a burden because they have to provide sufficient capital that is frequently difficult to obtain especially during the low fishing season. This situation sometimes attracts the outside investors to offer loans to *pongawas*.

government only once gave the independent fishers credit after the removal of trawl in 1981.

²⁴ The local government through coordinating access to regional or provincial government could request to auction confiscated fishing boats from other countries and use the money for loans and savings. This has been practiced in Aceh Province, Indonesia which is worth 14 millions Rupiah (Kompas, 2000). The

The role of local government in providing regulation instruments is necessary in co-management. However, it is not automatic that the provision of legal recognition of traditional fishers would lead them to participate in local fisheries management. This is not only because they have no experience in fisheries management, but also past experience of centralized governing of the fishery resources may still be difficult to forget. The legitimization process should also be followed by a persuasive approach to local fishing communities in order to gain their trust in the willingness of local government to cooperate.

There may be some problems in assessing fish stocks. It has been known that updated information regarding the fish stocks is difficult to obtain from local government even for the small villages of the research sites. In order to achieve better fisheries management, information about both socio-economic behaviour of the groups and the carrying capacity of local fish stocks is needed (Jentoft, 2000^a). Further Jentoft (2000^a) emphasized that the failure to analyze both of these aspects frequently results in the failure of any fisheries management option. Normally, the local government with limited staff only records the fish landings from fish auction halls, and they lack fish records from informal fish landings. A bias in using the fish landing records for evaluating the local fish stocks would appear because frequently the fish are not from local village waters. This condition often inaccurate records of the local fishery resources.

The new roles of the majority of independent fishers are promising in co-management but may also produce new problems. They have a variety of local

practice of the Grameen Bank (The Panos Institute, 1989; Holcombe, 1995) in alleviating poverty may also provide essential options for self-financing the local fishing communities in South Sulawesi.

knowledge regarding the surrounding environment that can be useful to co-management with respect to local fish stocks. In Japanese fishing communities, the roles of traditional fishers are both for exchanging information about the condition of fishing grounds and reporting the violation of the rules (Ruddle, 1985; Pinkerton and Weinstein, 1993). The majority of independent fishers will be effective if they are well organized. However, the low level of education of most independent fishers frequently causes misunderstanding about fisheries management plans (Bailey *et al.*, 1987). The independent fishers in South Sulawesi have never been involved in fisheries management, so co-management could be a learning experience for them. In this sense, effort is needed to convince them that co-management is their chance to express their expectations and ideas. If the objectives of co-management do not address the substantial problems of the local resource users, for example, equitable resource access or the legitimacy of regulation in their interest, they may leave co-management and disobey the rules (Jentoft, 1999; Karlsen, 2001; Jentoft, 2000^b).

The significant roles of independent fishers and their family members' roles should not be underestimated. The involvement of all local stakeholders in co-management is aimed at making all regulations work (Ellsworth *et al.*, 1997; Pomeroy and Berkes, 1997). Even though the roles of women and family members in subsidizing household income in the Buginese and Makassarese are invisible, their roles for sustaining livelihood security, especially during the low fishing seasons are significant. Nurland (1993) and Nurland (1995) found that wives have substantive skill in household management among the Buginese, Makassarese, and Mandarese that is important for continuation of the livelihood security of fishers' household. Therefore, there may be new

problems arising in co-management when the roles of women and family members are underestimated. Abregana *et al.*, (1996) explained that the failure of co-management in Bais Bay, Philippines, resulted from complex political and social conditions including both limited knowledge about the resource and an underestimation of potential roles of women.

There will also be new roles for local organizations such as *ACI*²⁵ in Tongke-Tongke in motivating the local community to restore habitat. The method and the model of this environmental restoration could also be transferred to other fishing villages in South Sulawesi. In this case, it is useful to empower or to revitalize grass-root community organizations such the *ACI*, *PKK*, and *Karang Taruna* or youth groups in every village and the *PKK* organizations. The new roles of these community organizations will be to narrow the gap in perceptions about essential issues in co-management. In addition, they can also organize regular meetings among groups involved in co-management. Regular meetings in co-management are important for evaluating and correcting the agenda during the process of the work. Additional roles of these organizations will be to encourage or to accelerate the process of co-management. In co-management, there should be an effort to eliminate the possible existence of “free riders” organizations or groups that will take advantage during the project.

²⁵ This local community self-organization has received a number of awards from government and international agencies for its achievement in mangrove forest restoration. The benefit of this achievement then motivates the local government to provide transport facilities. However, this achievement does not always bring the satisfaction of local community in Tongke-Tongke, because according to some prominent leaders, M. Thayeb (the one who always benefits from the awards) is not the only person to rehabilitate the mangrove forest. Some other people in this village also have had made contributions. Thus, it can be

6.14. Processes of Co-Management

The explanation of the strengths and weaknesses of each group involved in co-management, and the analysis of their possible new roles and new problems arising when these groups are integrated into co-management will be used as a basis for developing and analysing the model of co-management suitable to local conditions. According to Pomeroy (1998), early identification of problems of groups in co-management is crucial. There will be some challenges from each group in the co-management framework, but the general challenge will be in terms of working cooperatively in local fishery resources management.

In the integration of the *pongawa-sawi* institution and local stakeholders into the co-management framework, the first step is to ensure that they are perceived to be part of an informal institution. According to Pomeroy (1998), as co-management is a process, there are four major steps, and these include pre-implementation, implementation, phase-out, and post-implementation. Pre-implementation means the identification of all possible elements or concerns that may have impacts on co-management. These will range from biological resources to social and economic perspectives of local community. The implementation phase means the evaluation and revision of all groups' role during co-management. Phase-out means to evaluate (frequently the NGOs) the results of co-management on emerging issues that were used as the basis for co-management implementation. Finally, post-implementation means the determination whether the co-management produces positive or unexpected outcomes, and this much relates to the success or the failure of co-management.

predicted that the award received by M. Thayeb (besides the award, money was also received) is not fairly allocated for the next replantation program.

Involving the *ponggawa-sawi* institution in co-management can be initiated by approaching each *ponggawa*. Based on the performance of the *ponggawa-sawi* institution in these three ethnic groups, it may be best to start with the Mandarese *ponggawa* because these *ponggawas* have experience in negotiating with their *sawis* and local investors. The flexibility of the *ponggawas* to negotiate with independent fishers and local government in co-management is also determined by the amount of external and internal interactions in their patronage system. The *ponggawas* may be reluctant to be involved in co-management because their patronage institution is considered still capable of providing sufficient benefits without other involvement. In contrast, the *ponggawa-sawi* may be willing to be involved in co-management if their patronage institution can no longer provide social services, and mutual dependency is the alternative. In addition, the *ponggawa-sawi* may be willing to participate in co-management if the local government is consistent with the objectives of co-management. From the *ponggawas* point of view, it seems that as long as the program of co-managing the local fishery resources does not jeopardize their patronage institution they would participate in cooperative fishery management. Similarly for independent fishers the protection of their main source of income becomes their primary concern in any fisheries development and management model in South Sulawesi.

Although the changes in the Mandarese *ponggawa-sawi* suggest they may be the most flexible group as a start to co-management, they are also clearly targeting migratory species. A closer, participatory analysis is required to determine what can be expected from a co-management scheme in Banggae village. There may be aspects of the current fishery which would be responsive to local management. Alternatively, it may be

possible to involve other villages and make a positive impact on one or more of the migratory species.

Theoretically, the *pongawas* and independent fishers could request the local government to revitalize the Ordinance 1916, Coastal Fishery Law of 1927, and Ordinance 17/1985 to strengthen their traditional fishing rights besides the New Local Administration Act No. 22/1999²⁶. These Ordinances and Coastal Fishery Law have been misdirected by the New Order regime and should be put on the right track in which traditional fishing rights for local fishing communities are clear. If the local government acknowledges this request, the *pongawas*, the *sawis*, and the independent fishers could be confident in joining co-management. In terms of alternative livelihood strategies during co-management, the local government could revitalize or re-enforce the Ministry Decree No. 1251/Kpts/KL.420/II/98 that stressed the need for fishing industries, such as the *Lapawawoi* Company in Lappa District, Sinjai, who enhance business in its area to implement foster parent programmes for local fishing communities or the revenue from fishing industries should be partly allocated to the creation of alternative livelihood. It is realized that not all the groups in co-management fully understand the sustainability issue of local fishery resources, and they may have different perceptions. The local government could revitalize the Ministry Decree No. 01/Kpts/UM/I/75 that this revitalization later will be used as a guideline for sustainable use of local fishery resources in co-management.

²⁶ The complete content of this Act can be seen in <http://www.otoda.or.id/uu/UU-22.htm>

The cultural tradition of most Indonesian people called *gotong royong*, translated as mutual cooperation, can be used as a spirit for the involvement of the *ponggawa-sawi* institution, independent fishers, and local government in co-management. Once the *ponggawas* are convinced about the need to properly manage the local fishery resources, they would perceive that this initiative could increase their income or increase the catch of independent fishers who in turn would sell the catch to the *ponggawas*. Then the next task will be to organize the independent fishers with various kinds of local knowledge and fishing patterns. When the local government participates in co-management, their involvement will be in the form of negotiating the emerging issues that should be solved cooperatively with consideration of the carrying capacity of local fishery resources, and to find ways to identify alternative livelihoods.

All this would work out if the negotiation, decision-making, and enforcement of regulations are based on a compliance system that all the groups in co-management are familiar with (Bavinck, 1996). Other local resource users who are unable to participate in co-management, cannot be physically excluded, but they would comply with the regulation if the co-management is legitimated by the groups (Wilson and Jentoft, 1999). According to Hønneland (1999) a participatory approach should be applied in co-management rather than a coercive approach in which the role of central government is dominant in designing the compliance system. A participatory approach would be in the form of cooperation of all local resource users to establish regulations based on norms and traditions. This implies that the legitimacy of social arrangements in the performance of the compliance system would be more acceptable than the coercive approach (Hønneland, 1999). He further stated that traditional knowledge, local commitment, and

social norms are the basis for compliance mechanisms in order to achieve the successful fisheries management system. In addition, Ostrom (1990) emphasized that direct involvement of all local resource users in designing the rules is important for the establishment of sustainable fisheries management, but external forces may also influence this condition. Therefore, to effectively implement co-management in South Sulawesi, the local government should accommodate and acknowledge any available traditional compliance system based on social norms of local communities.

