

**ARCHITECTURE OF THE BAYANIHAN:
SPECULATIVE DESIGN IN THE PACIFIC TYPHOON BELT**

by

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Dalhousie University is located in Mi'kmaq'i,
the ancestral and unceded territory of the Mi'kmaq.
We are all Treaty people.

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Abstract

The Philippines is at the brunt of today's climate wrath, with typhoon winds reaching 300 km per hour. These storms create real-life dystopian scenarios, with people from informal communities especially vulnerable to displacement, homelessness, poverty, and dispersal cycles. In the Anthropocene, the category of the "Internally Displaced Person" thus becomes ever more vital as it reorganizes conventions of time, space, and culture through weather events. This thesis asks how architecture can help mitigate the experience of recurring typhoons by rethinking the safety and cultural practices of communities and coastal dwellers in Tacloban, Philippines. The project reinforces Bayanihan—a tradition of communal unity—by adapting ideas of mobility to changing climates and displacement cycles it produces in Barangay 37. As a speculative mobile architecture that plugs into a "safe zone", the project proposes a new cycle of retreat, reprogramming, and return whose links to cultural traditions undo the devastating paradigm of displacement.

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Chapter 1: Introduction

The Philippines archipelago is located along the western region of the Pacific Typhoon Belt and the Ring of Fire—an area prone to cyclones and seismic activity. It has been ranked the most disastrous country due to climate risk by the World Risk Index in 2022. Despite the Philippines' governmental efforts, hundreds of communities and settlements continue to suffer from recurring displacement caused by typhoons and their widespread damage to homes and livelihoods, resulting in a cycle of Internally Displaced People or IDPs. This situation still exists today, and the mass production of IDPs or environmental refugees in the coastal regions continues to rely on evacuation centers that are easily congested and overflowing with families and individuals looking for safety and shelter. The inadequacy of the government's provision of permanent and temporary shelters for IDPs is a growing cause of concern. With evacuation centers serving as temporary shelters and a maximum length of stay of four weeks in these reprogrammed schools and gymnasiums, IDPs are subject to relocation through government assistance through a relocation program; however, according to the National Disaster Risk Reduction Management and Council's or NDRRMC framework plan, this assistance can take anywhere from one to six years, creating a shelter gap that leaves IDPs homeless and forced to rely on vulnerable informal slums.



Lea holding her baby in local elementary school as emergency shelter (WorldVision Philippines 2020)

When the water level started rising fast, Lea had one thing in mind — save her 10-day-old baby. 'I wrapped my baby in a malong (a traditional woven tube of cloth) and headed out to the evacuation center. The water rose really fast. I had to pass through a knee-deep flood just to get to safety,' Lea shares. While already in safety, the next hours of November 12 was torture as she worried about the situation of her other family

members, including her husband, who were already trapped in their home. Reports of houses being submerged bothered her. Her baby, with no sleeping mat to use but discarded boxes, worried her. (World Vision Philippines 2020)

In today's world, everyone knows climate change or has a basic understanding of how global warming impacts people worldwide. The Anthropocene epoch, whether at the start of the industrial revolution or with the detonation of the first atomic weapon, set off an ecological chain reaction that resulted in many of the climatic issues we face today. At the pinnacle of human arrogance, climate change continues to grow, casting shadows on current and future communities. Rising sea levels, harsher storms, wildfires, earthquakes, and other natural disasters can provide a brief glimpse of an apocalyptic setting to the right community. The recent Covid-19 pandemic shows how humans adjust to the given

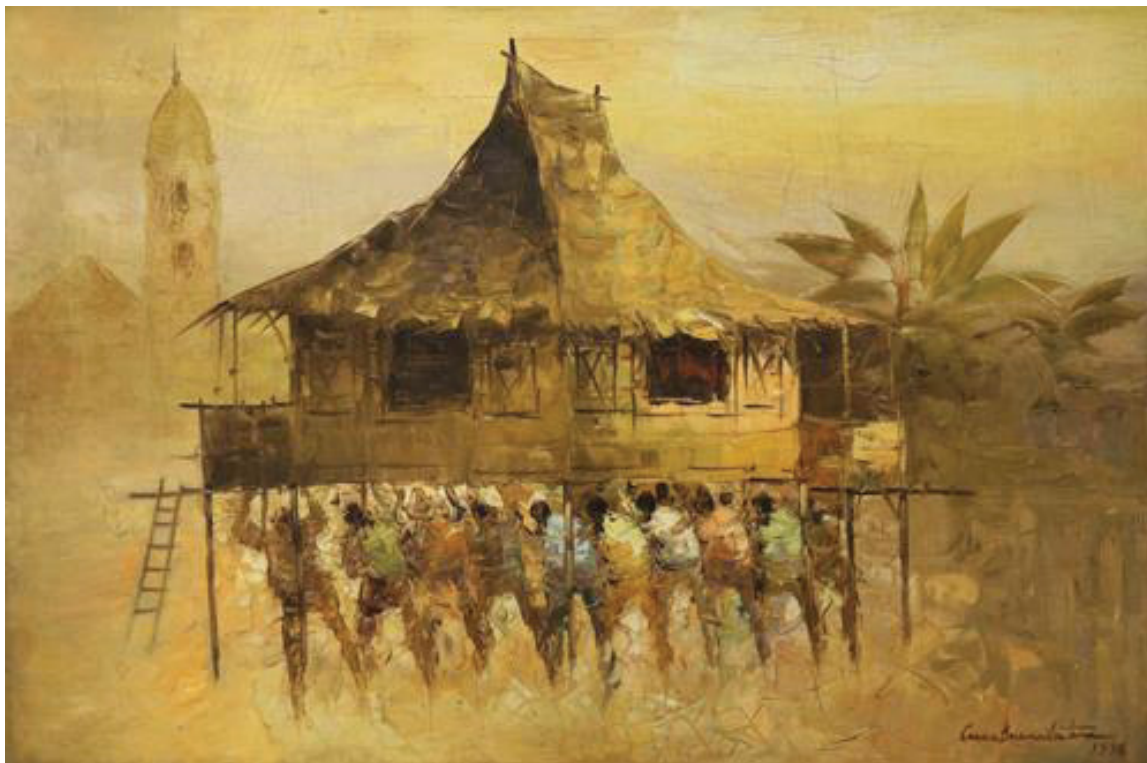


A general view of the damages caused by typhoon Rai seen in Surigao City, Philippines (Tiu 2021)



Village of Tolosa, Leyte Province, Philippines. The second site was where typhoon Haiyan made landfall. Vast areas of coconut farms were destroyed, leaving an apocalyptic scene behind. (Nybo 2013)

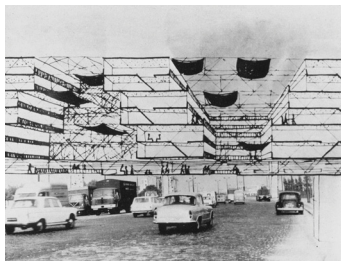
environment, standing 6 feet apart and putting on face masks at all times. As people adapt to changing environments, so do cultures change. This adaptation to a particular environment has a massive effect on fictional books, television shows, movies, and possibly even video games. The excesses of the Anthropocene linger in the background of our daily existence. In his works, Timothy Morton, an ecological philosopher, characterizes this way of thinking as a dark and strange ecology or strange happenings—these uncanny thoughts of becoming that loop around the entire ecological system, which revolves around human activities. Jacob Boswell describes this condition as a “wet apocalypse”, a film genre that brings an altered setting that human beings adapt to survive. Climate change and risk bring intensifying storms and typhoons that are changing for



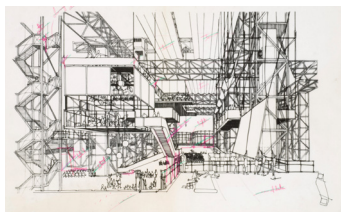
"Bayanihan", oil painting (Buenaventura 1978)

the worse, as well as harsh winds, storm surges, and other natural catastrophes that can force coastal communities to migrate, bringing a condition of an apocalyptic-like setting in today's age.

So, how can architecture provide a new living system for coastal settlements during recurring typhoons in the Philippines to prevent catastrophic displacements in the future? Rather than depending on technological advancements and designing resilient housing to address current displacement problems, this thesis proposes changing the norms of living and transforming displacement into temporary relocation. This change offers a cycle of retreat and advancement that creates a new routine lifestyle in coastal settlements by utilizing a temporary and permanent design that allows for relocation during any typhoon event, through the traditions of the Bayanihan. This



Photomontage, Spatial City,
Paris 1968 (Friedman 1968)



The Fun Palace (Price
1964)

tradition incorporates cultural and customary practices into the architecture, allowing for the continuation of Filipino culture in the face of climate change.

Instead of viewing our anthropological future through technological changes that exclude humans as part of the more extensive ecology of nature, this thesis will take another path and look at the current human living situations as part of the bigger ecology of climate change that can produce designs through a speculative approach to the changing living environments. Speculative Architecture was introduced in the 1960s by Archigram in the United Kingdom. It aimed to explore extreme urban design as part of the emerging avant-garde in response to what it perceived to be the dullness and simpleness of modern architecture. Historically, speculative architecture has been conceived as architectural scenarios inspired by technology and its effect on space and time (Cutieru 2020) . It is a way of thinking that is sometimes applied to urban planning ideas that may never exist but are meant to expand imaginative exploration. Architects like Cedric Price and Yona Friedman introduced speculative design through a plug-and-play of programs and mobile housing that can be useful in the future. As this thesis aims to produce a speculative architecture by addressing the Anthropocene and climate risk, the resulting architecture is a fiction that bridges traditional Bayanihan and ecological thinking, allowing a different approach to environmental resilience.

To generate the design, understanding some of the area's natural hazards and cultural aspects helps create a relationship between what exists now and the contemporary-speculating future. The thesis focuses on Tacloban City's coastal communities, located in the far eastern region

of the Philippines. Tacloban city provides a critical case study on displacement and the inadequacy of government responsiveness during Typhoon Haiyan in 2013. The National Disaster Risk Reduction Management and Council's framework plan for refugees exposes the failures of the current framework that further brings evidence and reasons for displacements and informality in the city. Many IDPs who lost their homes to the typhoon were subjected to relocation or offered bursaries to rebuild; however, rather than dealing with the slow pace and uncertainty of applications required, most of them would instead go back to their destroyed homes and rebuild on their own to avoid being separated from their community and lifestyle, forcing them to return to informality. Those chosen and granted temporary housing suffer from losing their traditions, livelihoods and community, making their displacements worse. As a test site, Tacloban city consists of "Makeshift-Dwelling" settlements that experience this displacement cycle regularly today and in the near future. In these vulnerable settlements or Barangays—the smallest type of municipal division relies on its proximity to San Pablo Bay, the Fish Markets and the Port of Tacloban for its opportunity in occupation and daily income. This study introduces a different cycle of "relocation and return" to possible safe zones and vulnerable settlements; this temporary retreat for our protagonists, the displaced informal dwellers, allows them to relocate temporarily until it is safe to move back and continue their traditions and lifestyles.

The project introduces a mobile housing system and a permanent infrastructure that helps the community deal with climate risk with added supporting programs to accommodate the newly adapted local living culture. Wood

and steel-reinforced concrete will be the predominant materials for the design that should adjust to traditional and contemporary building methods. The permanent infrastructure will serve the modular housings that allow detachment and reattachment capabilities to help move in and out easily on the related settlements. This project supports the changing living conditions in coastal Tacloban City, which adapts to a climate-driven environment that applies a contemporary-speculative architecture and removes the current cycle of displacements, introducing a new way of living from involuntary displacement to voluntary movement.

Chapter 2: Displacements and Settlements

The Architects of Displacement



Atomic bomb tests like this one at Bikini Atoll in 1946, photograph by US Navy (National Geographic Society 2020)

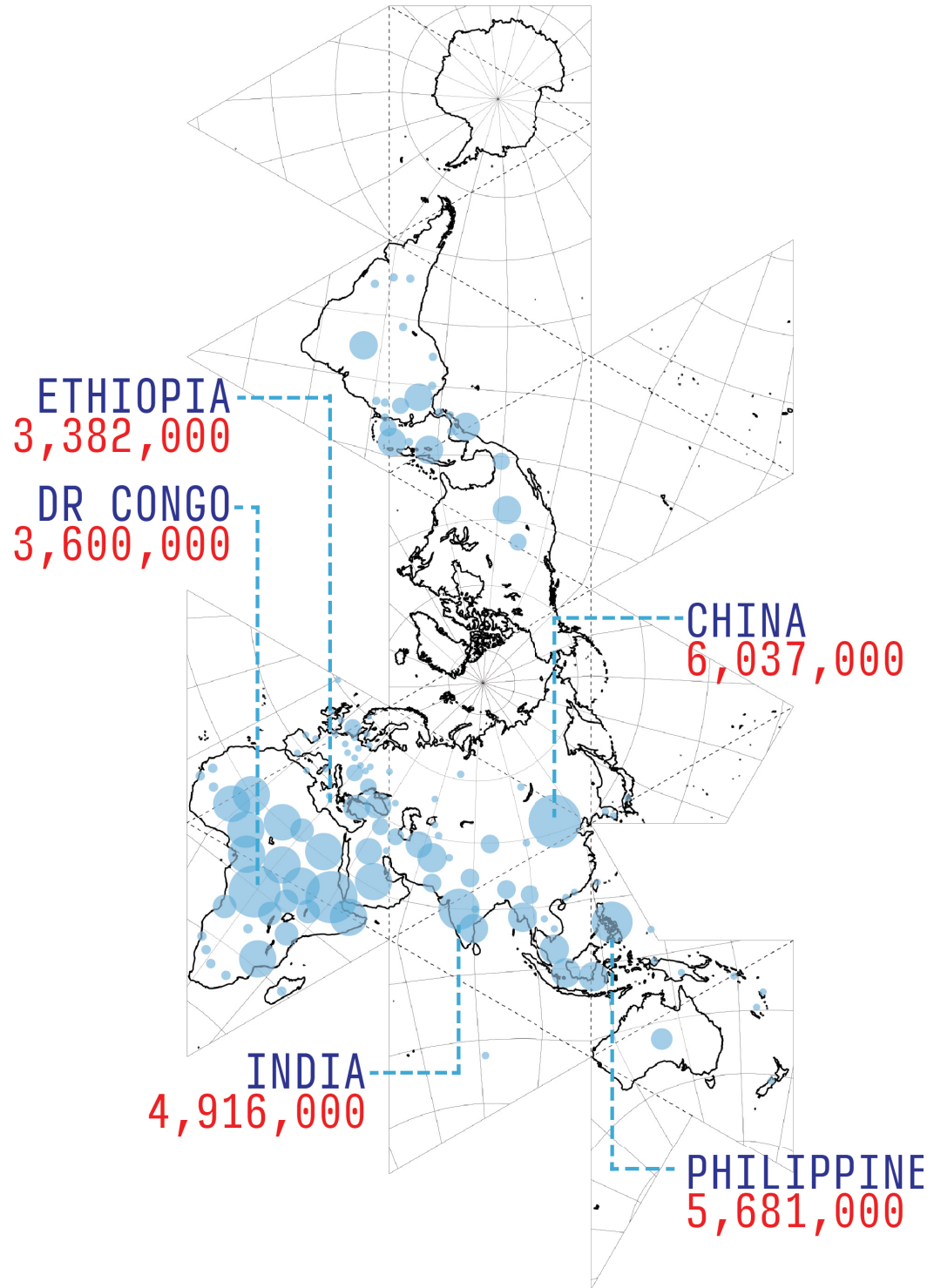
Living with the Anthropocenic repercussions of human activities, since the industrial revolution and the first testing of the atomic bomb, it is clear what marks we have made on Earth. This not-so-new epochal period, the Anthropocene Epoch, was coined by biologist Eugene Storer and chemist Paul Crutzen in 2000 (National Geographic Society 2022). This impactful change in how society functions through technology use and rapid urbanization can be linked to the development of human risk during this period. Though much of its defining ideas of the term are still debated today, climate change plays a huge part in the Anthropocene consequences.

Climate Change and Risk

As the climate change we face in the coming years only worsens, it will take decades to mitigate our current condition slowly (UNHCR 2022). At the end of 2021, 59.1 million people had been displaced due to conflict and natural disasters for only 12 months (Internal Displacement Monitoring Centre 2022). The world's climate changes throughout the years, accumulating disasters such as storms, earthquakes, wildfires, landslides, etc., are becoming extreme and devastating for vulnerable communities, destroying towns, homes and buildings, displacing millions of people in a single catastrophic event. This evolving climate creates a worry for developing countries that are vulnerable and endure natural calamities in recurring events like typhoons and earthquakes. Countries typically affected



IDPs around the world: 1. Flooding in Central Henan, China. (Bowen 2021). 2. Super Typhoon Rai (Odette) in Siargao Island (Catoto 2021). 3. Internally displaced people (IDP) camp in Debarq, Ethiopia (Sileshi 2021) 4. Aftermath of days of heavy rains in Nellore, India (The Associated Press 2021). 5. Rhoie Internally displaced people camp (Huguet 2022)



Internally displaced by conflict and disasters in 2021 (data from IDMC 2022 report)

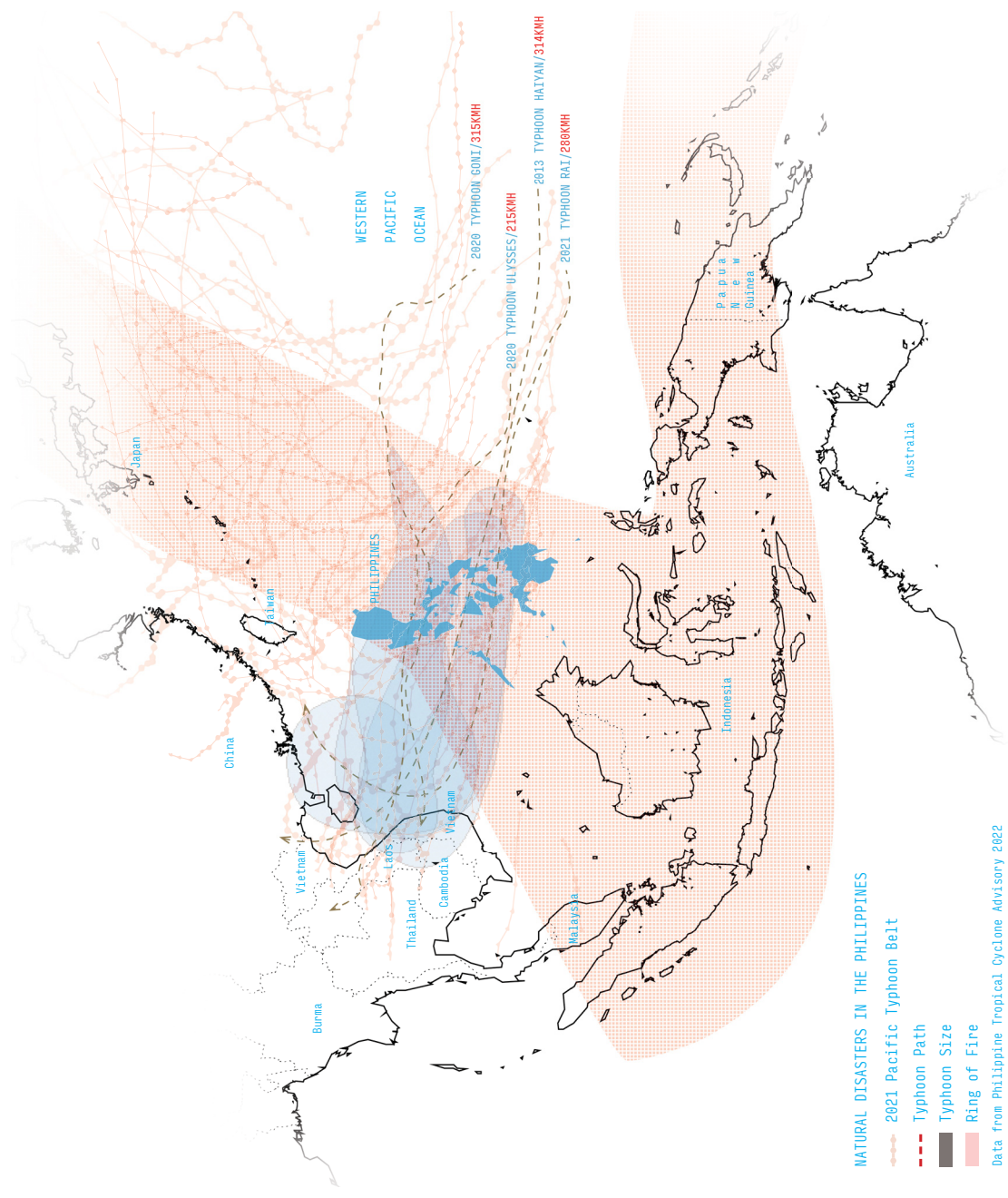
are abruptly troubled with millions of IDPs within 24 hours or less, disrupting their society and livelihood and shaping devastating outcomes for the people.

Internally Displaced Persons

Internally Displaced Persons or IDPs are people who, unlike refugees, seek refuge within their own country, according to the United Nations High Commissioner for Refugees or UNHCR. IDPs are families or individuals forced to flee their homes due to conflict or natural disasters within their countries, resulting in the loss of possessions, livelihoods, and, in some cases, loved ones. IDPs are protected by their governments, even though occasionally, their governments may cause their displacement. These groups frequently relocate to informal settlements and inaccessible areas to humanitarian aid, creating difficulty in providing assistance and guidance (UNHCR 2022). In the Philippines, 53.7 million are Internally Displaced from disasters alone. As climate changes worsen, this involuntary displacement becomes a new cultural group that depends on humanitarian aid or fend for themselves.

The Usual Stakeholders and The Belt

The Philippines sits at the forefront of its natural calamities in the Pacific Typhoon Belt and the Ring of Fire. While the Ring of Fire brings unpredictable seismic activities like earthquakes, volcanic eruptions and possible tsunamis, the Pacific typhoon—is a large region on the Western Pacific Ocean that is typically the path cyclones follow. This typhoon belt brings regular destruction to the country. Today, around 20 cyclones per year make their first downfall through the Philippines, resulting in millions of displacements (Makhoul 2014). Super typhoons and tropical storms are the most



WorldRiskIndex 2022

Rank	Country	Risk
1.	Philippines	46.82
2.	India	42.31
3.	Indonesia	41.46
4.	Colombia	38.37
5.	Mexico	37.55
6.	Myanmar	35.49
7.	Mozambique	34.37
8.	China	28.70
9.	Bangladesh	27.90
10.	Pakistan	26.75
11.	Russian Federation	26.54
12.	Vietnam	25.85
13.	Peru	25.41
14.	Somalia	25.07
15.	Yemen	24.26

*Data from WorldRiskReport 2022

NATURAL DISASTERS IN THE PHILIPPINES
 2021 Pacific Typhoon Belt
 Typhoon Path
 Typhoon Size
 Ring of Fire
 Data from Philippine Tropical Cyclone Advisory 2022
 Philippines archipelago and World Risk Index 2022, naming the Philippines as the most disastrous country (data from World Risk Index 2022 and Philippine Tropical Cyclone Advisories 2022)

prominent cause of displacements, making the Philippines ranked the world's most vulnerable to disasters and climate risk by the World Risk Index for 2022.

Philippines' Archipelago and Displacement

The Philippines' archipelago is near the equator along the western side of the Pacific. The Philippines is a Tropical country near the equator made of more than 7000 islands and islets, which lie along the typhoon belt, enduring tropical storms frequently. These island groups fall into three groups, Luzon, Visayas and Mindanao; the Luzon group consists of the northern and western islands, the Visayas group consists of the center and Mindanao in the south. The Pacific typhoon belt travels directly along the middle of the Philippines. Due to the country's location, the region of Eastern Visayas is the first to be affected by an upcoming typhoon, which lends them a displacement crisis during harsh storms. Displacement creates a heavy toll on the family and individual's mental state. Situations like this are handled by both national and international aid. In the Philippines, IDPs seek shelter with the government's help and many international and national humanitarian aid, NGOs like the United Nations High Commissioner for Refugees or UNHCR and National Disaster Risk Reduction Management and Council or NDRRMC. The Philippines government provided DRR or Disaster Risk Reduction plans and frameworks for IDPs. However, it falls short of its adequacy for a major catastrophic event like Super Typhoon Haiyan (Known as Yolanda in the Philippines). At the storm's arrival, around 800,000 people were evacuated, and local and national authorities were equipped to face the coming 195mph (315 kph) super typhoon. Despite this effort, the

people underestimated the threat and remained in their own homes, afraid of possible looters (Monteclaro et al. 2018).

To further understand the impacts of the typhoon belt on the Philippines' Coast, a study on Oceans and Coastal Management was done to assess damages, impacts and influence on fishing operations in 2018. Typhoon Haiyan, or Yolanda for the locals, swept through part of the Philippines in 2013. Powerful winds that reach 315 Kmh and heavy rainfall cause storm surges that reach a water level of 5-7.9 meters (Monteclaro et al. 2018). The poorest and numerous underdeveloped areas hit by typhoon Haiyan were the most devastated. While disaster assistance began slowly to mitigate the situation, most affected regions had to make do with their situations. After two weeks, food, water, shelter, and health assistance were issues faced during the aftermath. Most humanitarian aid still struggles to reach affected people, leaving vulnerable groups to rely on themselves because there is no adequate prepared assistance designed for this scale of calamity. The study reveals the damage to housings and fishing gear; the strong winds and pounding waves destroyed both land and sea gear, as most of these communities were made with lightweight materials. Different types of livelihoods were disrupted or damaged. The impact of the typhoon was evident, and the recovery to manage was overwhelming, especially for the small-scale fishers. Many local small fishers were left exposed to the disaster because



Collage of the aftermath of typhoon Haiyan in coastal Tacloban City



Survivors of typhoon Haiyan inspect the damage to their houses in Tacloban, Philippines (CNN 2013)

they live and work on the coastline, where they encounter increased risk and changing climate patterns. Climate change puts pressure on coastal dwellers to mobilize and forcibly displaced. As climate change intensifies, sea-level rise and extreme weather events force coastal settlements to migrate elsewhere, losing their traditions, cultural identity and lifelong practice. This separation of an individual from culture and traditions is another type of displacement that mentally devastates a person (Bammer 1994). Most coastal dwellers, especially those fixed on the seabed with stilt housing or light materials such as bamboo poles, risk extreme weather events to earn an adequate living wage (Monteclaro et al. 2018). The situation still needs to be improved for coastal dwellers, as most households remain dependent on the proximity to their livelihood of fishing and fishmongering. It is a profession that has been passed down

through generations, and leaving their customs and culture appears to be a significant sacrifice.

Repeated Loss to Informal Settlements

Among the displaced are communities already in a vulnerable state, and people who live in informal settlements along coastlines or landslide susceptible areas are included in this cycle of displacement. Coastal dwellers are the most affected, running into damages to their homes and lives. This abrupt change can have shocking effects physically and mentally. The aftermath of natural disasters can impact the social and mental state of the victims that encounter such loss. Humanitarian aid deals with economic issues like food, water and shelter. However, the mental state and emotional suffering a person experiences with the loss of family members, home, and possession can make an insecure victim (Makwana 2019). This insecurity then adds to the total loss of cultural traditions that gives an individual hope and reminds them of home. IDPs can experience a state of shock and despair following the disaster events. This traumatic disruption in their everyday habits and lives



Survivors after the damage of super typhoon Haiyan battered Tacloban City (Ranoco 2013)

can bring other psychological health effects, such as stress levels, sleep disturbance, dependence on alcohol and drugs, depression, etc. (Makwana 2019).

Climate change is worsening as long as humans emit greenhouse gasses into the atmosphere. Sea levels are rising, and harsher storms, drying lakes, wildfires and other natural disasters around the globe raise concerns for the world's future. In many third-world countries, informal settlements increase their numbers as rapid urbanization occurs (Morin et al. 2016), further widening the population of vulnerable settlements to said disasters. The Philippines is no exception; most working-class and low-income populations typically build on lightweight materials or "Makeshift Dwellings" and reside in slums or squatter areas. Despite governmental assistance, informal settlements remain part of the urban landscape, leaving thousands, if not millions, vulnerable to disasters. Recently, in Sitio Paradise, Mandaue City, Cebu, a fire razed a neighborhood that burned down 250 houses and displaced 700 families (Sagarino and Lauro 2022). The displacement experienced by man-made or natural disaster victims leaves them with virtually nothing and subjects them to restart their whole lives through the recovery help of the government (Morin et al. 2016). However, many IDPs take charge or initiate their recovery, continue rebuilding with inadequate materials, and reside in the same devastated neighborhood. Reasons for such behavior can be traced to the availability of job opportunities nearby and housing affordability in these squatter areas. According to the Philippines Statistics Authority, agriculture, forestry and fishery workers were the second major occupation groups in Eastern Visayas in 2020. In Tacloban, coastal dwellers are primarily fishermen, local



Fire razes 250 homes in Mandaue City, Cebu, Philippines (Bañacia 2022)

laborers and other domestic jobs. During typhoon Haiyan, most of the IDPs saw no option but to return to their unsafe communities since the majority did not want to relocate away from their livelihoods and current practices, and their sense of community, which could psychologically displace them even further; they then only wait out the storm, making this whole displacement situation a recurring cycle of IDPs that will continue and get worse along with the evolving climate.