After the *pongawas*, independent fishers, and local government are convinced to participate directly in co-management, the next step will be for them to identify their strengths and weakness and the potential roles they will play. Meanwhile, multidisciplinary research should also be started as well as participatory research on alternative livelihoods for the local community. Social research is intended to analyze and to evaluate the social impacts of co-management on local community livelihoods. Non-social research is intended to understand the capability and dynamics of the local fishery resources aimed at understanding the interactions among fish species, habitat, and fishing gear used that affect fish stocks. The variety of local ecological and biological knowledge of the *pongawas*, and *sawis* combined with traditional knowledge of independent fishers and the modern knowledge of local government can significantly enrich the participatory research.

The roles of local organizations such as *ACI*, *Karang Taruna*, and *PKK* are important in narrowing the difference perceptions among the groups in co-management, especially in dealing with the issues of resources allocation, compliance system and mechanisms, alternative livelihood, and the roles of women. The significant roles of

wives among the Mandarese can be used as an example for the Buginese and Makassarese. Meanwhile, the methods of habitat restoration of the Buginese can also be implemented by Makassarese and Mandarese. This means that they should exchange their experiences and strategies in aspects of livelihood and habitat conservation. The local fishing communities have such numerous problems in alleviating poverty and co-management cannot handle them at once. On this point, the roles of local informal leaders and the experience of all the groups, especially the *pongawa* who are experienced in dealing with various problems are needed in listing and selecting the most pressing problems to be solved collectively. The identified problems and solutions should start with those most affecting the local resources users and the community.

After all the problems and potential roles have been identified the *pongawas*, independent fishers, local prominent leaders, and local government can initiate discussion regarding the format of co-management. In this negotiation process, the carrying capacity of local fishery resources should also be considered as an important aspect to be discussed. The carrying capacity of local fishery resources is important because it will determine the success or failure of co-management. According to Dahuri (1998) the analysis of the carrying capacity of fishery resources in providing various services to resource users is important for sustainable fishery resources utilization and management.

Communication with local government will include resource access strategy, the amount of authority and responsibility to delegate, and clarification of objectives for the *pongawas*, *sawis*, independent fishers, and local government, and the roles they will play in co-management. Again, in local government itself, the availability of staff who fully understand the problems of the local community and fishery resources is required.

Considering the low level of education of most independent fishers, communication should proceed in simple and understandable language. The experience of local agricultural and fish farmers in negotiation of various concerns through their *Tudang Sipulung*²⁷ and *Kontak Tani Nelayan* programs can provide lessons for co-management. In these programs, all the problems, ideas, and conflict resolutions are expressed, and the spirit of these programs lies in unity and respect for each other.

In terms of the New Local Government Administration Act, it seems that local government and local community in South Sulawesi are not yet ready to accept full administrative and authoritative responsibility (Saad, 2001; Mallarangeng, 2001). Both local community and local government may face challenges when dealing with self-governing of local fishery resources as they have experienced thirty-two years of a strong centralized system of fisheries management. Therefore, the transformation of administration and responsibility to local government is a process that must gradually empower the local government and local community in governing their local resources (Pomeroy and Williams, 1994; Pomeroy and Berkes, 1997). In order to support the local government and local communities to deal with this transformation process, there should be support to revitalize their institutions as a means of institutional capacity building.

The roles of local government and the concern of the *pongawa-sawis* and independent fishers lie in the concern for the three mile exclusive fishing zone. Under the new act, the area is expanded to a four mile zone but realistically this will not have a significant impact given the growing number of resources users. This four mile zone

²⁷ *Tudang Sipulung* is a media where all local farmers gather together to discuss their problems in agricultural fields, and the discussion is led by a government official or local prominent leader from the agricultural community. The term *Tudang Sipulung* only exists in South Sulawesi. Actually, the fish

seems to be an essential point to discuss with local government because frequently the local government policies in this area have been inconsistent. For example, the policy on the establishment of coastal aquaculture that frequently raised conflicts between fish farmers and local independent fishers (Bailey *et al.*, 1987). In co-management, the defined area of fishery resources to be collectively managed is important, and any misunderstanding about the use of the area would impact either the groups or the fishery resources.

Once all participants have established communication and clarification of roles and responsibilities, continuous communication and exchange of information are needed during the process of co-management, as the emerging issues may continue to change. From all these efforts, it is important to note that the commitment of the government to implement the New Local Government Administration Act No.22/1999 and revitalization of Ordinances 1916 and No. 17/1985, as well as the Coastal Fishery Law of 1927 that officially recognize the traditional fishing rights of local resource users are crucial. Meanwhile, the commitment of the *pongawas*, the *sawis*, the independent fishers, and the local government to be consistent and to cooperate in the work of co-management is also essential.

6.15. Opportunities

The New Local Government Administration Act No.22/99, particularly in relation to the rights of traditional fishers to manage and to utilize local fishery resources, provides the opportunity for revitalizing or empowering traditional fishers and their informal institutions in South Sulawesi. In addition, social relations are changing within

farmers and fishers also have a medium to communicate with each other, called *Kontak Tani/Nelayan*. However, most of the discussion deals with the problems of fish farmers.

and among the patronage institution, the independent fishers, and the local government. Whatever the motives behind the direct involvement of the *pongawa-sawi* institution in local habitat restoration, the motives should be perceived as a positive attitude toward sustaining the local fishery resources rather than ignoring this institution.

The political will of the government to transfer some of its administration authority and responsibilities should also be followed by the willingness and the readiness of the local community to adjust their fishery utilization to a co-management arrangement. Revitalization and empowerment of local institutions, fishers' organizations, and local government institutions are important, as well as the empowerment of the groups in negotiation and decision-making processes. The Japanese government in strengthening its traditional fishers and local fishery organization has provided benefits to local fishing communities and the nation (Pinkerton and Weinstein, 1993; Yamamoto, 1995). Therefore, the *pongawas*, the *sawis*, and the independent fishers should be encouraged to join the *HNSI* because they are the fishery producers at the village level and dominate fishery utilization and the local fish market. The proper function of *HNSI* can be achieved if all its members work to find ways to alleviate the problems of local resource users and the sustainable use of fishery resources.

6. 16. Risks (Impacts and Constraints)

The involvement of the *pongawa-sawi* institution, the independent fishers, and the local government in co-management of local fishery resources in South Sulawesi is a new paradigm. The *pongawa-sawi* institution especially is commonly known only for utilizing the fishery resources. There are some risks with the involvement of the *pongawa-sawi* institution in co-management framework in South Sulawesi. First, the

Buginese and Makassarese *pongawas* with their years of experience in dominating the decision-making processes in their patronage system may continue to dominate in co-management. These *pongawas* may try to control other groups in the community meetings because they have an image that some independent fishers still have moral obligations to follow the *pongawas*, because of their loans. This may affect the decision-making processes, especially in selecting the priority issues to be addressed. However, since these *pongawas* allow other ethnic groups to work as their *sawi* in their patronage system, the risk of domination in decision-making process may be reduced. Second, if the *pongawas* and *sawi* do not have a clear role in co-management, they may not perceive that they have a moral responsibility in achieving the objectives of co-management.

Risks may also arise with the carrying capacity of local fishery resources because of limited information about the dynamics and interaction of fish stocks in most tropical countries (Christie and White, 1997). Theoretically, co-management is not managing the local fishery resources, but managing the resource users in order to achieve equitable access and fair distribution of the wealth of local coastal resources (Pomeroy, 1998).

Considering the number and various fishing gear in the three research sites, there should be an effort to evaluate the performance of fishing gear and methods that impact on the carrying capacity of local fishery resources. Therefore, in co-management, there should be a strong linkage between the number of participants and the carrying capacity of local resources, but this does not mean that some local fishers will not be restricted. There should be an adjustment of the number of local fishers and the carrying capacity of local fish stocks. There may be a diversification of target fish species, but this will depend on the local context, for example some Buginese fishing communities do not

consume black grouper, while for Makassarese, this fish is highly valued. Another risk would be in the availability of alternative livelihoods, because once the *pongawa-sawi* and independent fishers are involved in co-management, they are actually risking their main source of livelihood on an experimental basis (Pomeroy and Williams, 1994).

Once co-management is established in South Sulawesi, the area around the local fishing village may be established as an exclusive area. The outsiders or local communities who are reluctant to participate in co-management, would be marginalized as users. This may raise social inequity among local resource users.

Participation of the *pongawa-sawi* institution, and independent fishers in co-management, and the recognition by local government of the important roles of traditional fishers and their institutions may depend on the level of trust among participating *pongawa-sawi*, independent fishers, and the local government. This is understandable because the fishers will be newly involved with local government in the fishery management framework, but it is expected that a promising and positive result would be achieved. This would happen if the government is clearly consistent and defines roles and responsibilities for the *pongawa-sawi* and independent fishers. It is important to note that the government should not force its objectives in co-management, but the government should only function in facilitating the process, enforcing the regulations, providing modern knowledge of fisheries management, and in searching for alternative livelihoods. The ideas and defining the primary issues in co-management should lie mainly with the patronage institution and independent fishers themselves. This should include their preferences in searching for alternative livelihoods. For example, local fishing communities in Takalar regency, South Sulawesi, Lombok, and Nusa Island,

Biak, Indonesia, adopted the cultivation of seaweeds as an alternative livelihood (Hatta and Purnomo, 1994; Hatta and Dahoklory, 1996) and it was financed and assisted by local government.