Displacement Culture

As this thesis communicates, the Anthropocenic future we face will result in climate change and risks for those who are in vulnerable positions. The Philippines, which is in the brunt of the climate perils, has always been the regular victim, typical for those in the low-income margin. Their daily and yearly routine is to prepare for climate risks like sea-level rise, harsher weather events including drought and flooding, and other climatic disasters that add to the government's failures to mitigate situations and provide better frameworks to avoid traumatic recovery IDPs collectively. These inadequate frameworks and yielding of IDPs to informality worsen the situation rather than fix it. Through today's sheltering program by international and national humanitarian aid, recovery during displacements takes the internationalized approach to provide shelter. Unfortunately, through modern humanitarian aid, these tent-like shelters can alienate families and individuals, which adds to the impact of their displacement.



Temporary shelters in Tacloban City after Typhoon Haiyan (USAID 2013)

Chapter 3: Architecture and Emergency in the Philippines

The United Nations provides frameworks and humanitarian aid for those who require assistance. However, some countries fail to adopt those frameworks as not all disasters have the same level or calamity outcomes. For example, in the western Pacific, Japan, Indonesia and the Philippines all have disaster risk reduction frameworks specifically for their country. Still, regarding recurring disasters such as Typhoons, the Philippines takes most of the storms and suffers more frequently than the other two countries.

Architecture and Informality in the Philippines

The Philippines' coastal settlements and dwellings were part of the Austronesian expansion (Lico 2008, 15). The typical features of stilt houses and pitched roofs evolved from the heavy rainfall and aquatic-base lifestyle as indigenous communities settled near bodies of water; these river banks, sheltered bays, deltas, and coastal areas provided fresh food, ease of transportation and agricultural lands (Lico 2008, 22). However, this lushness of provisions is steadily eroding. Global warming and its assertive driver, the Anthropocene age, slowly decrease the land for opportunities. Sea level rises, and Typhoons are becoming more extreme for coastal dwellers to handle, especially in low-income settlements. During the Spanish Colonisation and the United States of America influences that developed the politics and cultural traditions of the Filipinos, the Philippines adapted to the modern western culture, reorienting the Filipinos towards contemporary thinking and approach to design and architecture. Through

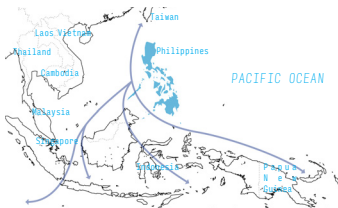


Diagram of Austronesian expansion



Tausug fisherfolk community in the coastal Barangay of Ipil in Maimbung in Sulu (Official Gazette 2015)

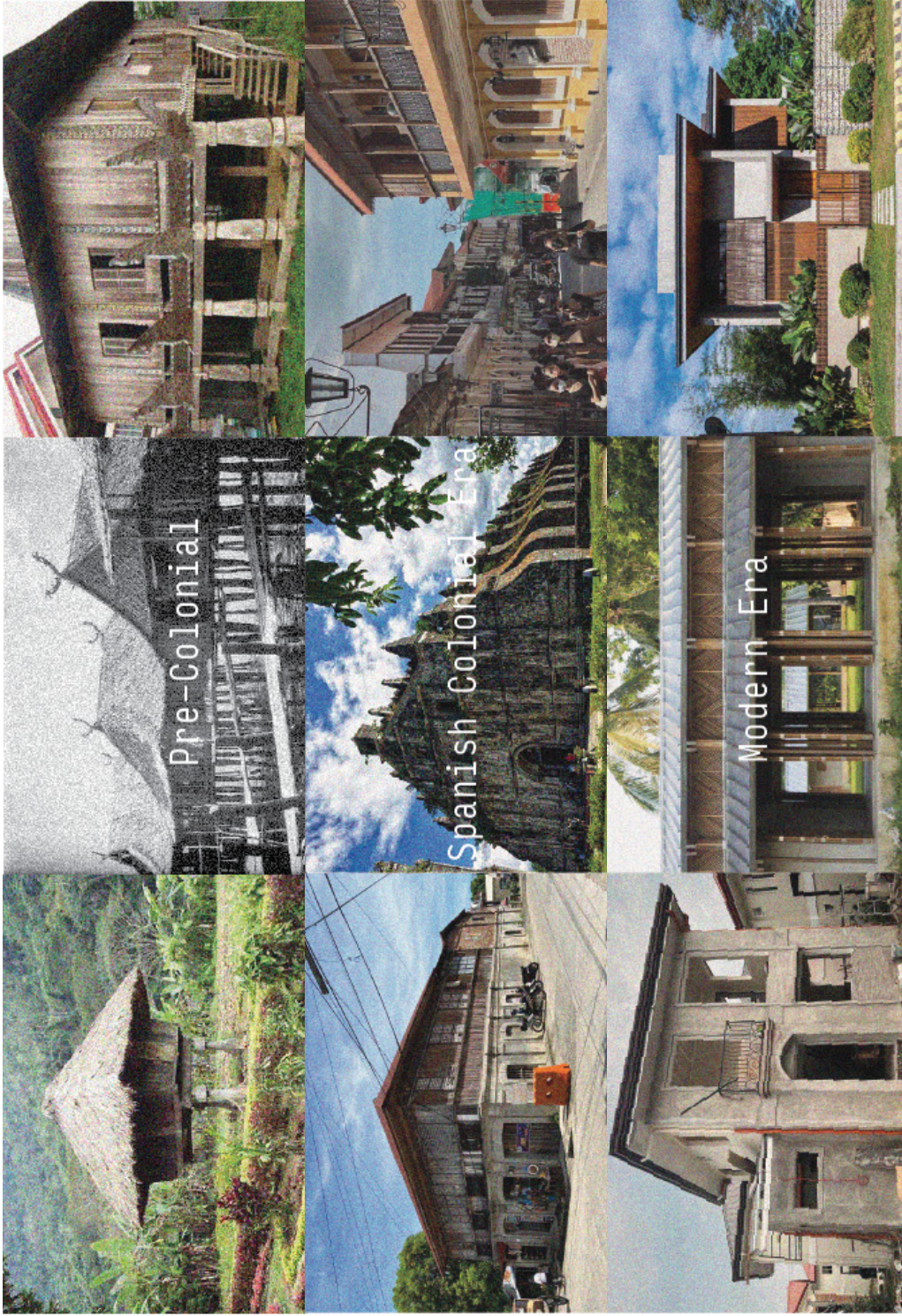


Tausug stilt settlement in Jolo, Sulu, burned in 1974 during a Philippine armed forces and the Muslim insurgent (Lico 2008)

the years of independence from colonization, architecture can still be traced back through its influences and use. Still, much indigenous architecture continues to practice the building crafts and architecture done throughout generations. The bahay-kubo and bahay-na-bato, the most known to be traditional houses in the Philippines, exist today and are more common in rural and coastal regions in the Philippines. The bahay-kubo is the most traditional type of dwelling derived from the Austronesian architecture of bamboo huts and stilt housings.



3 sketches of Indigenous architecture in mountain, low-lands, and coastal regions



Images of Filipino Architecture throughout their time period: Top Left to Bottom Right: Ifugao House (Qajirry 2014), Tausug House (PHINMA n.d.a), Maranao House (PHINMA n.d.b.), Bahay-na-bato, Saint Augustine Church, Vigan City, Modern Housing Development, Pampanga., Streetlight Tagpuro by Eriksson Furunes (Furunes 2016) , Bahay Sibi House by Platform 21 Architecture (Go 2019).



Program separation of the bahay-kubo, bahay-na-bato and contemporary house

During the Spanish Colonisation, it evolved into the bahay-na-bato or stone houses, eventually leading to today's contemporary architecture in buildings and homes (Lico 2008). The bahay-kubo and bahay-na-bato resemble one another through forms and uses, separating their supportive programs into a more permanent part of the architecture. The bahay-kubo, usually on stilts, uses its lower part, called Silong, as an enclosure to keep domestic animals like fowls and swine, sometimes a burial ground for the dead. It also has an elevated earthen fireplace for preparing and cooking food inside or outside the main dwelling (Lico 2008, 30). In the bahay-na-bato, the kitchen is located on the second level along with the living spaces; similarly to the bahay-kubo, its ground level is also used for storage and sometimes rented out to shop owners (Lico 2008, 158). Modern housing in the Philippines is now more practical and durable, but living space organization is still somewhat similar. In an example of how modern houses deal with flooding issues, the ground floor becomes a sacrificial area, only containing heavy furniture and water-resistant materials like steel and stone that are easily cleaned after flooding events. The more lightweight objects are brought upstairs to the dwelling spaces (Cabato and Neff 2022).

Both bahay-kubo and bahay-na-bato eventually evolved into the informal dwelling of IDPs, composed of "Makeshift Dwellings", or shantys; many of these informal settlements or squatter areas consist of flimsy housings made from discarded materials. These lightweight shelters are structured from wood and metal and are sometimes built with found materials. The bahay-kubo remains a basis for the cube floor plans for many informal dwellings. These multi-story makeshift huts set a dystopic tone and push the

limits of human habitation, usually in the most populated areas, despite their vulnerability to flash fires, eviction and lack of basic facilities and needs (May 2012). Derived from the basics of the Bahay Kubo spatial plan, a one-room dwelling, these descriptions are enticing parameters to design with. Still, the reality is that homes such as these are inadequate and sometimes a danger to the household and its neighbors.

Most live within the low-income margin, and many are bound to be IDPs who cannot afford to settle in safer areas and build with proper technologies and modern materials. This reason scatters IDPs throughout informal sites in the Philippines, and they usually reside in coastal regions for food and job opportunities. However, many of these coastal villages are highly exposed and susceptible to typhoon-related disasters. Yet, they still continue their lives along the dangerous coastal areas to earn daily wages. Most live in these makeshift huts and other non-permanent dwellings close to the sea, susceptible to harsh winds and storm surges that can reach far inland (Thomas 2015). Only some can afford to build on more sturdy foundations, but most low-income dwellers need help to afford such materials. Resilient architecture exists; however, it's primarily exclusive to the mid to high-income population. But resilience only protects you from some types of disasters; some more contemporary and developed parts of the Philippines are dealing with poor planning by the government. Water and sewage systems, for example, need to be designed appropriately; the sewage pipes need to be adequately sized, as flooding can be an issue to some, and as these communities are under threat of flooding from heavy rainfalls, there is not much to do but to evacuate.

Government Management and Frameworks

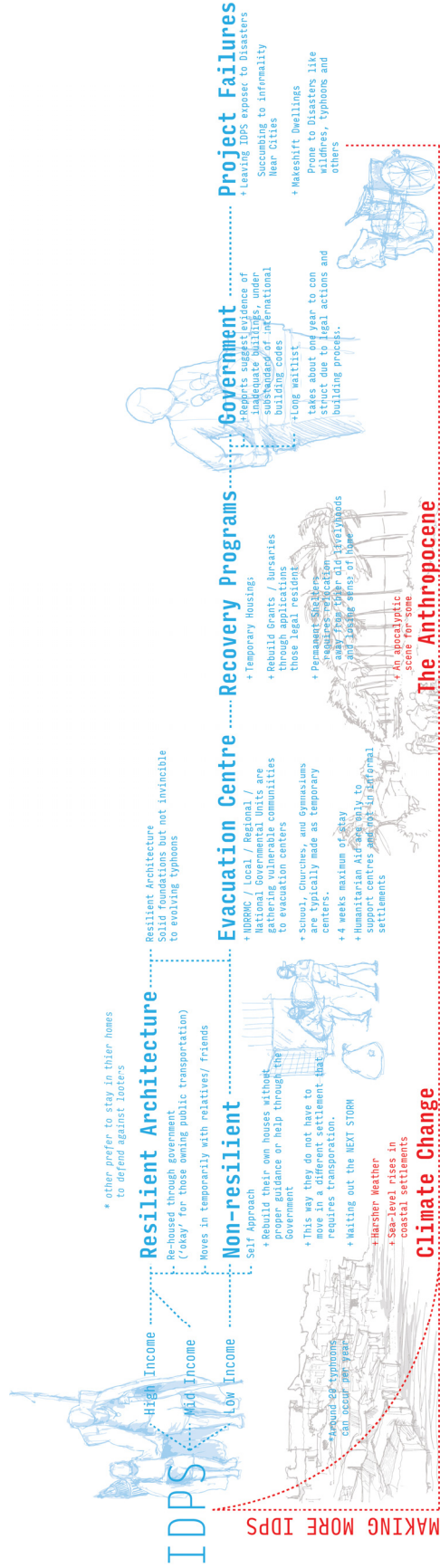
Mitigating the issue of internally displaced people can take in many forms. Internationally and National humanitarian aid are made under the most recent research and information on past disasters and new technologies. Many government authorities and departments in the Philippines address the issue in different disaster events. However, due to the poorly planned and slow process of government aid, IDPs unintentionally prolong their displacement as victims and vulnerable. Through the Sendai Framework 2015-2030, an adaptation of the previous Hyogo Framework 2005-2015, United Nations Disaster Risk Reduction or UNDRR. The Sendai Framework works with the other proposed 2030 agenda agreements, including the Paris Agreement on Climate Change, the New Urban Agenda and Sustainable Development Goals. It is the leading framework for disaster risk reduction worldwide as it recognizes the evolving impact of climate change and risk and enhances efforts to strengthen countries' disaster risk reduction frameworks while reducing their economic and amount of life loss.

Failures towards IDPS

The Philippines has achieved four main goals of the Sendai Framework, 1. Understanding disaster risk, 2. Strengthening disaster risk governance to manage disaster risk, 3. Investing in disaster reduction for resilience, 4. Enhancing disaster preparedness for effective response and building back better in recovery, rehabilitation and reconstruction (Carbon 2021). However, reports and national framework plans still need to be improved to accommodate millions of IDPS. The National Disaster Risk Reduction Management & Council provides guidelines to prepare during disasters and



Tent city in Tacloban a year later after Typhoon Haiyan (AFP 2014)



A typical journey of an internally displaced persons in the NDRRMC framework

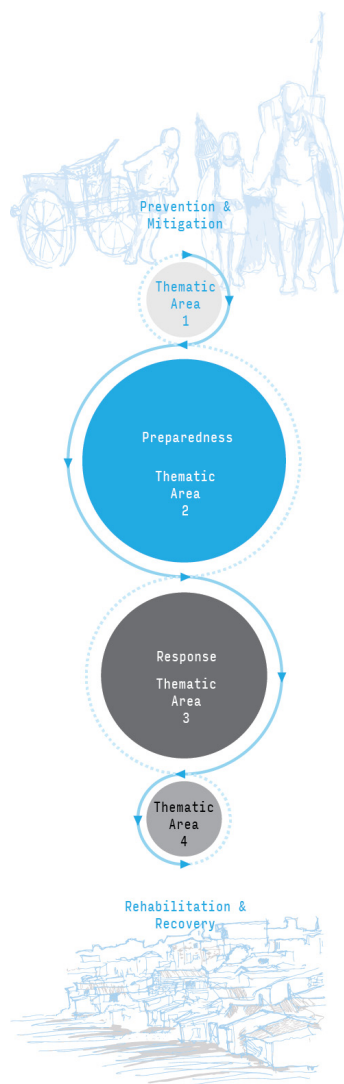
post-disasters properly. The framework allows the governing authority to move in accordance with each other's specific responsibility, providing a harmonious response towards refugees and units depending on the category of the disaster event. Before any potential disaster, the standard operating procedures are divided into the three hierarchy response units, Local, Regional, and National Government Units (LGUs, RGUs and NGUs). For disasters with a lead time for warning, like typhoons and tsunamis, in the Pre-Impact Phase, units are directing emergency plans and actions depending on the predicted scale of the disaster. Government units are issuing warnings and advisories within their areas of responsibility, analyzing the risk, generating worst-case scenarios, and ensuring communications and response readiness functionality. Depending on the disaster condition, raising blue or red alert status (blue being 50% of GUs and red being 100% of GUs) is then implemented when risk assessments are evolving for the worse, and units will start gathering vulnerable communities in designated evacuation centers. These acting evacuation centers are typically existing buildings that temporarily provide shelter for evacuees. During the disaster or Impact Phase, relocation of families and individuals would gather the last remaining casualties. Yet, there are still those willing to brave the storm and make do with their situation, fortifying their homes and guarding against potential looters. Post-Impact, authorities gradually return the high alert to normalcy and coordinate the deactivation of responses, downscaling the operations to the barangay level, narrowing the responsibility to a smaller scale, making the situation easy to organize and assist.



Church as evacuations center (Mildren 2012)



Gymnasium filled with IDPS (Malasig 2014)



NDRRMC framework phases becomes a cycle

Disaster Rehabilitation and Recovery

The National Disaster Risk Reduction Management and Council Plan 2011-2018 is an adaptive framework that provides legal policies, plans and programs dealing with disasters to have “...disaster-resilient Filipino communities towards sustainable development” stated in the document describing its vision and principal goals. It has four areas for guiding the pre-preparedness during the disaster and mitigating the response and recovery of the affected.

- Disaster Prevention and Mitigation
- Disaster Preparedness
- Disaster Response
- Disaster Rehabilitation and Recovery

Disaster Prevention and Mitigation include plans for policies and budgets, increasing the resiliency of infrastructures, and also has approaches to improving forecasting and warning systems. Disaster Preparedness is where the government equips regional and local communities with the necessary skills and resources to cope with the impacts of disasters. Disaster Response provides guidelines for the standard of operations and provisions of social services to affected populations in or outside evacuation centers. Finally, Disaster Rehabilitation and Recovery, where damages are assessed and repaired. However, Disaster Rehabilitation and Recovery is where the framework falls into inadequacy. This fourth thematic area covers the recovery plan of employment, livelihoods, infrastructure, housing and resettlements of the displaced. The problem with rehabilitation and recovery plan lies within the timeframe of the assistance and sometimes lack or inadequacy of the service being provided by authorities. It starts from the evacuation centers, where IDPs are placed

temporarily in Churches, Schools, Gymnasiums and other public or community buildings. However, during most typhoons, these temporary evacuation centres can become overcrowded (Thomas 2015) (Makhoul 2014, 13). Reports and news coverage show the lack of components in these governmental aids, lack of immediate personnel, resources, and responsiveness in the local authorities (Makhoul 2014, 14). These reports and news display poor handling of the IDPs' recovery phase. To make matters worse, these people only have a maximum of four weeks until they are removed, as these evacuation centers will have to continue to be operated as their original building program. Church services will continue, and classes will resume in school, leaving IDPs practically homeless.

Approaches to Disaster Risk Reduction

Other countries have different types of approaches to disaster risk reduction. As each country differs in culture, so do their frameworks and management plans. A great example is Japan's Sendai Frameworks for disaster risk reduction, which was set up to achieve new goals to prevent further and existing disaster risks. Other countries have adapted this framework to include it in their approach



Guantánamo, Cuba, after a category 4 hurricane landed, humanitarian efforts began without delay (Lloyd 2016)

to risk management. Since its endorsement in 2015, it has followed all 2030 agendas and frameworks. Another great example of Cuba's Comradery in Disasters is its solidarity and mobilization to risk reduction gives community living a worthy practice; not only that the country does simulation drills on different scales, but the government also allocates the community expertise and assigns workplaces to help in the disaster recovery phase (Oxfam American Report 2004, 39). This initiative allowed recovery from extreme weather disasters such as hurricanes and even epidemic outbreaks to be well mitigated. In 2004, the Cuban government successfully evacuated two million people prior to Hurricane Ivan due to practicing drills for communities as part of the disaster management plans (De Los Santos and Prashad 2022). Not only do they practice these drills within communities, but they also teach them as part of the curriculum in their education system.

Another example is the Choco' Project. The project is a disaster risk reduction that the Columbian Red Cross and Netherlands Red Cross made in 2012. The community was in a very vulnerable flooding area that required the project to consist of elevated houses and a footbridge spanning 1 kilometer long. They were made with recycled plastics and bottles (Charlesworth 2014b, 141). The



Houses and community infrastructure in the Choco' Project (D'Urzo, 2011)

project had a significant impact on community resilience and environmental awareness. The design improved local building techniques and allowed the community to resist flooding (Charlesworth 2014b, 143).

The book *Humanitarian Architecture, 15 Stories of Architects Working After Disasters*, 2013, written by Esther Charlesworth, shows that most humanitarian architecture is specific to the context, the disaster event and the local people. All stories and architecture projects in the book aimed to produce humanitarian projects specific to the site context of traditions and building performance, bringing correct cultural practices and building a culture to the outcome of the architecture solution.

Another example of approaching disaster is through existing architecture types. Shigeru Ban Architects and some of their expertise have been shared and used in a Filipino context. As a response to typhoon Haiyan, Ban reinvented his paper log homes and used them for temporary shelter projects built in Cebu, Philippines, (Chin 2018) (Shigeru Ban Architects 2014). The structure was modeled on earlier

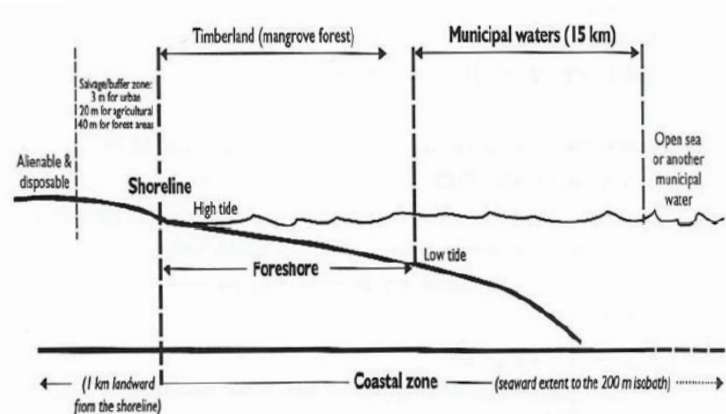


Shigeru Ban constructs his Paper Log House in Cebu, Philippines, after typhoon Haiyan (Shigeru Ban Architects 2014)

paper log home projects in Kobe, Turkey, and India. They used the Paper Partition System's connection system in the design, which allowed them to streamline the shelter, thus shortening the construction time. Beer barrels packed with sand sacks served as foundations, and floor slabs were made of coconut wood and plywood on the frame of paper tubes. This procedure brought immediate help and a sense of dignity to those affected and in need of shelter (Shigeru Ban Architects 2014). However, lasting solutions are still in demand as stronger winds can still blow out these lightweight structures.

Relocations and Rebuilding

Those IDPs who follow the recovery framework are granted transitional housing that allows them to continue living and start anew. However, they still have to wait on the slow process of documentation and legal works to be done; after they still have to wait on these transitional housing to be built and they will be forced to relocate and taken far away from their old jobs and trusted local community. This relocation concerns some IDPs as it would mean they must leave their old community and lose their current lifestyle. This relocation program can lead to losing their traditions and identity, displacing them further from their old lives. According to the NDRRMC, this process of relocation and building can take 1 to 6 years, leaving IDPs homeless and creating a shelter gap that leaves them vulnerable to the 20 cyclones for the rest of the year. IDPs then take the initiative to rebuild and makeshift their dwellings on their own and resettle in the old vulnerable community or resettle in another informal community that will allow them to keep their old lives and jobs but leaves them risking the next storm, and the whole disaster cycle begins again. The government tries to avoid



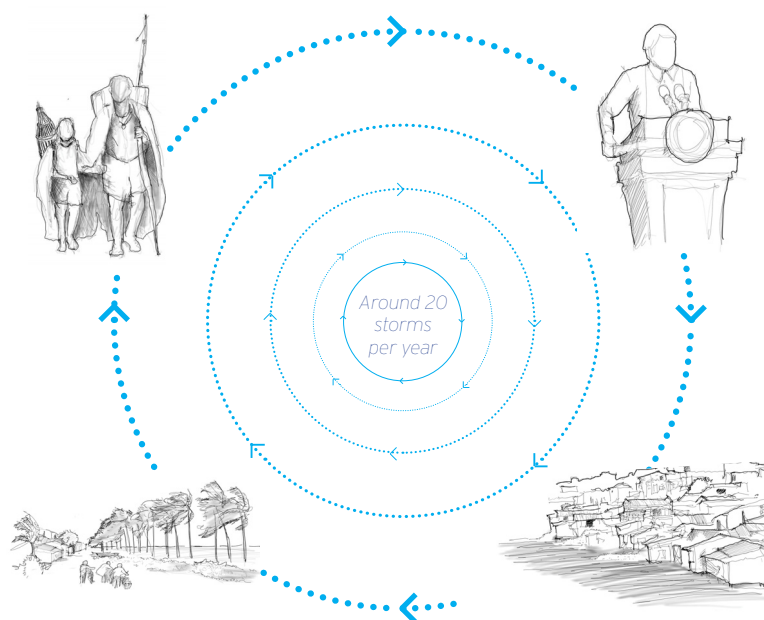
A diagram of the foreshore area and other features of the coastal zone (Land Management Bureau 2020).

this cycle of IDPs by implementing a No-Build-Zone (NBZ) and No-Dwelling-Zones (NDZ) in coastal areas. The law requires buildings and dwellings to be developed 40 meters away from the high water tide on the coastline. The policy targeted overcrowded and informal settlements to make their situation safe and avoid further vulnerability. Although these NBZs and NDZs are intended to provide safety for the people, it ran into other legal policies that did not follow human rights standards. Another issue is that storm surges can travel 1 km inland in some places, making the 40-meter regulation illogical. The UN agencies and other humanitarian aids who provide help were having difficulty displaying efforts in the new law, as municipalities restricted them from assisting in communities in the NBZ and NDZ (Thomas 2015) ("No build and no dwelling zone" 2020). Some informal settlers own legal land titles that technically make them legal settlers and not squatters. These policies and regulations show how governmental policies and new frameworks are being implemented are rushed and not well throughout for the people, bringing further failures to IDPs and their situation.

Chapter 4: A Bayanihan Culture

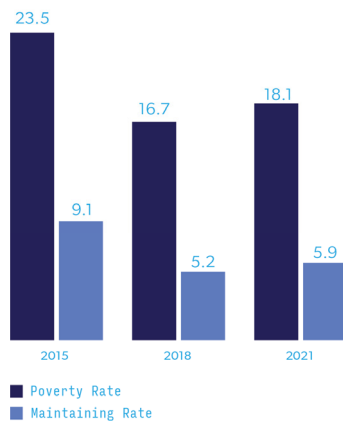
Involuntary Cultural Group

These apocalyptic scenes in the Philippines, the recurring typhoons, the rising sea level, the harsh winds and rainfall, and the inadequacy of government aid all contribute to creating most IDPs. Climate change induces this repeated displacement cycle on the Philippines' coasts. With the evolving super typhoons that we are blindly predicting and waiting on, and the generations after generations that can forcefully adapt to this condition becomes their routine lifestyle in vulnerable communities. The assessment of damages during the aftermath of typhoons is done by estimating the cost through high counts of expenses; this is also done by treating IDPs as numbers rather than people. We can then label and describe IDPs as a cultural group, collectively sharing a core set of involuntary behaviors and values, becoming a cultural identity for future generations



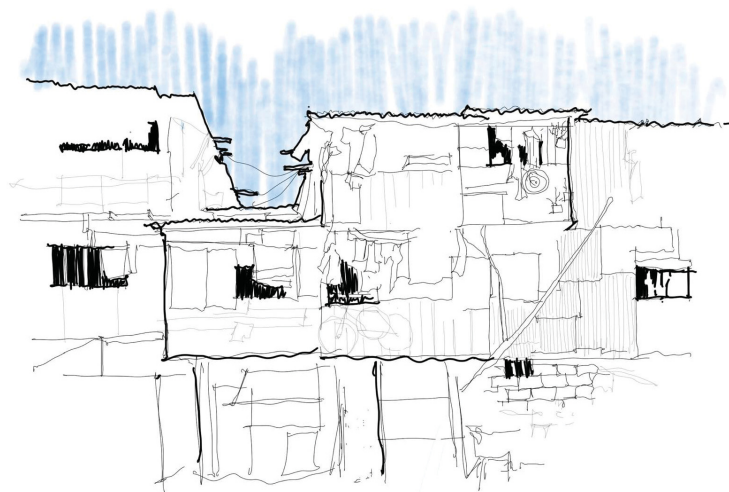
IDPs cycle, around 20 tropical storms devastate Filipinos per year.