The model of integrating the *pongawa-sawi* into co-management may face many challenges either in the formulation of decision-making mechanisms or in co-management implementation. However, through working cooperatively, and with the trust and consistency of all groups involved, the sustainability of local fishery resources may be achieved. This means that all user groups in co-management should realize each of their weaknesses and optimally function from their strengths with respect to the carrying capacity of local resources. The roles and problems of each user group may be temporary and can be changed according to internal and external forces. Thus, the model of co-management presented here is aimed at proposing an alternative approach to the sustainable use of local fishery resources. The ultimate implementation will depend on the willingness of local government to initiate this model. In addition, the willingness of *pongawas* and independent fishers to share their experiences and ideas about the sustainable use of local resources with local government is also important. Then, all user groups involved in co-management should also realize that there will be various changes in aspects of decision-making affecting the outcome co-management.

Chapter VII:

General Discussion and Conclusion

7.1. General Discussion

An examination of the performance of the *pongawa-sawi* relationship in three of South Sulawesi's fishing communities has revealed some opportunities for the integration of this institution into a co-management plan with independent fishers and local government. The reasons for integrating the *pongawa-sawi* into co-management are not only derived from the recently declared New Local Government Administration Act No. 22/1999, but also the recognition of the important roles of the two main user groups (*pongawa-sawi* and independent fishers) in order to achieve effective local fisheries management.

The reasons for proposing an integrated model of co-management in South Sulawesi include a wide range of biological, social and economic issues that need to be addressed with respect to the sustainable use of local fishery resources. The growing number of independent fishers, the significant role of the *pongawa-sawis*, the legal recognition of traditional fishers in local resource management, and the failure of government to centrally administer the fishery resources have contributed to the need to establish co-management in South Sulawesi.

The following is a discussion of the nature and importance of coastal fishery resources, the performance of the *pongawa-sawi* institutions in the three ethnic groups, the government policy of fisheries management, the independent fishers, strengths and weaknesses of government and all local resources users, and the emerging concerns of

local fish stocks and local community that lead to the design of an integrated model of co-management.

The importance of coastal fishery resources for small-scale fishers in South Sulawesi is clearly acknowledged both by local fishing communities and local government. Various fish species provide additional income but also produce potential conflicts among user groups, particularly since the fishery resources are limited and the number of users is growing. The interactions among fish species, habitat, and local fishery resource users produce complex problems in fisheries management. Conditions have further deteriorated with the absence of local fishery users participating in fisheries management because there has been no cooperative fisheries management including the local resource users and the local government. Various fisheries management policies have been designed by the government through the centralized system intended to achieve sustainable use of fishery resources but they have proven to be unpopular in the implementation. The reformation government of Indonesia finally realized that the centralized system of fisheries management was not effective, and the fishery resources and the environment have become depleted and degraded. This situation has not only caused a decrease of national revenue, but most importantly has produced an increase of poverty and social instability of local fishing communities due to their high dependency on the fishery resources. To address this undesirable condition, a fisheries management plan should be designed carefully that would accommodate all the fishery resource users' expectations and aspirations.

Fishery resources in the eastern part of Indonesia, including South Sulawesi are the focus of attention either for proposes of national revenue or for the provision of

animal protein (Dahuri and Dutton, 2001). Tomaschik *et al.* (1996) acknowledged that even though the fishery resources in the eastern part of the country are substantial both in terms of number of fish species and biomass, updates on fish stocks and habitat changes are scarce. Fishing gear and methods also change and this affects fisheries development and management. Furthermore, research focusing only on biological and ecological perspectives no longer satisfies the fishery management policy-makers. They are now looking for a wide range of impacts on society, the economy, policies, and law and regulation. This means the challenges are now more complicated for fishery resource management, particularly in coastal areas.

Dahuri (2001), Dahuri and Dutton (2001) emphasize that there should be some efforts to encourage integrated research on fishery resources, to empower human resources, and to establish a participatory approach to fishery management in order to achieve the sustainable use of fishery resources. It is believed that the results of these efforts would make a significant contribution to the design of fishery resource management. However, these efforts would be more significant if the research also identifies the potential roles of local informal institutions and independent fishers that have long been associated with the utilization of local fishery resources.

It is realized that it is difficult to develop and to analyze the model of co-management integrating the *pongawa-sawi* and independent fishers into the government fisheries management in South Sulawesi without reviewing the fisheries management policies. It is clear that the fisheries management policies of the Indonesian government are not designed to address the specific problems and solutions for each coastal fishery resource, but they have been set as general guidelines for the whole of Indonesia. Thus,

the regional and the local governments function as subordinates of the central government. This fishery resources management was centrally structured and created by the New Order Regime but eventually produced undesirable outputs. Many case studies have mentioned the failure of government in implementing the centralized system of fishery management that led to resource depletion, habitat degradation, and even increasing persistent poverty of local fishing communities in Indonesia (Dahuri, 2001, Dahuri and Dutton, 2001; Sardjono, 1983; Mantjoro 1996^a; Mantjoro, 1996^b; Saad, 2000; Saad, 2001; Nikijuluw, 1996; Nikijuluw, 2001).

The government did not directly cause the failures, but some local fishing communities also contributed to the failure of fisheries management. For example, in South Sulawesi, there are some beliefs among the local fishing communities that the fishery resources are never exhausted because the resources are given by God. This condition then is further exacerbated by the local resource users' behaviour resulting from limited concern about the sustainable use of fishery resources. The uses of dynamite or blasting for fishing and chemicals are classical examples (Pet-Soede and Erdmann, 1998). In addition, the market preference and high fish prices frequently force the local fishing community to put aside the sustainable resource consideration, and they increase their fishing rate. Unfortunately this increases the fishing pressure for specified target fish species. All these are then accumulated into the condition of "*the tragedy of the commons*" (Hardin, 1968).

In South Sulawesi, the *pongawa-sawi* institution in coastal fishing communities has never been encouraged by the government to participate in a strategy to solve or minimize the problems of the local fishery, on the contrary, this institution tends to be

marginalized. However, the social behaviour and economic motives in the local fishing communities in South Sulawesi are changing, as are the fishery resources and their habitats. When the resource users perceive that their main source of income is diminishing, there would be two options. First, they might leave their business in search of another source of income. Second, if the fishery resources are the main source of income (as in the case of the *pongawa-sawi* institution), they could respond to the situation through modifying their patronage system and carefully considering the sustainable use of the fishery resources. This has actually happened with the *pongawas* who have negotiated with other parties in order to maintain their patronage institution and their social roles in the local fishing community. If the government continues to marginalize this institution, the *pongawa* and *sawi* may act radically through increasing pressure on local fish stocks, considering the limited capability of government to enforce fishery management. A logical alternative is to incorporate the *pongawa-sawi* institution into a co-management framework.

Theoretically, several fishery resource management options can be implemented in South Sulawesi without involving the *pongawa-sawi* institution. These include the continuation of a centralized system by the local government, the legal recognition of traditional fishers (in this case the independent fishers) practices without government intervention, and the establishment of cooperative fishery management between the local independent fishers and local government. Each of these fishery management options has its own strengths and weaknesses and may or may not be suitable for local conditions in South Sulawesi's fishery resources and fishing communities. If the government were to continue its centralized system in governing the fishery resources in South Sulawesi -

assuming that the government implements the centralized system even though the New Local Autonomy Act has been issued - the past failures in administering the fishery resources would be repeated.

Traditional fishers could practice their traditional use rights in order to generate their income and to overcome the dilemma of common property fishery resources (Christy, 1982). This would be viable and promising in South Sulawesi if the traditional fishers had a traditional system for utilizing the coastal fishery resources. In considering giving the traditional fishers authority and responsibility to manage their local fishery resources without government involvement, one has to consider whether they are capable of enforcing their regulations when other local users have more capital and more advanced fishing technologies. Considering also that many independent fishers rely on the *pongawa-sawi* institution to obtain loans for their fishing, there would be a reluctance to impose the regulations on *pongawas*.

Considering the number of traditional fishers in South Sulawesi, the recognition of traditional use rights for fishing for individual fishers may be difficult to implement. If territorial rights are attempted, there would be a potential for inter-village conflicts as many fish resources are mobile. In addition, inter-ethnic group relations in the coastal fishing communities in South Sulawesi also contribute to the difficulties in implementing the traditional use rights for fishing. Giving fishing use rights exclusively to the independent fishers, in South Sulawesi will cause problems because the *pongawa-sawi* institution cannot be separated from these fishers. This is actually the weakness of the New Local Government Administration Act that it does not clearly mention who these traditional fishers are and what their roles will be. One interpretation would be that the

ponggawa-sawi institution could also be included as traditional fishers in the New Local Government Administration Act, as this act is still in a review and revision process.

All of this indicates that both centralized and informal fishery management cannot work without recognizing and including the *ponggawa-sawi*. Even so it will be difficult to involve these groups in effective local fisheries management after years of uncertain status for the informal institutions in utilizing the local coastal fishery resources. New Local Government Administration Act No. 22/1999 creates opportunities to establish cooperative fisheries management between the local government, the independent fishers, and the *ponggawa-sawi* institution. However, the government must clearly demonstrate its political will for decentralization, because sometimes the government issues policy aimed at reducing tension, but in fact it maintains a centralized system of fishery governance. Unclear definition of the traditional fishers' rights and roles in the new act will be interpreted as the reluctance of central government to seriously transfer responsibility to local government.

Previously, the *ponggawa-sawi* institution in fishing communities has been seen as only working internally between the *ponggawa* and the *sawis* in fishery resource exploitation. However, the emerging change of fish stocks and social relations in local communities has forced this institution to work cooperatively with other resource users for its continuation. The uncertain status of this institution and the protection of small-scale fishers under the common property of fishery resources will produce a free-for-all in the fishery. This will result for two reasons; first, the government rarely evaluates how policy has impacted small-scale fishers' livelihood; and second, there is lack of monitoring and assessment of the implementation of policy. Therefore, there must be an

effort by the policy makers to undertake a persuasive approach to encourage participation in local fisheries management schemes.