Poverty and Subsistence Incidence Among Population, Philippines: Full Year 2015, 2018, and 2021



Poverty and maintaining rate graph (data from Philippine Statistics Authority 2022)

in informal settlements on the Philippines coasts. As one finds themselves in this displacement loop or cycle, it seems like a never-ending process that becomes a practice of displacement. A custom that slowly turns and becomes a group of involuntary tradition-like behaviors, these displaced families and individuals would rather resettle at their destroyed settlements instead of relocating somewhere else where job security is non-existence or unknown. In 2021, 18.1 percent of the population in the Philippines was below the poverty line. Most of these demographics live in rural and coastal regions to find jobs in agriculture and aquaculture (Philippine Statistics Authority 2021). Significant cities, particularly coastal areas like Tacloban City, offer aquatic base jobs. The province, located in the region of Leyte, is one of the major ports in the Eastern part of the country. The city is located in the mouth of San Juanico Strait and acts as a destination and a stop for local fishermen, seafarers and travelers. The main port connects to the rest of Eastern Visayas and Mindanao, creating a steady flow of tourists and trade between adjacent regions. Local architecture derives its forms and types from contemporary building methods; concrete masonry units are one of the primary



A sketch of informal squatters in Manila.

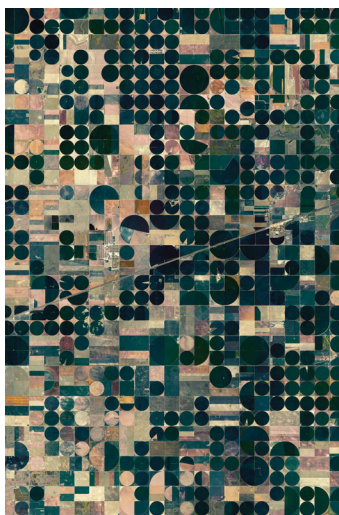


Materials used in Barangay 37, a “Makeshift-Dwelling” settlement in Tacloban City (GoogleEarth 2022)

building materials used in small homes and large buildings. However, many still have to deal with improper housing or inadequate resiliency in architecture (Thomas 2015), especially in informal sites and or squatter areas. Due to having low income and lack of affordability to buy building materials results in many of the low-income population living in “Make-Shift Dwellings” or Shanty that are vulnerable to climate risk and eventually displacements.

These involuntary cultural groups define their lives and approach recovery using what is laid to them. This behavior and self-reliance are unintentionally becoming a cultural tradition, a characteristic of IDPs and informality in the Philippines. Thousands of coastal dwellers are still being displaced and, or vulnerable to being a protagonist in this real-life apocalyptic scenario; most are only looking for a

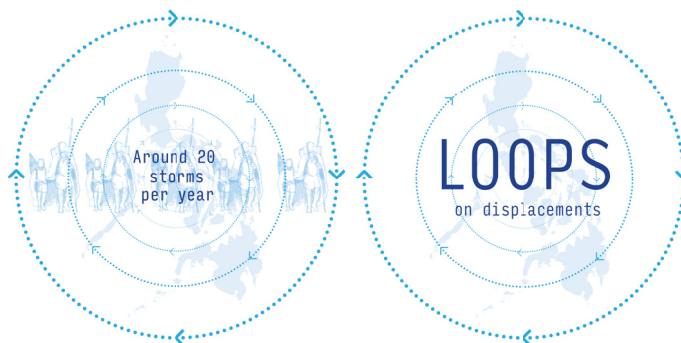
way to stay within their community with or without adequate housing and try to be prepared for the next super typhoon. Most IDPs are in the low-income population, so this cultural group of displacements is continuously thrown to the poverty threshold.



Pivot irrigation in Kansas, USA, (Daily Overview Photography 2020)

Strange Loop and Wet Apocalypse

Timothy Morton, an ecological philosopher, describes ecological thinking that relates uncanny and strange loops in the ecological system. He explains this weirdness with different ecological loops or cycles, positive feedback loops, negative feedback loops, phasing loops and strange loops. Positive loops can be simplified as “command and control”, a farmer who tended soil or antibiotics to bacteria, IDPs resettling at their previously destroyed house. Other positive loops are unintentional, like the use of pesticides that resulted in the destruction of swarms of bees. Negative feedback loops slow down the intensity of positive feedback loops, a thermostat changing a room’s internal climate. Phasing loops are ecological loops in extended periods of time or phases, much like global warming through the earth’s age of 4.5 billion (Morton 2016, 7). Finally, the strange loop is the more ecological loop the IDPs cycle can fall under. Morton further explains strange loops as dark-ecological loops, a weird loop, an ecological awareness of all dark and uncanny

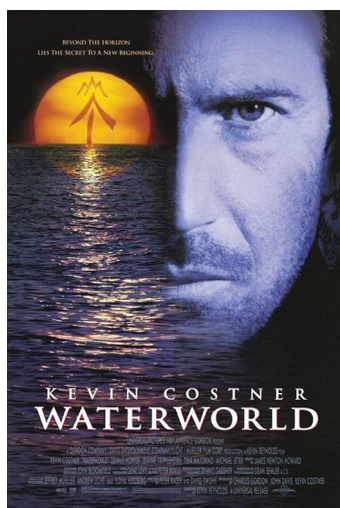


Recurrence of typhoons and loops on displacement in the Philippines.

odd; for example, the ignition of one car is insignificant to global warming but imagine billions of cars. This strange loop is connected to all other loops in the Anthropocene that expose a looping cycle, in this case, the cycle of displacement that resembles an uncanny happening in the Anthropocene. This dark ecological awareness is connected to the systems of inadequate governmental frameworks and building a culture of displacement. This connection affects the choices of IDPs to return to informal settlements and eventually leaves these families and individuals vulnerable to typhoon disasters creating recurring displacements, a displacement cycle turned into a tradition-like practice of involuntary displacement that presents a setting where IDPs in the Philippines have unintentionally situated and are currently living.



Film poster for *Mad Max* (1979) (Garland 1980)



Film poster for *Waterworld* (Reynolds 1995).

This setting of IDPs in the Philippines falls under the very definition of a wet apocalypse by Jacob Boswell, the willingness to accept this altered living condition, which in this case, the displacement cycle in the Philippines. In American pop culture, apocalyptic scenes caused by humanity's technological hubris produce images of climatic dystopias, a dramatic environmental change (Boswell 2016, 44). This story has been told many times. From George Miller's *Mad Max* to Cormac McCarthy's *The Road*, this apocalyptic setting has been shared throughout the common theme of future imaginary scenes that resulted from a single catastrophic event. In the aesthetic of the 1940s, '50s, and '60s, The dry and wet apocalypse were two main dystopian genres in fictional stories (Boswell 2016). In Boswell's definition, a Dry apocalypse involves symbols of the modern era—the automobile, the airplane, the atomic bomb—which has significance to the storyline of



Future dystopian of IDPS with the continuous climate change, adapted from Untitled; The Creature (Beksinski 1975)

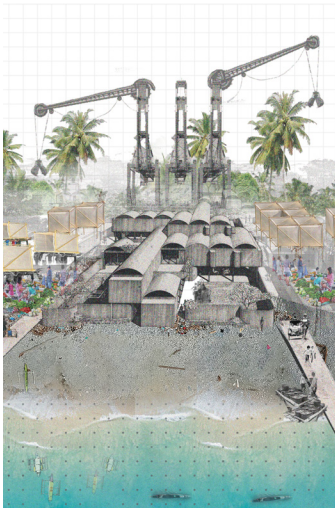
the downfall and history of the dystopia. The lost civilization created such objects that doomed them to destroy the perfect future but instead became a cataclysmic and post-apocalyptic world; an example is the film series *Mad Max*, set in a nuclear wasteland. Wet apocalypse worries about the slow degeneration of humanity into a genetically altered race, often a displacement of its creation. A global sea level rise or a growing tropical reclamation in an urban setting is a significant aspect of the wet apocalypse, *Waterworld* (1995) and the television series *See* (2019). Both dry and wet apocalypse tells the story of humanity's struggle for survival following a cataclysm or a large disaster event (Boswell 2016, 44). Evidence suggests that climate change-related risks are becoming extreme for humans as global warming proceeds to increase its presence. Countries experiencing drought, cataclysmic cyclones, wildfires and other climate-linked disasters are condemning more and more places to the apocalyptic-dystopian stories. Today, these Anthropocenic repercussions create forced migration and displacements (Zickgraf 2019), resembling the wet apocalypse.

Climate change and Architecture relate as both can drive each other in their cycle. Designing for and with climate change in mind produces environmentally friendly buildings, passive houses, etc. The main difference is that architecture ensures that humans survive, in and outside nature, making humans the subject. However, ecological thinking cannot be done by separating humans as subjects to nature as objects. Instead, ecological awareness should consider humans and nature in the same plot contributing to one another in a constant loop with ecology (Morton 2016). This ecological awareness gives us reason to design a



Scenes from dystopic films and real world events: 1. *Mad Max* 1979 (Miller 1979). 2. Aftermath of typhoon Ulysses Philippines (Tiu 2022). 3. *Last of Us 2* (Naughty Dog 2020). 4. Fire in Cebu, (Bañacia 2022). 5. Covid-19 social distancing (Eisele 2020). 6. *Waterworld* (Reynolds 1995). 7. Aftermath of Typhoon Haiyan in Tacloban City (De Castro 2013). 8. Typhoon Haiyan Tacloban City, (Nybo 2013). 9. California Wildfires (Berger 2022).

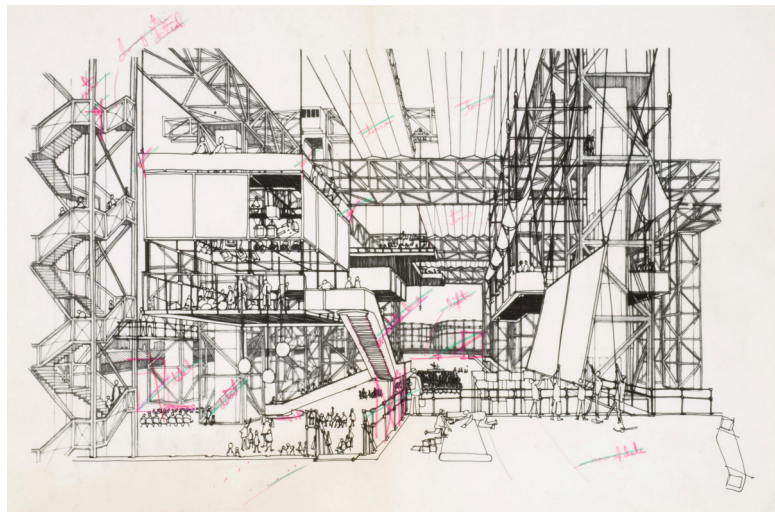
speculative architecture that brings better living conditions for IDPs in the Philippines who are in this displacement cycle, a cultural setting that is now defined as a wet apocalypse. This new Anthropocenic cultural group requires a new living cycle to deliver themselves from involuntary displacement to voluntary movement, their wet salvation in the future of coastal climate risks.



Wish image: an architecture for the future cultural group

Speculative Nature

As we define the IDPs scenario as an adapted setting in which vulnerable communities live, this wet apocalyptic-like cycle brings this new cultural group of IDPs a need for a better housing system in the future, speculating on the changing environment. Cedric Price's The Fun Palace gives notions of plug-and-play of building programs. Through a speculative nature, spaces can be used in their evolving programs. The project suggests aspects of changing social culture during changes in both time and habits of people during the late 60s. These changing programs can direct architecture and let the design accompany how people adapt to the design and planning. The programs introduced were amenities that provided happiness to the people. Although it was dubbed



The Fun Palace (Price 1964)

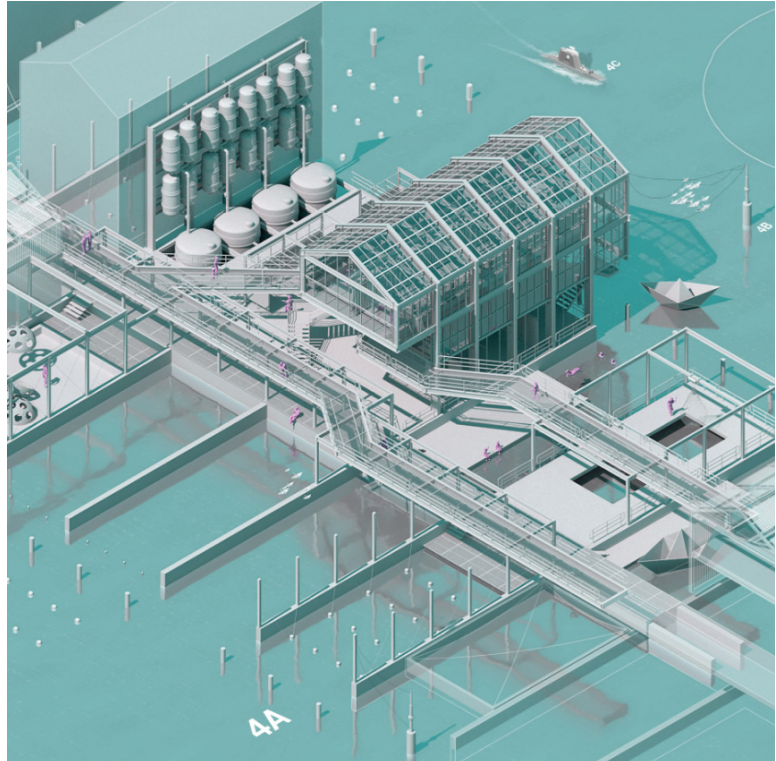
a drug-like place where people will eventually drop in and leave for temporary happiness or a behavioral modification (Mathews 2006, 46), reprogramming space proposes a solution with different uses or programs plugged in. Another architect and urban planner, Yona Friedman, proposes mobile architectures to integrate society into evolving cityscapes. His concepts in mobile architecture introduced a radical approach to grid systems of modules that hang above or be part of the urban landscape. Friedman's idea for Villa Spatale, one of his radical projects, applies some of this principle to mobile architecture (García 2016). The spatial approach was to accommodate growth in urban settings without demolitions of existing buildings and exhausting the use of land. The mobile architecture allows movement and configuration that brings different opportunities to society; people can reorganize themselves however they want. The critical part of Villa Spatale was the infrastructure that allowed mobile units to settle and move when needed. The radical approach gave a speculative nature to how society would function on this type of urban planning and architecture, bringing in different infrastructures and challenging existing societal functions.