Decentralization of fisheries management to a co-management scheme seems to be a viable option. However, there are at least two major aspects that need to be carefully considered: the political will of central government, and the availability of supporting infrastructure of local government and the local fishing community to facilitate decentralization. A lack of political will and continuous commitment from central government would result in frustration of local fishing communities and may lead to increased exploitation of fish stocks. The decentralization of natural resources to local government and local communities is an opportunity for central government to gain trust and sympathy from local fishing communities, especially the traditional fishers and *pongawa-sawi* institution after years of ignoring them. The second concern is about the capability of local government and local fishing community to self-govern their local fishery resources without creating marginal user groups. There is still a lack of qualified human resources, as well as limited infrastructure for administering the local fishery resources. In fact, this would be a new experience for traditional fishers and the *pongawa-sawi* institution to work together with local government in administering their local fishery resources. This is an opportunity but also a challenge for empowering or revitalizing the independent fishers and institutions such as the *pongawa-sawi* institution to take on roles in local fishery management initiative.

The process of transformation of administrative authorities and responsibilities from central government to local government or local community cannot be completed quickly. There are several trials and steps needed. This process of transformation in

phases to local government is important in order to minimize misinterpretation or misunderstanding (Weningsih and Faozanudin, 2000). Before wide-spread delegation of government authority and responsibility to local government, the central government has tried decentralization with some local governments, for example, in 1998 Gowa regency in South Sulawesi was selected as a pilot project for implementing the transformation. The results show that some efforts are needed to empower local government staff and institutional capacity building for self-governing of local natural resources (Ananda, 2001).

Under the New Local Government Administration Act No.22/1999 self-administration of local fishery resources is expected to increase local revenue and to achieve equitable sharing of the resources. It may be that local government and local communities in South Sulawesi have different perceptions of sustainable use and self-governance of local fishery resources management. Under the act, sustainability becomes a primary concern in self-administering of the local fishery resources. In order to achieve sustainable use of local fishery resources, careful design and planning are needed to be sure of equity of access rights and sustainability of the local resources through minimizing marginal resource users.

The local government and local community should have a clear understanding that local fishery resources are not only for economic benefits for the resource users, but also for improving livelihood of all members of the local fishing community. Lessons can be learned from the failure of fishery resource policy of the regional government in South Sulawesi in the 1980s when the regional government encouraged the local fishing communities to establish shrimp aquaculture through the provision of soft loans. The

result of this policy was that mangrove forests were converted into coastal aquaculture while the benefits were captured by a small number of people. Most benefits of this program have been allocated to central government, while the local government only received a small portion of the benefits compared to environmental costs.

The initiation of co-management in South Sulawesi` fishing communities can not be separated from the negotiation processes among all potential resource users and the New Local Government Administration Act is the basis for this. The success or the failure of co-management of local fishery resources depends on the efforts and commitments of all the groups and local government. In order to encourage direct participation and the commitment of all groups, the past approach of central government must change to a participatory approach.

Various experiences of the Philippines in implementing co-management have revealed some useful insights (Ferrer *et al.*, 1996; Abregana *et al.*, 1996) about the strong support of its Local Government Code since January 1992. Similar conditions are reflected in the introduction of co-management in South Sulawesi with legal support from the New Local Government Administration Act. In addition to the strong legitimization from the Philippines Local Government Code, the continuous support of the Philippines NGOs has been important. In Indonesia, NGOs were frequently accused of opposing the previous government. However, NGOs, known in Indonesia as *Lembaga Swadaya Masyarakat* or *LSM* have been given opportunity in recent political reform to assist in accelerating national sustainable development through participatory approaches. According to Djohariah (2000), based on the success of the NGOs in the Philippines and Indonesia, the *LSM* in Indonesia should be involved in every project addressing

environmental and poverty concerns. This is a means for accelerating local community empowerment and capacity building.

Co-management of local fishery resources is new for local fishing communities in South Sulawesi. According to Pomeroy and Williams (1994), a persuasive approach is needed to encourage local fishing communities to participate in co-management. This is true especially in the case of South Sulawesi's fishing communities where at least two aspects need to be addressed. First, there is still a doubt among local fishing communities about the consistency of co-management objectives. This was also a concern of Dahuri and Dutton (2001) in the lack of initiative of the local fishing community and self-motivation when the Coastal Resources Management Project ceased. For local fishing communities, in a case where there are limited alternative livelihoods, the fishery resources are their only means of livelihood. Putting their main source of livelihood at risk in a trial and error for co-management would mean they are putting their livelihood security in uncertainty. To anticipate this, the local government together with other local informal leaders should first provide backup alternative livelihoods for them. In addition, some local fishing communities may still be pessimistic about the initiative of co-management, because they have experience with previous governments in centralizing fishery resource management. Second, some local fishing communities may prefer to continue to simply depend on government guidance in fishery resource management.

However, based on my research regarding the performance of the *pongawa-sawi* in the three villages in South Sulawesi, the *pongawa-sawi* institution perceives this co-management option as a new approach that would accommodate objectives and expectations of all local resource users in the fishing community and local government.

The accommodation will include the expectation of local government to re-gain local community's trust and confidence over the local fisheries management, and the opportunity of the local fishing community to practice and to express their needs and expectations. This means that there should be an effort to carefully select and prioritize the emerging issues that will significantly affect the local fishing community's livelihood and local fishery resources.

The emerging issue is whether the *pongawa-sawi* institution can contribute in co-management with respect to the current performance of this patronage system or is this institution still positioned as a marginal user group. Based on the changes of the patronage system in the three areas studied, it is believed that this institution has strengths that may be valuable to local fishery resources management. The question then may arise, why should the *pongawa-sawi* institution have the right to participate in co-management beside independent fishers and local government? There are some reasons for this:

- In terms of organizational structure in fishing and investment strategy, the *pongawa-sawi* institution seems more capable than the independent fishers in general, for example in market network distribution and in local fish marketing stimulation (Streich, 1996).
- There would be some risk if this patronage institution is not involved in the local fisheries management initiative. This patronage institution is capable of financing local independent fishers and other resource users to increase the fishing rate that in turn would affect the local resources sustainability.

There must be some risks and expectations of integrating the *ponggawa-sawis* into co-management of local fishery resources. These may include the possibility of the *ponggawas* dominating the process, while independent fishers may be reluctant to oppose the *ponggawa*. In dealing with this situation, an early identification of each of their roles is important, and then this should be followed by regular meetings for review. Another risk is that outside wholesalers may use the *ponggawa* to achieve their economic benefits. It has been said that the co-management is not managing the fishery resources, but managing the resource users (Pomeroy, 1998). In order to be able to reduce the risks of the wholesalers exploiting the *ponggawa*, there should an effort to understand the business linkages between them, so all participants are aware of potential biases.

Besides the need to encourage all local resource users to actively participate in co-management, the issues of potential roles of wives and the family members should not be underestimated. In the co-management initiative, the involvement of women and family members is important as they also have roles in sustaining the livelihood for local resource users' families. It is not clear how this will be accomplished but each group needs to consider what would work best.

The availability of various fish species and environments does not necessarily mean that the concern for carrying capacity of local fish stocks is less important than other issues in co-management. The capability of local fishery resources to provide continuous services to the local fishing community would be the final expectation of co-management in the long-term. Christie and White (1997) acknowledged that in most tropical countries, the accessibility of fishery information is difficult to obtain for evaluating the carrying capacity of fishery stocks. In this situation, the role of traditional

local knowledge of local fishery users is important in evaluating the carrying capacity of local fishery resources to support co-management.

The sustainable use of fishery resources should be used as a basis for establishing co-management in South Sulawesi. This means that the local administration of the fishery resources has been given to local government, and then the utilization of the resources should directly increase local revenue, as well as the improvement of living condition of local fishing community. Even though Ostrom (1990) stated that sustainability of fishery resources could be achieved by limiting resource access, the growing number of local resource users and their high dependency on the resources would create challenges. Therefore, the approach would be to search other potential fishing grounds, alternative livelihoods, diversification of the catch, the improvement of fish market price and encouraging the local fishery users to reduce their fishing pressures without jeopardizing their livelihood.

7.2. Conclusion

This interdisciplinary research which focused on the Buginese, Makassarese, and Mandarese *pongawa-sawi* institutions in South Sulawesi has shown various changes of their structures, objectives, and strategies in the utilization of fishery resources. The external and internal pressures have forced this institution to emerge from one based on the single authoritative decision-making of the *pongawa* to a cooperative one. Changes have included locality of fishing, limitation to single ethnic group involvement, and the patron's total control of all activities in the patronage system. Furthermore, there are signs that the *pongawas* are not only concerned with utilizing the fishery resource, but also to conserve local habitat. The evolution of the Mandarese *pongawa-sawi* to a

horizontal mode and the willingness of Buginese and Makassarese *pongawas* to consider alternatives for local fishery management should be considered as positive.

A framework for integrating the Buginese, Makassarese, and Mandarese *pongawa-sawi* into co-management in South Sulawesi has been presented as an option for involving this institution in local fisheries management. It is realized that this framework may not fully accommodate all factors that may affect the outcome of co-management, but through this integrated model there could be encouragement or motivation to start to establish co-management.

Co-management option for governing the local fishery resources in South Sulawesi is a new paradigm after thirty-two years under a central system. The argument of involving the *pongawa-sawi* institution in co-management is not only the legal recognition of the importance of traditional fishers and their institutions in local fishery resource management, but also acknowledges the fact that this institution dominates local fishery activities including other local resource users.

Based on the current conditions of fishery resources in South Sulawesi, there is still limited information regarding the status of fish stocks, especially at a local level. In addition, the type and number of fishing gear created by local fishing communities is rarely inventoried. The understanding about the complex interactions among fish resource and habitat, as well as the multiple fishing gear used also need to be considered. This basic information is important when the regulations are made regarding allowable amount of fish to be harvested.

The *pongawas*, *sawis*, local government, and independent fishers in South Sulawesi are new to the co-management system, and it is expected that there will be both

success and failure. The possibility of failures should be discussed among the local resource users, along with efforts to find alternative livelihoods in anticipation of the failures in the fishery. Based on the conditions in the three research sites, it seems the challenge would be to organize the dispersed independent fishers and to encourage them to actively participate in the co-management initiative. It should be noted that the introduction of co-management through involving the *pongawa-sawi* institution, independent fishers, and local government will not be the ultimate solution to problems of local fishery management. What is needed is a process of trial and error and modification until all participants are satisfied.

The proposed model of integrating the *pongawa-sawi* institution together with independent fishers and local government in co-management may not be the ultimate model for South Sulawesi's fisheries management. There will be ongoing external and internal factors causing changes in the groups, as well as continuous revitalization and re-empowerment of local fishing communities, their institutions and local government. There is a need for in-depth analysis of the socio-economic benefits of *pongawa-sawi* involvement in local habitat conservation, the functioning of the sharing system, *KUD*, fish auction halls, *HNSI*, fish landing sites, loans scheme, and the fish market network. In addition, analyses of gender in coastal fishing communities, compliance systems of *pongawa-sawi* and independent fishers, and the existing informal systems in utilizing the local fishery resources should also be initiated. All these assessments will be valuable in contributing to the design and formulation of a new form of co-management in the fisheries of South Sulawesi.

The variety and numerous fishery resources in South Sulawesi cannot sustain long-term use if the local resource users and the *pongawa-sawi* institution do not participate in local fisheries management. Even though they have some weaknesses, building on their strengths with the support of local government in facilitating the co-management initiative, sustainable use of fishery resources can be achieved.

Appendix 1.

Letter of Informed Consent:

Dear Respondent,

I am a student in Interdisciplinary Studies at Dalhousie University conducting research for a Ph.D. thesis. I am interested in understanding the *pongawa-sawi* system, especially in relation to coastal resources utilization and management in three different ethnic groups in South Sulawesi. I will be interviewing *pongawa* and *sawi* regarding the coastal resources utilization, as well as independent fishers, reliable local informal leaders, local and regional governments, non-government organizations, and researchers who are not directly involved in this patronage system.

My field research will involve semi-structured interviews and participant observation. I will be asking you some specific questions but I am also interested to learn what you think are the important issues in the *pongawa-sawi* relationship. Later I may request a short follow-up interview with you for clarification. Your participation is entirely voluntary and you may choose to withdraw from answering any of the questions I ask without terminating the interview. If you have given me permission to tape the interview you may still ask me to turn off the recorder at any time. Questionnaires and tapes will be kept and stored in a locked cabinet for a minimum five years. The questionnaires and tapes will be coded so that only I will know the identification of the person interviewed.

What you inform me will remain confidential. When the information is used, your privacy will be protected through changing identifying characteristics and using different names. I also will provide you with a non-academic summary of the findings or a verbal summary, on your request when my thesis is finished. My thesis itself will be available to be read in the Faculty of Graduate Studies, at Dalhousie University.

If you have any questions regarding my field research, you may call me after the interview at 411-585-028. If you would like to discuss my field research with someone else please feel free to call my doctoral supervising committee chair Dr. Gary Newkirk at 494-2284, Lester Pearson International, Dalhousie University, Halifax, Nova Scotia, Canada.

I really appreciate you time and contribution in my field research. I hope this field research will interest you as well.

Sincerely,

Muhammad Yusran

I agree to participate in Muhammad Yusran's thesis research

Signature of respondent

Appendix 2.

Surat Persetujuan: (Indonesian)

Dengan Hormat,

Saya adalah mahasiswa Interdisiplinari pada Dalhousie University yang akan melakukan penelitian Doktor. Saya tertarik meneliti sistem *pongawa-sawi* khususnya yang berhubungan dengan pengelolaan dan penggunaan sumberdaya perikanan pantai yang dilakukan oleh tiga suku di Sulawesi Selatan. Saya akan mewawancarai *pongawa, sawi*, mengenai penggunaan sumberdaya perikanan pantai, demikian juga dengan nelayan, pemimpin lokal, staff pemerintah lokal dan wilayah, LSM, dan peneliti yang secara langsung atau tidak langsung terlibat dalam sistem *pongawa-sawi* ini.

Penelitian lapangan saya ini akan dilakukan dengan wawancara dan pengamatan lapangan. Saya akan menanyakan beberapa pertanyaan penting, tapi saya juga akan mempelajari bagaimana pendapat anda mengenai pentingnya hubungan *pongawa-sawi* ini. Kemudian saya akan menanyakan lagi hal-hal spesifik untuk mendapatkan gambaran atau penjelasan yang lebih rinci. Partisipasi anda adalah bersifat bebas dan anda bisa tidak terlibat atau tidak menjawab pertanyaan saya tanpa membatalkan wawancara ini. Jika anda tidak menginginkan saya untuk memakai alat perekam, maka anda berhak meminta saya mematakannya kapan saja. Kwisiorer dan pita rekaman akan saya simpan dan jaga di tempat terkunci minimum dalam waktu lima tahun. Kwisiorer dan rekaman akan diberi tanda, sehingga hanya saya yang tahu identifikasi dari orang yang saya wawancarai.

Apa yang anda beritahukan adalah bersifat rahasia. Manakala informasi ini saya gunakan, maka identitas anda akan terjamin melalui perubahan identitas dan perbedaan nama. Saya juga akan menyediakan ringkasan hasil temuan, atas permintaan anda jika diinginkan. Thesis saya sendiri dapat dibaca di Fakultas Pasca Sarjana, Dalhousie University.

Jika anda mempunyai pertanyaan lain mengenai penelitian saya ini, anda dapat menghubungi saya setelah wawancara ini pada 411-585-028. Jika anda ingin mendiskusikan penelitian saya ini dengan orang lain, silahkan menghubungi pembimbing program doktor saya yang diketuai oleh Dr. Gary Newkirk pada 902-494-2284, Lester Pearson International, Dalhousie University, Halifax, Nova Scotia, Canada.

Saya sangat menghargai waktu dan partisipasi anda dalam penelitian saya ini. Semoga penelitian ini juga menarik buat anda.

Hormat,

Muhammad Yusran

Saya setuju untuk berpartisipasi dalam penelitian lapangan Sdr. Muhammad Yusran

Tanda Tangan Responden.

Appendix 3.

Research Questionnaires

3. Village Research Site Databases: (It will be applied in each of Research Site)

- | | | |
|--|---|---|
| a. Village area | = | Square km ² |
| b. Coastal area | = | Square km ² |
| c. Mangrove area | = | Square km ² |
| d. Sea grass area | = | Square km ² |
| e. Coral Reefs area | = | Square km ² |
| f. Coastal aquaculture | = | Square km ² |
| g. Fisheries Species/Potential according to type of Coastal Habitats | | |
| g.1. Mangrove area | | |
| - Fishery Species | = | (Indonesian, Scientific, and Local Names) |
| g.2. Sea Grass area | | |
| - Fishery Species | = | (Indonesian, Scientific, and Local Names) |
| g.3. Coral Reefs area | | |
| - Fishery Species | = | (Indonesian, Scientific, and Local Names) |
| h. Population | = | People |
| i. Educational Attainment | | |
| i.1. University/College | = | |
| i.2. Diploma | = | |
| i.3. Senior High School | = | |
| i.4. Junior High School | = | |
| i.5. Elementary School | = | |
| i.6. None | = | |
| 3.a. Number of Coastal Resource Stakeholders | | |
| - <i>Ponggawa</i> | = | |
| - <i>Sawi</i> | = | |
| - Independent Fishers | = | |
| - Retailers | = | |
| - Fish Brokers | = | |
| - Wholesalers | = | |
| - Fish Export and Processing Companies | = | |
| - Others | = | |
| 3.b. Number of Fishing Gear | = | |
| 3.c. Types of Fishing Gear | = | |
| 3.d. Number of Fishing Boat | = | |
| 3.e. Types of Fishing Boat | = | |
| 3.f. Fishing Gear according to their Catch | | |

- Purse Seine =
- Gill Nets =
- Beach Seine =
- Mobile Lift Net =
- Others =

3.h. Local Government Institutions

- Number of KUD (Village Cooperative) =
- Number of Rural Banks =
- Number of Fish Storages =
- Number of TPI (Fish Auction Hall) =
- Others =

3.i. Government Support of Social Organization

- PKK (Family Welfare Organization) =
- *Kontak Tani/Nelayan* (Farmers/Fishers Organization) =
- Others =

3.1. Information from the Ponggawa (the content of semi-structured interview):

- Name (Code of Respondent) =
- a. Age =
- b. Sex =
- c. Education =
- d. Marital Status =
- e. Ethnic Origin =
- f. Ethnic Origin of his/her Wife/Husband =
- g. Number of Wife/Wives =
- h. Number of Children =
- h.1. Children Educational Level =
- i. Source of Income other than Fishing =
- j. Number of Fishing Gear =
- k. Number of Fishing Boat =
- l. Number of *Sawi* =
- m. Relation to *Sawi* =
- n. Occupation when no fishing activity =
- Income received =

3.1..a. Fishing Operation, Marketing Product, and Sharing System

3.1.a.1. Fishing Operation

- Fishing Ground =
- Fishing Gear used =
- Number of *sawi* employed based on Fishing Gear Used =
- Purse Seine =

- Gill Nets =
- Mobile Fishing Gear =
- Others =

3.1..a.2. Seasonal Fishing Grounds

- Peak of Fishing Seasons = months
- Location of Fishing Grounds =
- Nautical Miles from the Shore = miles
- Target Species =
- Number of Fishing per day =
- Fish Species dominant caught =
- Average Fish caught = per kg/basket
- Average Income = Rp
- Average Operational Costs = Rp
- Average *Sawi* employed = people

- Low of Fishing Seasons =
- Location of Fishing Grounds =
- Nautical Miles from the Shore = miles
- Target Species =
- Number of Fishing per day =
- Average Fish caught = per kg/basket
- Average Income = Rp
- Average Operational Costs = Rp
- Average *Sawi* employed = people

3.1..a.3. Fishing Gear Used at Peak of Fishing Seasons

- Type of Fishing Gear Used =
- Number of *Sawi* employed =
- Operational Costs =
 - Gasoline =
 - Foods =
- Kg Fish per one fishing trip =
- Fish Species dominate that caught =
- Fish landings Preference =
 - Reasons =

3.1.a.4. Fishing Gear Used at Low of Fishing Seasons

- Type of Fishing Gear Used =
- Number of *Sawi* employed =
- Operational Costs =
 - Gasoline =
 - Foods =

- Kg Fish caught per one fishing trip =
- Fish Species dominate that caught =
- Fish landings Preference =
- Reasons =