Another adaptation to social uses is The Urban Village Project by Space10. The project allows cheap homes to challenge the housing market. The project consists of Livability, Sustainability and Affordability. Livability ensures that families or individuals are accommodated within the settlement and community by having adaptable modules to the household type. Sustainability comes in the materiality and the natural part of the built environment—affordability through a modular building system. The project can also be fabricated elsewhere and easily assembled on the site.



Urban Village Project (SPACE10 2019)

The project proposes a new way of living within a collective relationship within a community. The project would also offer access to shared amenities and services that would keep you near to your everyday needs. For example, communal meals, shared childcare services, farming, exercise, shopping, and shared transit. It envisioned how cities could be made and combined with social lifestyles, giving health and happiness to the residing and surrounding community. The architecture allows configurable modules, depending on the household size, and enables the growth of the family (Space10 2019). Although this project doesn't deal with IDPs and Mobility, the project, much like Price's The Fun Palace, gives a contemporary-speculative approach to uses of space, the programs to be used in the community that can plug and play in the designed modules by allowing the structure to accommodate different programs depending on



Surface Ex_tension (Nieto 2020)

what the community needs. Another speculative project that uses strategic programs and a more extensive infrastructure is the project called Surface Ex_tension by Marco Nieto, a designer at Foster+Partners. His project addresses the changing climate without knowing the future climate risk. The project is his take on the speculative and fantasization of architecture in the Anthropocenic future. The design aims to address the coastal cultivation and over-population, but instead of connecting to the coast, the project acts as a metaphorical bridge that allows industrial support structure to benefit social, economic, and commercial aspects to serve the nearby community better to help both humans and nature (Nieto 2020). The speculative approach of the project brings interesting ways to mitigate climate risk and solve overcrowding issues by building out in the sea and changing the living situation of some communities that are in need, expanding questions about the social and economic

aspects of the project. The project utilizes its infrastructure to provide economic gains in different ways (Nieto 2020), through greenhouse and farming systems and housing, giving opportunities to traditional fishing villages in Asiatic communities. The innovation of sustainable living in this design provides speculative thinking of how society benefits from the infrastructure. These speculative projects highlight changes in architectural thinking with climate conditions and social norms, challenging the existing conditions and societal issues that could be mitigated by designing a new living environment and situations for communities that are in a vulnerable state.

Architecture of the Bayanihan

In catastrophic times, Filipinos turn to one another for help. In a traditional form of community assistance called Bayanihan (Bankoff 2020b), Bayanihan is also known as Tulongan or Damayan, a system of help and concern for families and village life in the Philippines archipelago. It can also be described as brotherhood within communities (Ang 1979). The root word Bayan means community or place, and the term Bayani refers to a hero who selflessly helps others (Bankoff 2020b). Bayanihan refers to communal cooperation that allows camaraderie among the people in the community, a practice that usually strives during a crisis. For example, suppose a community member suddenly loses their job and lacks the money to provide food for their family; in this case, other community members will step in and offer food to the family. In the most traditional sense of the Bayanihan, it is to move someone's bahay-kubo on the shoulders of a group of neighbors away from danger or move to a new location. Recently in Zamboanga Del Norte, a



Bayanihan, a traditional moving of houses in the Philippines that expresses community camaraderie. (Remit2philippines 2011) (Ilagas 2018) (Bankoff 2020a).

video of neighbors carrying an elderly man's house to a new site in order to keep him close to his children (Lippke 2022). This viral video proves that the bayanihan practice still exists and the spirit continues to bring communities together. As the Philippines lies in a disastrous location, Filipinos often meet catastrophic events like floods, typhoons, earthquakes and volcanic eruptions, bringing the community together to ensure everyone's safety and needs are met. This comradery concept is familiar as many countries have versions of this comradery portraying the spirit and heart of the Bayanihan. Though the Bayanihan heavily relies on the non-cash economy, today's practice of this traditional movement and camaraderie falls under a time of desperate need during climatic disasters. This movement proposes mobility in times of crisis in vulnerable communities and it strengthens the community togetherness and fortifies Filipino traditions through the common good of the people and fellow neighbors.

The understanding of Bayanihan presents a different version of speculative architecture. An architecture that lets climate change and the spirit of communal unity drive the architectural systems and potentially redesign infrastructures through dark ecological loops in the Anthropocene. This strange looping concept of displacement also creates an approach to programs that cooperates with recurring typhoons, as emergency architectures reprogram themselves to accommodate IDPs during a typhoon event. Moreover, it brings more comprehensive urban strategies that allow IDPs to live in a new settlement that redefines their wet apocalypse into wet salvation.

Chapter 5: Thesis Site and Methodology

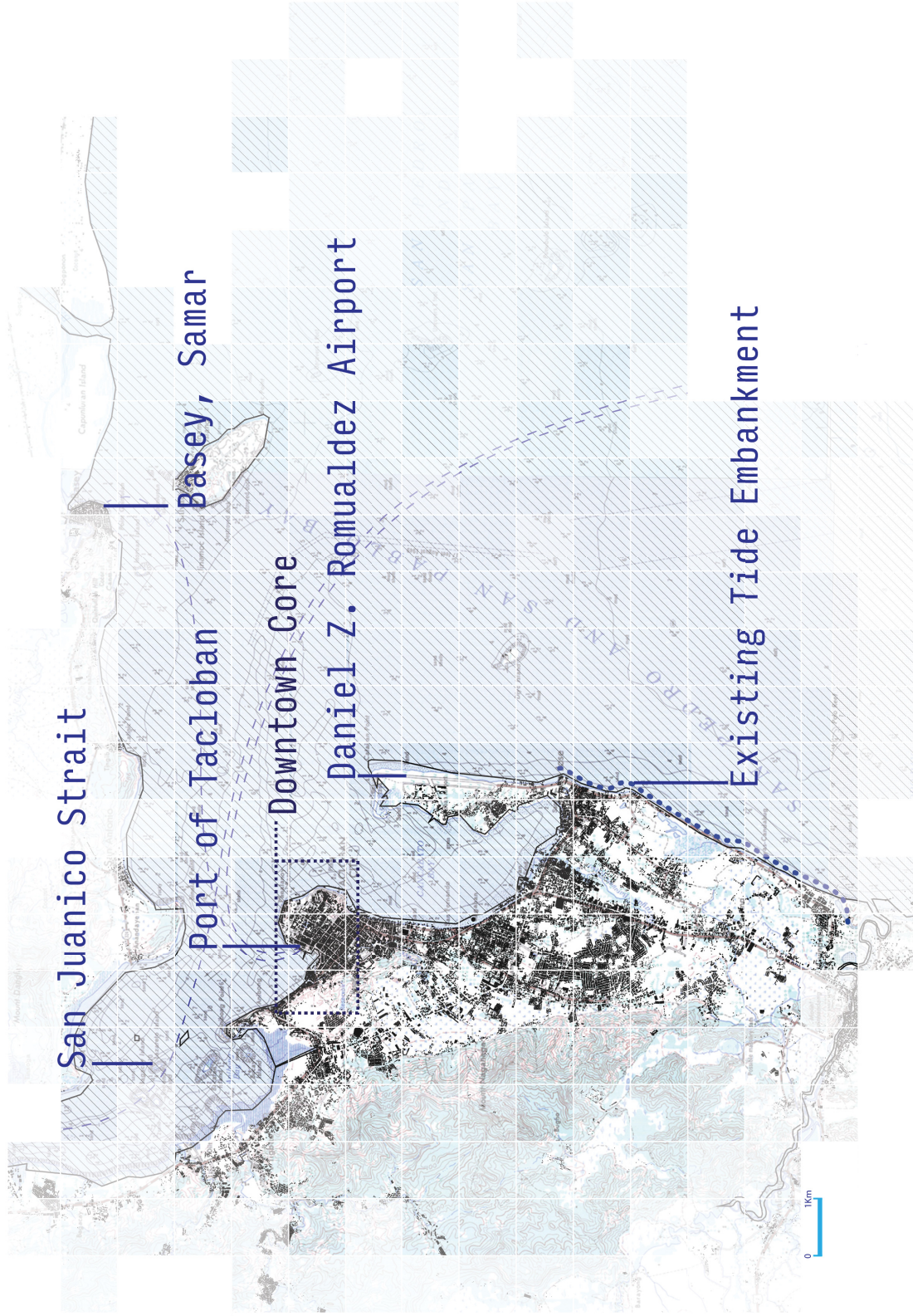
Thesis Site

Tacloban City is one of many coastal cities in the Philippines susceptible to typhoon-related disasters, and Tacloban people are regularly the first to experience harsh winds and storm surges. Tacloban's low-income population resides along the coast, and the unwanted lots that squatters had taken over accumulated throughout years of displacements. Most of these informal settlements are in the city and downtown core, as many job opportunities are nearby. Focusing on the central Downtown Core of Tacloban City, Barangay 37, the largest vulnerable site, presents a case study for governmental policies and natural disasters and provides a potential test site for the design. IDPs who previously lived in Barangay 37, who were granted new housing and relocated, were concerned about their livelihood. Five years after Typhoon Haiyan made landfall in Tacloban in 2013, IDPs who were promised relocation and new housing still wait on their homes to be built (Board 2018), prolonging their displacement that leaves them homeless.

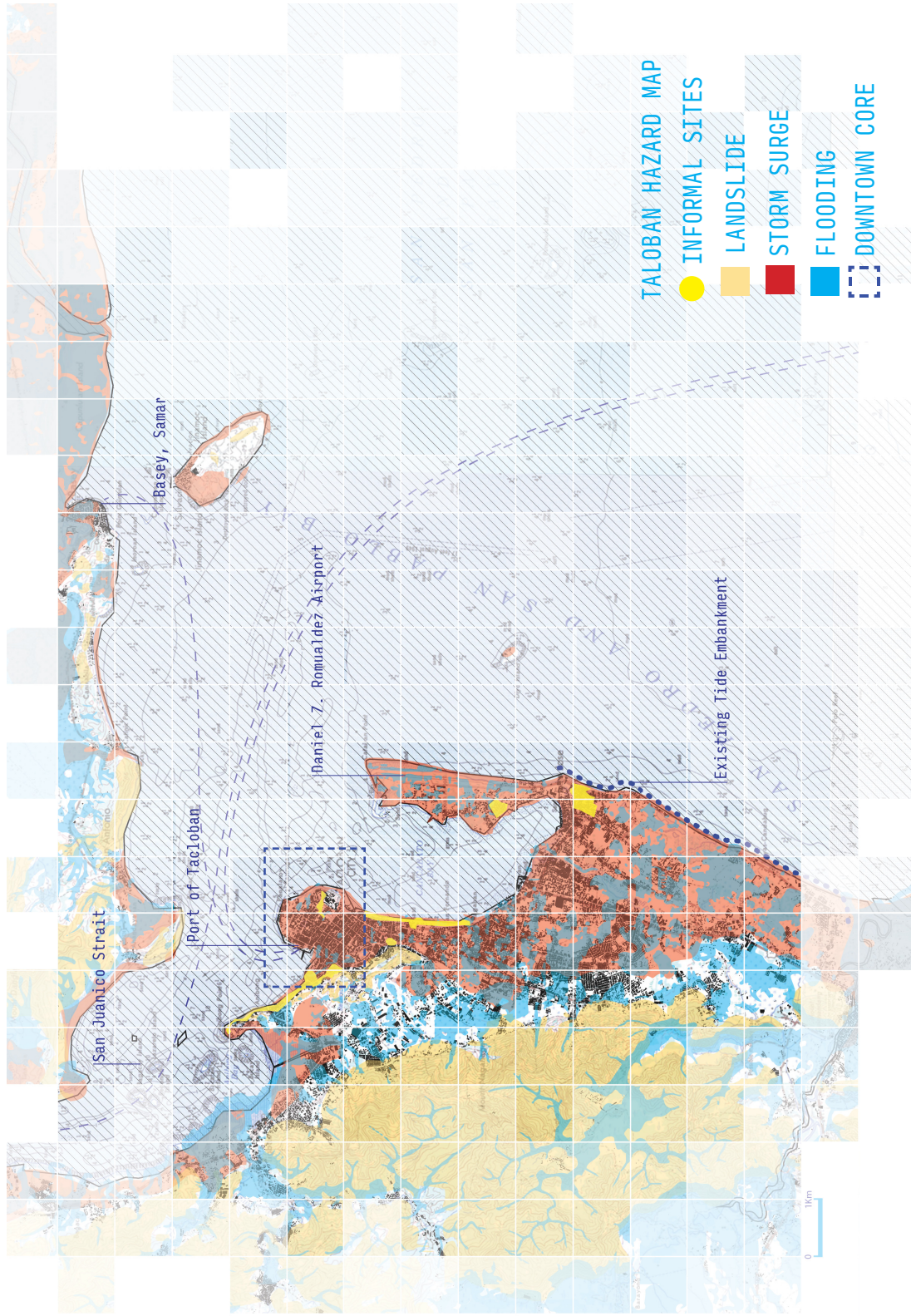
Tacloban City was originally known as Kankabatok, meaning Domain of Kabatok—a prominent settler who occupied the presently Downtown Tacloban. In 1770, the arrival of Augustinian Missionaries, who were the first Christian missionaries in the area, then led to change the city's name to Tarakluban, which means a place where inhabitants use taklub—a bamboo-catching trap for crabs, shrimps and fishes (Tacloban Gov 2019). Tarakluban evolved into today's



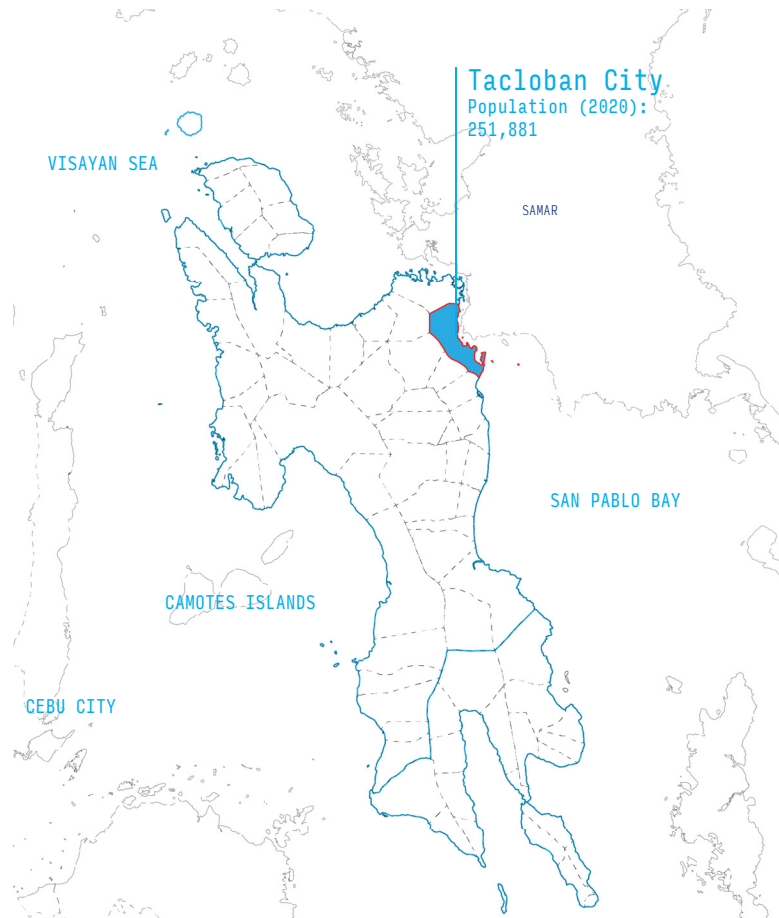
Map of volcanoes and typhoon Haiyan 2013 (data from Philippines Tropical Cyclone Advisories 2022)



Map of Tacloban City, main downtown area (base map from NAMRIA 1956)



Hazard map of Tacloban City (base map from NAMRIA 1956 and NOAA n.d.)