3.1.a.2. Marketing and Product Options

- at Peak of Fishing Seasons =
 - Local market Destination =
 - Regional market Destination =
 - International market Destination =
- Product Sold
 - Fresh Fish =
 - Dried or Salted Fish =
- at Low of Fishing Seasons =
 - Local market =
 - Regional market =
 - International market =
- Product Sold
 - Fresh Fish =
 - Dried or Salted Fish =

3.1.a.3. Sharing System (per type of Fishing Gear)

- Investment for Fishing Boat (in Rp) =
- Investment in Fishing Gear (in Rp) =
- Investment in Boat Engines (in Rp) =
- Price of Fish per Basket =
- Price of Gasoline per Fishing Trip =
- Administrative Costs in TPI =
- Income received per fishing trip =
- Income received per month =
- Saving per month =

3.1.a.4. Division of Labour in *Ponggawa-Sawi* System

- in Fishing Operation
 - Fishing Master =
 - Crew at Fishing Operation =
- Decision Making Process
 - Consideration of Decision making =
 - in Fishing Operation =
 - in Selecting *Sawi* in Fishing Operation =
 - in Marketing the fish caught =
 - in receiving outside financial assistance =

- System of compliance =
- System of *sawi* Recruitment =

3.1.a.5. Social and Economic Relations to *Sawi*

- Relation to *Sawi* =
- Type of Assistance to *Sawi* =
- Roles of *sawi*'s wife/family =
- Strategies to maintain the *Sawi* =
- Type of incentives is given to *Sawi* =
- Type of Relations to Independent Fishers =

3.1.a.6. *Ponggawa* Perceptions and Expectation on

- Government Supporting Institutions =
- Government Loans/Banks =
- Government Policies on Fisheries Resources =
- The Patronage system itself =
- Non-Government Organizations =
- Government Village Administration =
- Independent Fishers =
- Fisheries Resources Use and its Management =

3.2. Information from the *Sawi* (the content of semi-structured interview):

- Name (Code of Respondent) =
- Age =
- Education =
- Marital Status =
- Ethnic Origin =
- Ethnic origin of his wife =
- Number of Children =
- Children Educational Level =
- Source of Income other than Fishing =
- Relation to *Ponggawa* =

3.2.a. Fishing Operation, Marketing Product, and Sharing System

3.2.a.1. Fishing Operation

- Fishing Ground =
- Fishing Gear Specialized =
- Function in Fishing Operation =

3.2.a.2. Seasonal Fishing Grounds

- Peak of Fishing Seasons =
- Location of Fishing Grounds =
- Nautical Miles from the Shore =
- Function in Fishing Operation =

- Number of Fishing per day =
- Average Income per month =
- Average Saving per month =
- Low of Fishing Seasons =
- Location of Fishing Grounds =
- Nautical Miles from the Shore =
- Function in Fishing Operation =
- Number of Fishing per day =
- Average Income per month =
- Average Saving per month =

3.2.a.3. Fishing Gear Used at Peak of Fishing Seasons

- Type of Fishing Gear Used =
- Kg Fish caught per one fishing trip =
- Fish Species dominant that caught =
- Fish landings Preference =
- Reasons =

3.2.a.4. Fishing Gear Used at Low of Fishing Seasons

- Type of Fishing Gear Used =
- Kg Fish caught per one fishing trip =
- Fish Species dominant that caught =
- Fish landings Preference =
- Reasons =

3.2.a.5. - Decision Making Process

- Consideration of Decision making to select *Ponggawa* =
- System of compliance/Obedience =
- System of *sawi* Recruitment =

3.2.a.6. Income generated from the Sharing System

- Income received per fishing trip = Rp
- Income received per month = Rp
- Saving per month = Rp
- Occupation when no Fishing Activities =
- Income received = Rp

3.2.a.7. Social and Economic Relations to *Ponggawa*

- Relation to *Ponggawa* =
- Type of Assistance from *Ponggawa* =
- Roles of *sawi*'s wife/family =
- Strategies to maintain the *Ponggawa* =
- Type of incentives is received from *Ponggawa* =
- Type of Relations to Independent Fishers =

3.2.a.8. *Sawi* Perceptions and Expectation on

- Government Supporting Institutions =
- Government Loans/Banks =
- Government Policies on Fisheries Resources =
- The Patronage system itself =
- Non-Government Organizations =
- Government Village Administration =
- Independent Fishers =
- Fisheries Resources Use and its Management =

3.3.Information from Independent Fishers (the content of semi-structured interview):

- Name (Code of Respondent)=
- Age =
- Education =
- Marital Status =
- Ethnic Origin =
- Ethnic origin of his wife =
- Number of Children =
- Children Educational Level =
- Source of Income other than Fishing =
- Relation to *Ponggawa* =
- Relation to *Sawi* =

3.3..a. Fishing Operation, and Marketing Product

- 3.3.a.1. Fishing Operation
 - Fishing Ground =
 - Fishing Gear Used =
 - Function in Fishing Operation =
- 3.3.a.2. Seasonal Fishing Grounds
 - Peak of Fishing Seasons =
 - Location of Fishing Grounds =
 - Nautical Miles from the Shore =
 - Function in Fishing Operation =
 - Number of Fishing per day =
 - Fish Dominant caught =
 - Average Income =
 - Average Kg/basket of Fish caught =
 - Low Fishing Seasons =
 - Location of Fishing Grounds =
 - Nautical Miles from the Shore =
 - Function in Fishing Operation =
 - Number of Fishing per day =
 - Fish Dominant caught =
 - Average Income =
 - Average Kg/basket of Fish caught =

3.3.a.3. Fishing Gear Used at Peak of Fishing Seasons

- Type of Fishing Gear Used =
- Operational Costs =
- Kg Fish caught per one fishing trip =
- Fish Species dominant that caught =
- Income =
- Saving =
- Fish Landings Preference =
 - Reasons =
- Roles of women/family =

3.3.a.4. Fishing Gear Used at Low Fishing Seasons

- Type of Fishing Gear Used =
- Operational Costs =
- Kg Fish caught per one fishing trip =
- Fish Species dominant that caught =
- Income =
- Saving =
- Fish landings Preference =
 - Reasons =
- Roles of women/family =

3.3.a.5. - Decision Making Process

- Consideration of Decision making to be independent fishers =
- System of compliance/Obedience to fisheries resources =
- Source of capital for fishing gear, boat and fishing operation =

3.3.a.6. Income Attainment

- Income received per fishing trip =
- Income received per month =
- Saving per month =

3.3.a.7. Social and Economic Relations to *Ponggawa* and *Sawi*

- Relation to *Ponggawa* =
- Relation to *Sawi* =
- Type of Assistance from *Ponggawa* (if any) =
- Roles of his wife/family =
- Strategies to maintain as independent fishers =
- Type of incentives is received from Government =
- Type of Relations to *Ponggawa* =
- Type of Relations to *Sawi* =

3.3.a.8. Independent Fishers' Perceptions and Expectation on

- Government Supporting Institutions =
- Government Loans/Banks =
- Government Policies on Fisheries Resources =
- The Patronage system =
- Non-Government Organizations =
- Government Village Administration =
- The *Ponggawa* =
- The *Sawi* =
- Fisheries Resources Use and Its Management =

3.4. Information from Reliable Informal Local Leaders, Community, NGOs, Researchers, and Regional and Local Government Officers Regarding:

3.4.a. from Reliable Informal Local Leader

- Name (Code of Respondent) =
- The *Ponggawa-Sawi* System =
- The Sharing System in the *Ponggawa-Sawi* System =
- The Function of *Ponggawa* =
- Village Government Administrative =
- Informal Fish Landings =
- Fish Auction Hall =
- Coastal Fisheries Resources =
- Income Distribution among stakeholders =
- Alternative Livelihood =
- Coastal Aquaculture =
- The roles of Village Cooperative =
- The roles of Rural Banks =
- Coastal habitats =
- Informal market system =
- Market mechanisms =
- Fisheries Utilization and Management =

3.4.b. from Community

- Name (Code of Respondent) =
- The *Ponggawa-Sawi* System =
- The Sharing System in the *Ponggawa-Sawi* System =
- The Function of *Ponggawa* =
- Village Government Administrative =
- Informal Fish Landings =
- Fish Auction Hall =
- Coastal Fisheries Resources =
- Income Distribution among stakeholders =
- Alternative Livelihood =
- Coastal Aquaculture =

- The roles of Village Cooperative =
- The roles of Rural Banks =
- Coastal habitats =
- Informal market system =
- Market mechanisms =
- Fisheries Utilization and Management =

3.4.c. from NGOs

- Name (Code of Respondent) =
- The *Ponggawa-Sawi* System =
- The Sharing System in the *Ponggawa-Sawi* System =
- The Function of *Ponggawa* =
- Village Government Administrative =
- Informal Fish Landings =
- Fish Auction Hall =
- Coastal Fisheries Resources =
- Income Distribution among stakeholders =
- Alternative Livelihood =
- Coastal Aquaculture =
- The roles of Village Cooperative =
- The roles of Rural Banks =
- Coastal habitats =
- Informal market system =
- Market mechanisms =
- Fisheries Utilization and Management =

3.4.d. from Researcher

- Name (Code of Respondent) =
- The *Ponggawa-Sawi* System =
- The Sharing System in the *Ponggawa-Sawi* System =
- The Function of *Ponggawa* =
- Village Government Administrative =
- Informal Fish Landings =
- Fish Auction Hall =
- Coastal Fisheries Resources =
- Income Distribution among stakeholders =
- Alternative Livelihood =
- Coastal Aquaculture =
- The roles of Village Cooperative =
- The roles of Rural Banks =
- Coastal habitats =
- Informal market system =
- Market mechanisms =
- Fisheries Utilization and Management =

3.4.e. from Local Government Officers

- Name (Code of Respondent) =
- The *Ponggawa-Sawi* System =
- The Sharing System in the *Ponggawa-Sawi* System =
- The Function of *Ponggawa* =
- Village Government Administrative =
- Informal Fish Landings =
- Fish Auction Hall =
- Coastal Fisheries Resources =
- Income Distribution among stakeholders =
- Alternative Livelihood =
- Coastal Aquaculture =
- The roles of Village Cooperative =
- The roles of Rural Banks =
- Coastal habitats =
- Informal market system =
- Market mechanisms =
- Fisheries Utilization and Management =

3.4.f. from Regional Government Officers

- Name (Code of Respondent) =
- The *Ponggawa-Sawi* System =
- The Sharing System in the *Ponggawa-Sawi* System =
- The Function of *Ponggawa* =
- Village Government Administrative =
- Informal Fish Landings =
- Fish Auction Hall =
- Coastal Fisheries Resources =
- Income Distribution among stakeholders =
- Alternative Livelihood =
- Coastal Aquaculture =
- The roles of Village Cooperative =
- The roles of Rural Banks =
- Coastal habitats =
- Informal market system =
- Market mechanisms =
- Fisheries Utilization and Management =

Appendix 4.

Kuisisioner Penelitian

4. Informasi Dasar Daerah Penelitian: (Indonesian)

- a. Luas Desa = km²
- b. Panjang Pantai = km²
- c. Luas Mangrove = km²
- d. Luas Padang Lamun = km²
- e. Luas Terumbu Karang = km²
- f. Luas Tambak = km²
- g. Jenis Ikan/Potensinya menurut Jenis Habitat Pantai
 - g.1. Daerah Mangrove
 - Jenis Ikan = (Name Ilmiah, dan Daerah)
 - g.2. Daerah Padang Lamun
 - Jenis Ikan = (Nama Ilmiah dan Daerah)
 - g.3. Daerah Terumbu Karang
 - Jenis Ikan = (Nama Ilmiah dan Daerah)
- h. Jumlah Penduduk = Org
- i. Jenjang Pendidikan
 - i.1. Universitas/Institut =
 - i.2. Diploma =
 - i.3. SMA =
 - i.4. SMP =
 - i.5. SD =
 - i.6. Tidak Ada =
- 4.a. Jumlah Pengguna Perairan Pantai
 - Ponggawa =
 - Sawi =
 - Nelayan =
 - Pappalele =
 - Pedagang Ikan Lokal =
 - Pedagang Ikan antar Kabupaten =
 - Perusahaan Pengelola atau Pengexport Ikan =
 - Lainnya =
- 4.b. Jumlah Alat Tangkap =
- 4.c. Jenis Alat Tangkap =
- 4.d. Jumlah Kapal Ikan =
- 4.e. Jenis Kapal Ikan =
- 4.f. Alat Tangkap Menurut Hasil Tangkapan
 - Purse Seine = Nama Ikan

- Gill Nets = Nama Ikan
- Jaring Pantai = Nama Ikan
- Bagang Tetap = Nama Ikan
- Bagang Perahu = Nama Ikan
- Lainnya = Nama Ikan

4.h. Institusi Pemerintah Lokal

- Jumlah KUD (Village Cooperative) =
- Jumlah Bank =
- Jumlah Pabrik Es/Fish Storages =
- Jumlah TPI (Tempat Pelelangan Ikan) =
- Lainnya =

4.i. Organisasi Sosial Dukungan Pemerintah

- PKK (Family Welfare Organization) =
- *Kontak Tani Nelayan* (Farmers/Fishers Organization) =
- Lainnya =

4.1. Informasi dari Ponggawa:

- Nama (Kode Responden) =
- a. Umur =
- b. Jenis Kelamin =
- c. Pendidikan =
- d. Status Perkawinan =
- e. Asal Suku =
- f. Asal Suku Istri/Suami =
- g. Jumlah Istri =
- h. Jumlah Anak =
- h.1. Tingkat Pendidikan Anak =
- i. Sumber Pendapatan selain Pengkapan Ikan =
- j. Jumlah Alat Tangkap =
- k. Jumlah Kapal Ikan =
- l. Jumlah *Sawi* =
- m. Hubungan dgn *Sawi* =
- n. Pekerjaan Sambilan =
- Penghasilan yang diterima =

4.1.a. Operasi Penangkapan Ikan, Pemasaran Hasil Tangkapan, dan System Bagi Hasil

4.1.a.1. Operasi Penangkapan Ikan

- Daerah Penangkapan Ikan =
- Alat Tangkap yg digunakan =
- Jumlah *sawi* yg dipakai berdasarkan Alat Tangkap yg digunakan
- Purse Seine =
- Gill Nets =

- Bagang Perahu =
- Lainnya =

4.1.a.2. Daerah Penangkapan Musiman

- Musim Puncak Penangkapan = bulan
- Lokasi Daerah Penangkapan =
- Jarak dari Pantai = mil
- Target Ikan tangkapan =
- Jumlah Penangkapan per hari =
- Jenis Ikan yg dominan tertangkap =
- Rata2 hasil tangkapan = per kg/keranjang
- Rata2 Penghasilan = Rp
- Rata2 Biaya Operasi = Rp
- Rata2 *Sawi* yg dipekerjakan = Org
- Musim Paceklik Penangkapan =
- Lokasi Daerah Penangkapan =
- Jarak dari Pantai = mil
- Target Ikan Tangkapan =
- Jumlah Penangkapan per hari =
- Rata2 Hasil Tangkapan = per kg/keranjang
- Rata2 penghasilan = Rp
- Rata2 Biaya Operasi = Rp
- Rata2 *Sawi* yg dipekerjakan = Org

4.1.a.3. Alat Tangkap yg digunakan pada Musim Puncak Penangkapan

- Jenis Alat Tangkap yg digunakan =
- Jumlah *Sawi* yg dipekerjakan =
- Biaya Operasi =
 - Solar =
 - Makanan =
- Kg Fish per penangkapan =
- Jenis Ikan yg dominan tertangkap =
- Lokasi Pendaratan Ikan yg disukai =
 - Alasan =

4.1.a.4. Alat Tangkap yg digunakan pada Musim Paceklik

- Jenis Alat Tangkap yg digunakan =
- Jumlah *Sawi* yg dipekerjakan =
- Biaya Operasi =
 - Solar =
 - Makanan =
- Kg Fish per penangkapan =
- Jenis Ikan yg dominan tertangkap =

- Lokasi Pendaratan Ikan yg disukai =
- Alasan =

4.1.a.2. Pemasaran dan Penanganan hasil tangkapan

- Pada Musim Puncak =
 - Tujuan pemasaran lokal =
 - Tujuan pemasaran Regional =
 - Tujuan pemasaran International =
- Hasil yg dijual
 - Hasil segar =
 - Kering atau Ikan segar =
- Pada Musim Paceklik =
 - Tujuan pemasaran lokal =
 - Tujuan pemasaran Regional =
 - Tujuan pemasaran International =
- Hasil yg dijual
 - Hasil segar =
 - Kering atau Ikan segar =

4.1.a.3. Sistim Bagi Hasil (per jenis Alat Tangkap)

- Investasi kapal penangkapan (dlm Rp) =
- Investasi Alat Tangkap (dlm Rp) =
- Investasi mesin kapal (dlm Rp) =
- Harga Ikan per keranjang =
- harga solar per penangkapan =
- Biaya Administrasi TPI =
- Penghasilan yg diterima per penangkapan =
- Penghasilan yg diterima per bulan =
- Tabungan per bulan =

4.1.a.4. Pembagian Kerja dlm sistim *Ponggawa-Sawi*

- Dlm Penangkapan Ikan
 - Fishing Master =
 - *Sawi* pd Operasi penangkapan =
- Proses Pengambilan Keputusan
 - Pertimbangan Pengambilan Keputusan =
 - Dlm Operasi penangkapan =
 - Dlm menyeleksi *Sawi* pd Operasi penangkapan =
 - Dlm Pemasaran Hasil Tangkapan =
 - Dlm menerima bantuan keuangan dr luar wilayah =
 - Sistim Kepatuhan Hukum =
 - Sistim Penerimaan *sawi* =

- 4.1.a.5. Hubungan Sosial dan Ekonomi ke *Sawi*
- Hubungan dgn *Sawi* =
 - Jenis bantuan ke *Sawi* =
 - Peran istri/keluarga *sawi* =
 - Strategi untuk mempertahankan *Sawi* =
 - Jenis incentif yg diberikan ke *Sawi* =
 - Jenis hubungan ke Nelayan =
- 4.1.a.6. Pandangan dan harapan *Ponggawa* terhadap
- Institusi Pemerintah =
 - Bantuan dan Bank Pemerintah =
 - Kebijakan Pemerintah dlm Manajemen Perikanan =
 - Sistim *Ponggawa-Sawi* itu sendiri =
 - LSM =
 - Administrasi Pemerintahan Desa =
 - Nelayan =
 - Sumberdaya perikanan dan Manajemennya =

4.2. Informasi dari *Sawi*:

- Nama (Kode Responden) =
- Umur =
- Pendidikan =
- Status Perkawinan =
- Asal Suku =
- Asal Suku Istri =
- Jumlah Anak =
 - Tingkat Pendidikan Anak =
- Sumber Pendapatan selain penangkapan Ikan =
- Hubungan dgn *Ponggawa* =

4.2.a. Operasi Penangkapan, Pemasaran Hasil Tangkap, dan Sistim Bagi Hasil

- 4.2.a.1. Operasi Penangkapan Ikan
- Daerah Penangkapan =
 - Alat Tangkap yg dikuasai =
 - Peran dlm Operasi Penangkapan =
- 4.2.a.2. Daerah Penangkapan Musiman
- Musim Puncak =
 - Lokasi Daerah Penangkapan =
 - Jarak dari Pantai =
 - Peran dlm Operasi Penangkapan =
 - Jumlah Penangkapan per hari =
 - Rata2 penghasilan per bulan =
 - Rata2 tabungan per bulan =

- Musim Paceklik =
- Lokasi Daerah Penangkapan =
- Jarak dari Pantai =
- Peran dlm Operasi Penangkapan =
- Jumlah penangkapan per hari =
- Rata2 penghasilan per bulan =
- Rata2 tabungan per bulan =