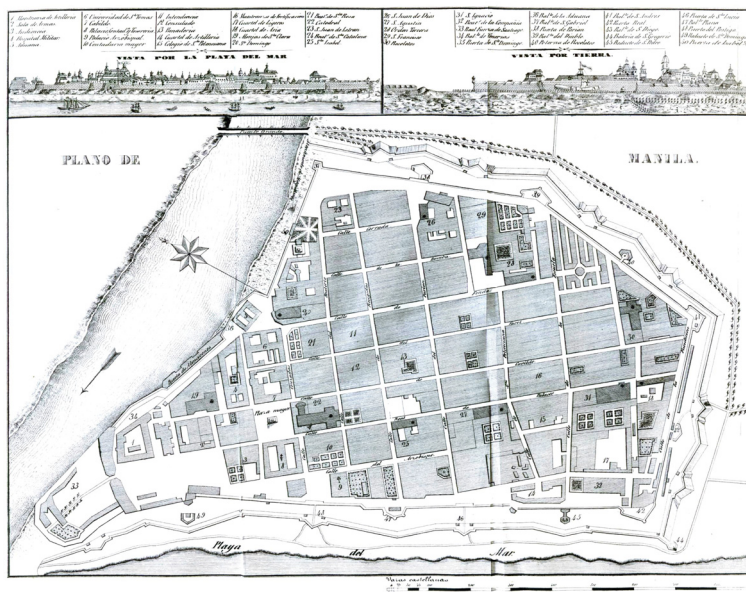
Leyte island group, Eastern Visayas



Yolanda memorial monument, a '*Taklub*' or fishing baskets, where the city was named after (Ballena 2020)

Tacloban city, as the Spanish Laws of Indies were applied to establish the grid settlement during the Spanish Era. This settlement layout required new towns to be able to defend themselves, and they must have sufficient water sources and arable land to be accessible and specific to seacoast towns; the plan shall have the plaza and church should be near the port (Barretto-Tessoro 2015, 434).

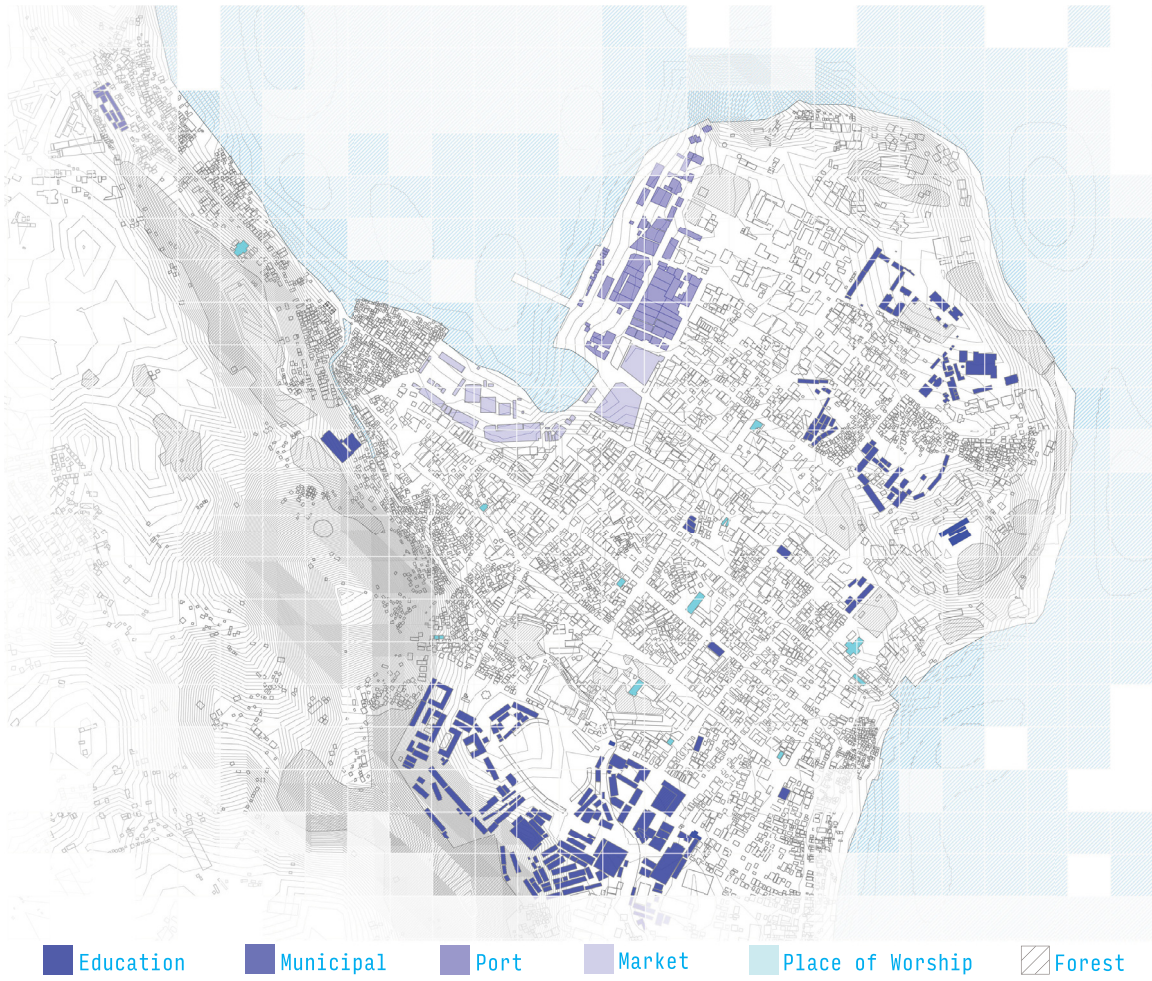
The Philippines has many mountain ranges in Tacloban, Mount Naga Naga is the highest mountain range in the area that separates Tacloban City from the rest of Leyte. Due to the city's location along San Pablo Bay and Mount Naga Naga, the city is vulnerable to many natural disasters like storm surges and landslides. See the Natural Hazards image. In 1830, Tacloban City was chosen as the capital



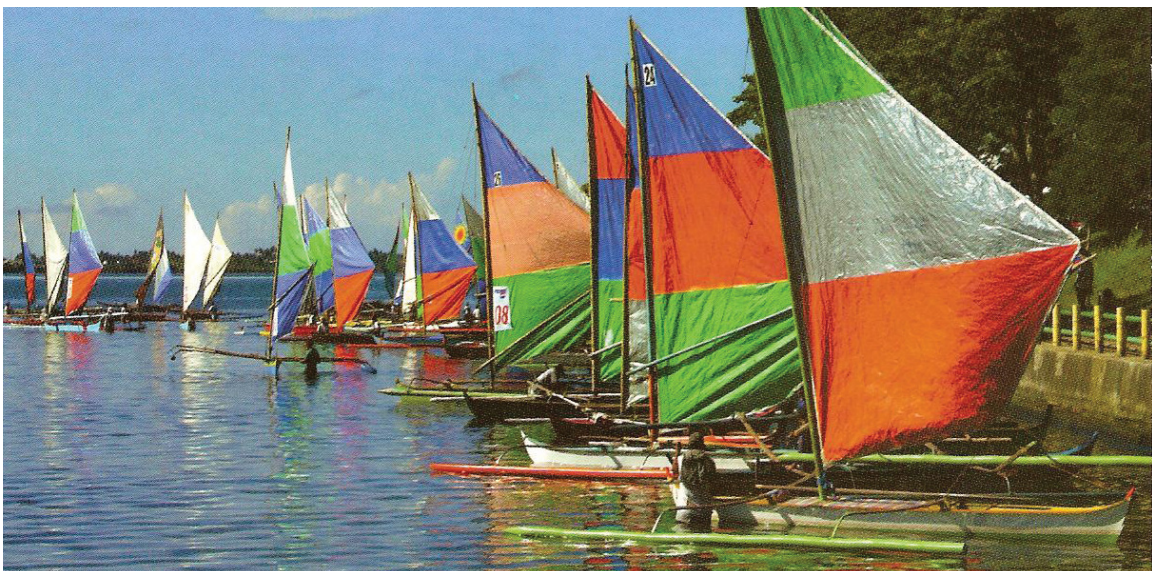
Plan of Manila, 1851 (Wikipedia 2006)

of Leyte, making it a significant trading point between the provinces of Leyte and Samar due to its strategic port location. Tacloban's population is around 251,881 as of the 2020 census (PhilAtlas n.d.). It is the busiest and most opportunistic city in Region 8 (Eastern Visayas) and is a center for business, education, health and leisure activities. Along the San Juanico Strait, it acts as a major tourism hub as the region's leading arrival destination for regional tourists in ferries and airlines. It is also home to three major state universities, Leyte Normal University, Eastern Visayas State University, and University of the Philippines Visayas Tacloban Campus.

Filipinos love their festivals, and as the capital of Leyte, heritage and traditional lifestyle are celebrated in various city cultural events and festivals. These fiestas include regional and local events like Sangyaw Festival—a religious and socio-cultural festival involving traditional dance and street dance competitions showcasing the culture of the Warays—Visayan people. Another Festival is the Pintados



Map of amenities in downtown Tacloban City



Subiran Regatta in Leyte (Bonbon2010 2012)

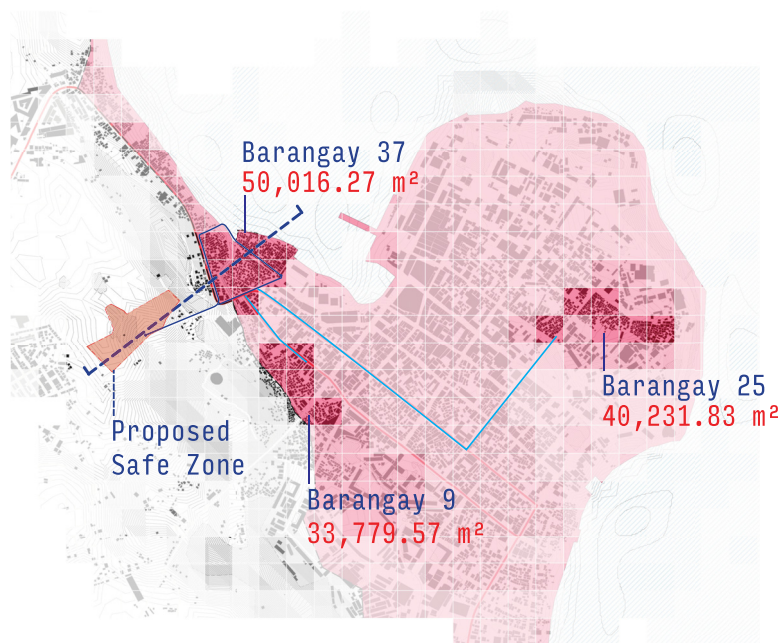


Pintados Festivals
(Tabafunda 2022)

Kasadyaan—showcasing the ancient practice of body painting or tattooing, traditional dances, and costumes based on the ancient tattoos “pintados” or painted warriors, a name Spanish colonials gave during the 16th century. In the San Juanico Strait, Subiran Regatta is sometimes held, a sail-boat event for local fishermen to exhibit their crafts in boat building and skills in maneuvering their attractive and colorful subiran vessel, sailing them in an eight nautical miles race along Cancabato Bay.