4.2.a.3. Alat Tangkap yg digunakan pd musim puncak

- Jenis Alat Tangkap =
- Kg Ikan yg ditangkap per fishing trip =
- Jenis Ikan yg dominan tertangkap =
- Tempat pendaratan ikan yg disukai =
- Alasan =

4.2.a.4. Alat Tangkap yg digunakan pada musim paceklik

- Jenis Alat Tangkap =
- Kg Ikan yg ditangkap per fishing trip =
- Jenis Ikan yg dominan tertangkap =
- Tempat pendaratan ikan yg disukai =
- Alasan =

4.2.a.5. – Proses Pengambilan Keputusan

- Pertimbangan dlm memilih *Ponggawa* =
- Sistim kepatuhan Hukum =
- Sistim Pemilihan *sawi* =

4.2.a.6. Penghasilan dr sistim bagi hasil

- Penghasilan yg diterima per fishing trip = Rp
- Penghasilan yg diterima per bulan = Rp
- Tabungan per bulan = Rp
- Pekerjaan selain *Sawi* =
- Penghasilan yg diterima = Rp

4.2.a.7. Hubungan Sosial dan Ekonomi terhadap *Ponggawa*

- Hubungan dgn *Ponggawa* =
- Jenis bantuan dr *Ponggawa* =
- Peran istri/keluarga *sawi* =
- Strategi mempertahankan *Ponggawa* =
- Jenis incentif yg diterima dr *Ponggawa* =
- Jenis hubungan dengan Nelayan =

4.2.a.8. Pandangan dan Harapan *Sawi* terhadap

- Institusi Pemerintah =
- Bantuan/Bank Pemerintah =
- Kebijakan Pemerintah terhadap Manajemen Perikanan =

- Sistim *Ponggawa-Sawi* itu sendiri =
- LSM =
- Pemerintahan Desa =
- Nelayan =
- Penggunaan dan Manajemen Perikanan =

4.3. Informasi dari Nelayan :

- Nama (Kode Responden) =
- Umur =
- Pendidikan =
- Status Perkawinan =
- Asal Suku =
- Asal suku Istri =
- Jumlah Anak =
- Tingkat Pendidikan Anak =
- Penghasilan selain penangkapan Ikan =
- Hubungan dgn *Ponggawa* =
- Hubungan dgn *Sawi* =

4.3.a. Operasi Penangkapan, dan Pemasaran hasil tangkapan

- 4.3.a.1. Operasi Penangkapan
 - Daerah penangkapan =
 - Alat Penangkapan yg digunakan =
 - Peran dlm Operasi penangkapan =
- 4.3.a.2. Daerah Penangkapan Musiman
 - Musim Puncak =
 - Lokasi Daerah Penangkapan =
 - Jarak dari Pantai =
 - Peran dlm Operasi Penangkapan =
 - Jumlah Penangkapan per hari =
 - Dominan Ikan yg tertangkap =
 - Rata2 Penghasilan =
 - Rata2 Kg/keranjang Ikan yg tertangkap =
 - Musim Paceklik =
 - Lokasi Daerah Penangkapan =
 - Jarak dari Pantai =
 - Peran dlm Operasi Penangkapan =
 - Jumlah Penangkapan per hari =
 - Dominan Ikan yg tertangkap =
 - Rata2 Penghasilan =
 - Rata2 Kg/keranjang Ikan yg tertangkap =
- 4.3.a.3. Alat Tangkap yg digunakan pada Musim Puncak
 - Jenis Alat Tangkap =
 - Biaya Operasi Penangkapan =

- Kg Ikan yg tertangkap per fishing trip =
- Dominan Ikan yg tertangkap =
- Penghasilan per bulan =
- Tabungan per bulan =
- Tempat Pendaratan Ikan yg disukai =
 - Alasan =
- Peran wanita/keluarga =

4.3.a.4. Alat Tangkap yg digunakan pada Musim Paceklik

- Jenis Alat Tangkap =
- Biaya Operasi Penangkapan =
- Kg Ikan yg tertangkap per fishing trip =
- Dominan Ikan yg tertangkap =
- Penghasilan per bulan =
- Tabungan per bulan =
- Tempat Pendaratan Ikan yg disukai =
 - Alasan =
- Peran wanita/keluarga =

4.3.a.5. – Proses Pengambilan Keputusan

- Pertimbangan dlm Pengambilan Keputusan menjadi Nelayan =
- Sistim Ketaatan Hukum terhadap Sumberdaya Perikanan =
- Sumber Biaya untuk Alat penangkapan, kapal dan Operasi penangkapan Ikan =

4.3.a.6. Pendapatan

- Pendapatan per fishing trip =
- Pendapatan yg diterima per bulan =
- Tabungan per bulan =

4.3.a.7. Hubungan Sosial dan Ekonomi terhadap *Ponggawa* dan *Sawi*

- Hubungan dengan *Ponggawa* =
- Hubungan dengan *Sawi* =
- Jenis Bantuan dari *Ponggawa* (jika ada) =
- Peran istri/keluarga =
- Strategi untuk tetap menjadi Nelayan =
- Jenis incentif yg diterima dari Pemerintah =
- Jenis Hubungan dengan *Ponggawa* =
- Jenis Hubungan dengan *Sawi* =

4.3.a.8. Pandangan dan Harapan Nelayan terhadap

- Institusi Pemerintah =
- Bantuan/Bank Pemerintah =
- Kebijakan Pemerintah terhadap Sumberdaya Perikanan =
- Sistim *Ponggawa-sawi* =

- LSM =
- Administrasi Pemerintahan Desa =
- *Ponggawa* =
- *Sawi* =
- Pengelolaan Sumberdaya Perikanan dan Manajemennya =

4.4. Informasi dari Pemuka Masyarakat setempat, masyarakat, LSM, Peneliti, Staf Pemerintah Lokal dan Provinsi.

4.4.a Dari Pemuka Masyarakat

- Nama (Kode Responden) =
- Sistim *pongawa-sawi* =
- Sistim Bagi Hasil dalam *pongawa-sawi* =
- Peran *pongawa* =
- Administrasi Pemerintahan Desa =
- Tempat pendaratan ikan tidak resmi =
- Tempat pelelangan ikan =
- Sumberdaya perikanan pantai =
- Distribusi pendapatan diantara pengguna pantai =
- Sumber pendapatan lain =
- Tambak di pantai =
- Peran koperasi desa =
- Peran bank desa =
- Lingkungan pantai =
- Pasar tradisional =
- Mekanisme pasar =
- Pengelolaan dan penggunaan sumberdaya pantai =

4.4.b Dari Masyarakat

- Nama (Kode Responden) =
- Sistim *pongawa-sawi* =
- Sistim Bagi Hasil dalam *pongawa-sawi* =
- Peran *pongawa* =
- Administrasi Pemerintahan Desa =
- Tempat pendaratan ikan tidak resmi =
- Tempat pelelangan ikan =
- Sumberdaya perikanan pantai =
- Distribusi pendapatan diantara pengguna pantai =
- Sumber pendapatan lain =
- Tambak di pantai =
- Peran koperasi desa =
- Peran bank desa =
- Lingkungan pantai =
- Pasar tradisional =

- Mekanisme pasar =
- Pengelolaan dan penggunaan sumberdaya pantai =

4.4.c Dari LSM

- Nama (Kode Responden) =
- Sistim *pongawa-sawi* =
- Sistim Bagi Hasil dalam *pongawa-sawi* =
- Peran *pongawa* =
- Administrasi Pemerintahan Desa =
- Tempat pendaratan ikan tidak resmi =
- Tempat pelelangan ikan =
- Sumberdaya perikanan pantai =
- Distribusi pendapatan diantara pengguna pantai =
- Sumber pendapatan lain =
- Tambak di pantai =
- Peran koperasi desa =
- Peran bank desa =
- Lingkungan pantai =
- Pasar tradisional =
- Mekanisme pasar =
- Pengelolaan dan penggunaan sumberdaya pantai =

4.4.d Dari Peneliti

- Nama (Kode Responden) =
- Sistim *pongawa-sawi* =
- Sistim Bagi Hasil dalam *pongawa-sawi* =
- Peran *pongawa* =
- Administrasi Pemerintahan Desa =
- Tempat pendaratan ikan tidak resmi =
- Tempat pelelangan ikan =
- Sumberdaya perikanan pantai =
- Distribusi pendapatan diantara pengguna pantai =
- Sumber pendapatan lain =
- Tambak di pantai =
- Peran koperasi desa =
- Peran bank desa =
- Lingkungan pantai =
- Pasar tradisional =
- Mekanisme pasar =
- Pengelolaan dan penggunaan sumberdaya pantai =

4.4.e Dari Staf Pemerintah Daerah

- Nama (Kode Responden) =

- Sistim *pongawa-sawi* =
- Sistim Bagi Hasil dalam *pongawa-sawi* =
- Peran *pongawa* =
- Administrasi Pemerintahan Desa =
- Tempat pendaratan ikan tidak resmi =
- Tempat pelelangan ikan =
- Sumberdaya perikanan pantai =
- Distribusi pendapatan diantara pengguna pantai =
- Sumber pendapatan lain =
- Tambak di pantai =
- Peran koperasi desa =
- Peran bank desa =
- Lingkungan pantai =
- Pasar tradisional =
- Mekanisme pasar =
- Pengelolaan dan penggunaan sumberdaya pantai =

4.4.f Dari Staf Pemerintah Provinsi

- Nama (Kode Responden) =
- Sistim *pongawa-sawi* =
- Sistim Bagi Hasil dalam *pongawa-sawi* =
- Peran *pongawa* =
- Administrasi Pemerintahan Desa =
- Tempat pendaratan ikan tidak resmi =
- Tempat pelelangan ikan =
- Sumberdaya perikanan pantai =
- Distribusi pendapatan diantara pengguna pantai =
- Sumber pendapatan lain =
- Tambak di pantai =
- Peran koperasi desa =
- Peran bank desa =
- Lingkungan pantai =
- Pasar tradisional =
- Mekanisme pasar =
- Pengelolaan dan penggunaan sumberdaya pantai =

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Note: See also Government Documents p. 239 and Internet Sources p. 240.

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