Tacloban’s Informality

The abundance of amenities and jobs on site attracts a population in the low-income margin, working as wage laborers or various local jobs. Most of these low-income populations residing in squatters are migrants from rural to urban or urban to urban (Lico 2008, 54). Although traditional architecture, like the bahay-kubo, brings the idea of crafting houses with one’s own hands, informal squatters, the makeshift dwellings, bring the essence of this vernacular with it (Lico 2008, 53). While these

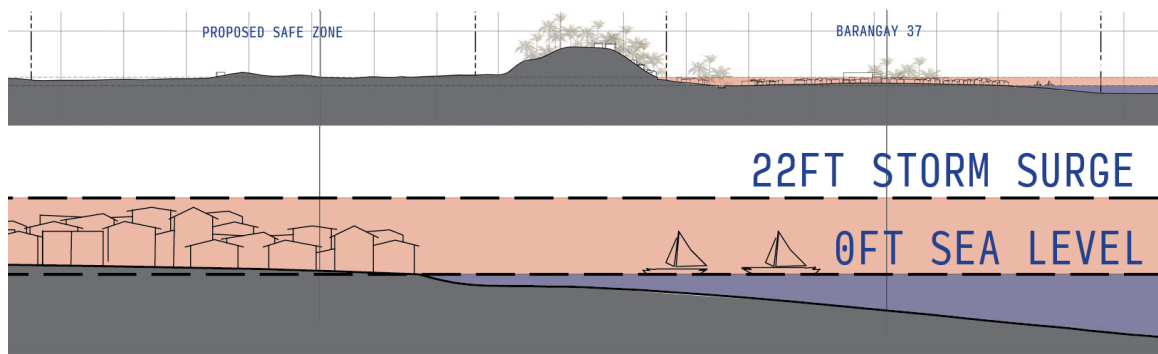


Vulnerable informal settlement in downtown Tacloban City



Tacloban City, Before and After Typhoon Haiyan, from NPR, Base Image from Google and Digital Globe 2013

migrants prefer to have a more permanent house, they are pressured to reinvent and repurpose the vernacular of the bahay-kubo through a shanty type of setting, using found materials with no blueprints and building with little skills and resources (Lico 2008, 53). This informal architecture uses various materials for building and typically has three tiers, a.) Temporary—using found or salvage materials, b.) semi-permanent—using a combination of a more durable



Storm surge height during typhoon Haiyan in 2013



Inadequate sewage and water line in Barangay 37, Tacloban City, (GoogleEarth 2023)

material like Hollow Blocks, and c.) Permanent shelters—made with durable materials like reinforced concrete and galvanized sheets, these permanent informal settlers are seen as “professional squatters” that permanently occupy lands without consent from the land owners (Lico 2008, 57); they also have more financial capacity for durable housing. Most of these settlements are a mix of all three categories, typically squatting in open and vacant lots like Barangay 37, located near a canal where most of the local sewage and water runoff flows.

In operational terms, informality or a slum household lacks one or more indicators: a durable housing structure; access to clean water; access to sanitation; adequate living space; and permanency. The first four are based on standard definitions; the fifth is the most difficult to assess and is not

currently used in slum measurement (UN-Habitat 2018). The Philippines' informal settlements are located in major cities, and Tacloban is no exception. As one of the major seaports in Eastern Visayas, informal communities are bound to exist within the town. Barangay 37 is a Makeshift-Dwellings community consisting of temporary, semi-temporary and permanent houses that was recently labelled as a NBZ (No-Build-Zone) and then later changed into NDZ (No-Dwelling-Zone), confusing the community and the local authorities because most of them have been living on-site for generations, with 80% of the community legally residing on the site, braving climate risk for better or worse ("No build and no dwelling zone" 2020).

The failure to provide IDPs with the necessary and standard assistance is a huge significant to the current displacement cycle. The shelter gap leaves victims wandering homelessly and giving in to slums and further pushes them into the process of displacement, resulting in more informality in the country. Moreover, the failures of government assistance to current and future internally displaced persons lead IDPs to fend for themselves and live a life that is in a present climatic dystopia, where climate change dictates their situation for the worse, and live through today's disimproving climate risk that the Philippines will endure for the on the coming future.

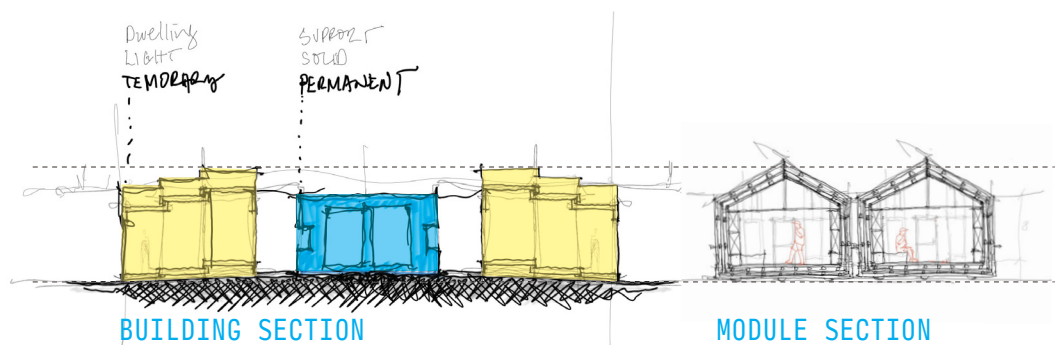
Design Methods

The design goal is to produce a retreating community with a traveling house and programs that can be used during typhoon events and the regular year-round. The traveling house or module will accommodate the displacement cycle but redefine it as a relocation cycle. The practice of

separation of dwelling and support programs of the house will continue to reduce baggage during the relocation.

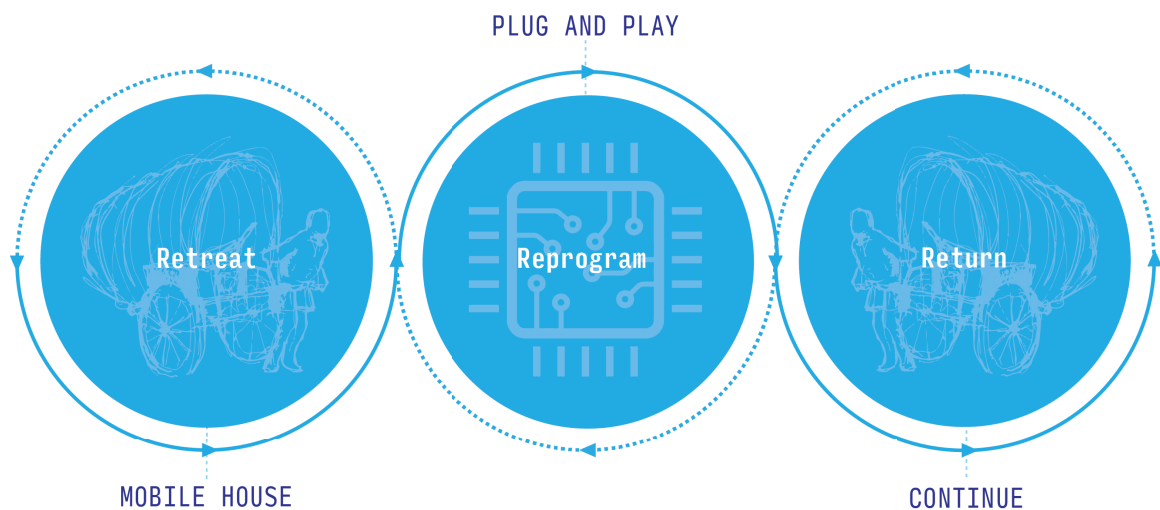
Although The Fun Palace of Cedric Price was never built, the project intends to provide amenities for the working class during the 60s that could radically change the shifting culture of the people. The design introduced the interchangeability of building programs in a collective architectural superstructure that evolved, offering various types of amenities to the working class. This thesis, however, proposed slightly more practical programs that can also plug-and-play into the architecture. Programs unique to an emergency event and reflecting on Tacloban City's needs will inhabit some of the proposed architecture. This design integrates a plug-and-play system supporting IDPs' new cultural relocation lifestyles with the insertion of building programs that can be used in the safe zone where these said structures could be reprogrammed during and after the typhoon event.

Through the community togetherness of the Bayanihan, mobility plays a role in the architectural intervention that will aim to design a more extensive infrastructure that provides use for the retreating community that could expand to the whole city. This mobile architecture allows the community to relocate temporarily in safe zones during the pre-impact and post-disaster phases, without the repercussions of being

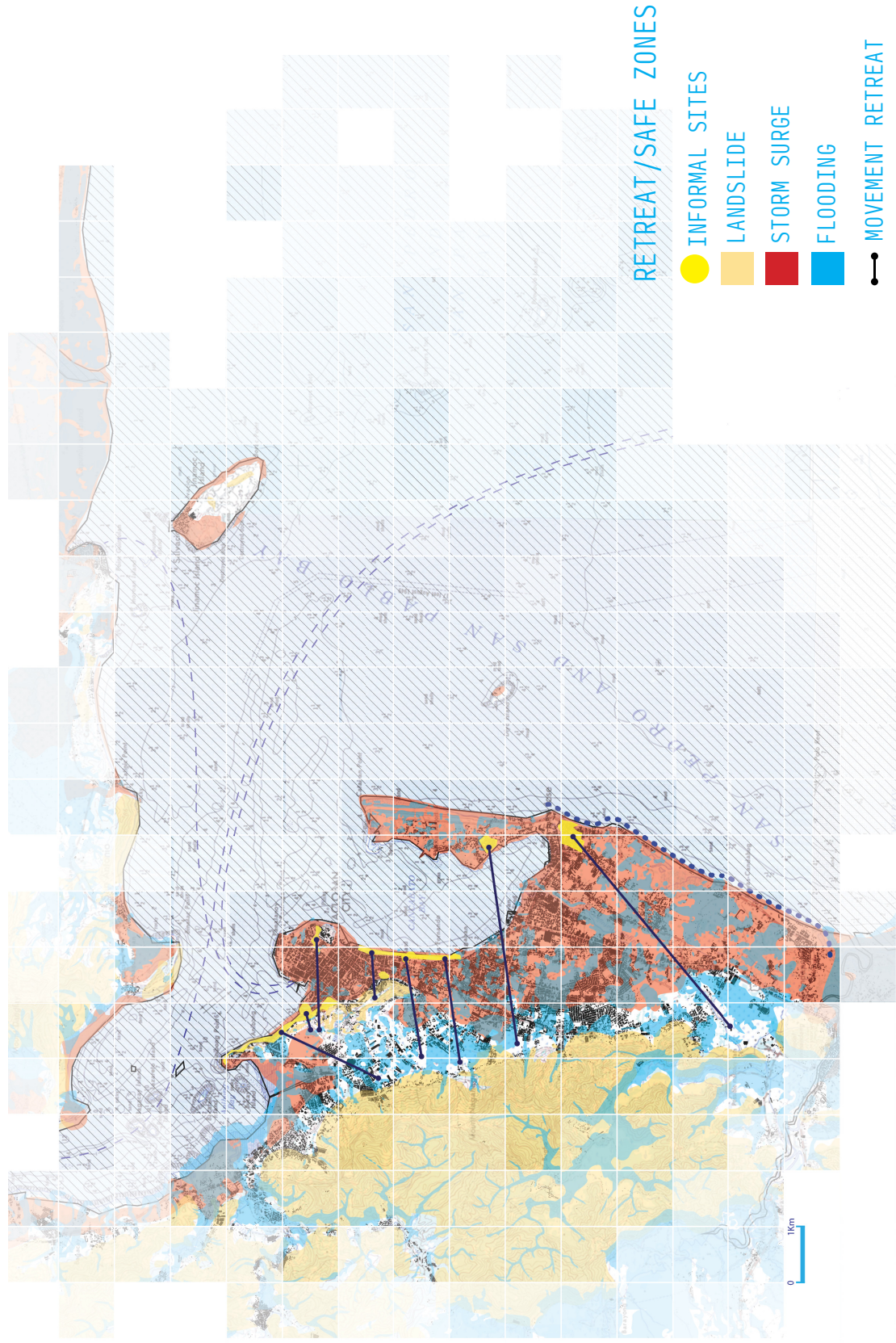


Concept for housing units, the permanent and temporary

alienated. Rather than being displaced, this design concept will let coastal dwellers relocate and return to their original community along the coast, which allows the traveling houses to retreat and return to enable the continuity of livelihoods. The vernacular typology will drive explorations of forms and house programs; the bahay-kubo proposes a lightweight construction that is easily moved through the Bayanihan, and the bahay-na-bato offers a permanent solution to support spaces that will contain utilities like the plumbing and electrical systems, kitchen and storage. These utility cores will be left and sealed during the retreat and act like nodes of breakwaters to decrease the storm surge waves. The design falls in a contemporary-speculative architecture, speculating on climate change that will get worse, making IDPs in the coastal Philippines a future category of environmental refugees. By relating traditional ways of using a bahay-kubo and bahay-na-bato, the house components will divide into two, dwelling and support (the temporary and the permanent). The project results in a new type of relocation lifestyle that cooperates with the recurrence of typhoons, looping with the Anthropocenic environment.



A diagram of proposed cycle for new cultural group



Hazard map and possible retreat site for vulnerable communities (base map from NAMRIA 1956 and NOAA n.d.)

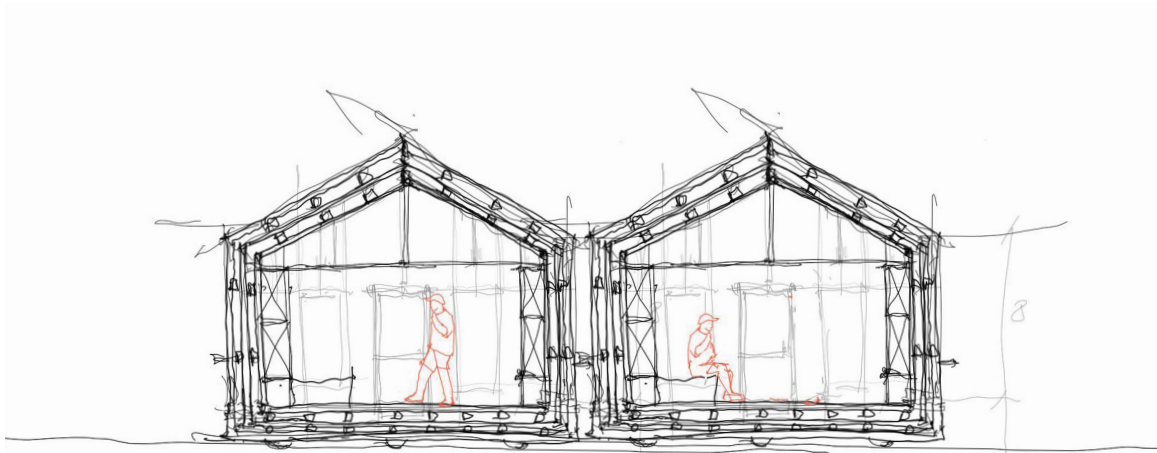
Chapter 6: Design Proposal

The project aims to produce a traveling housing system that allows relocation from Barangay 37 to a nearby safe zone. This proposal requires two project sites that work with one another, allowing people in these informal settlements to relocate, reprogram and return to continue their livelihoods without experiencing displacement. This thesis responds to Emergency Architecture in the Philippines that provides temporary and permanent support to vulnerable communities.

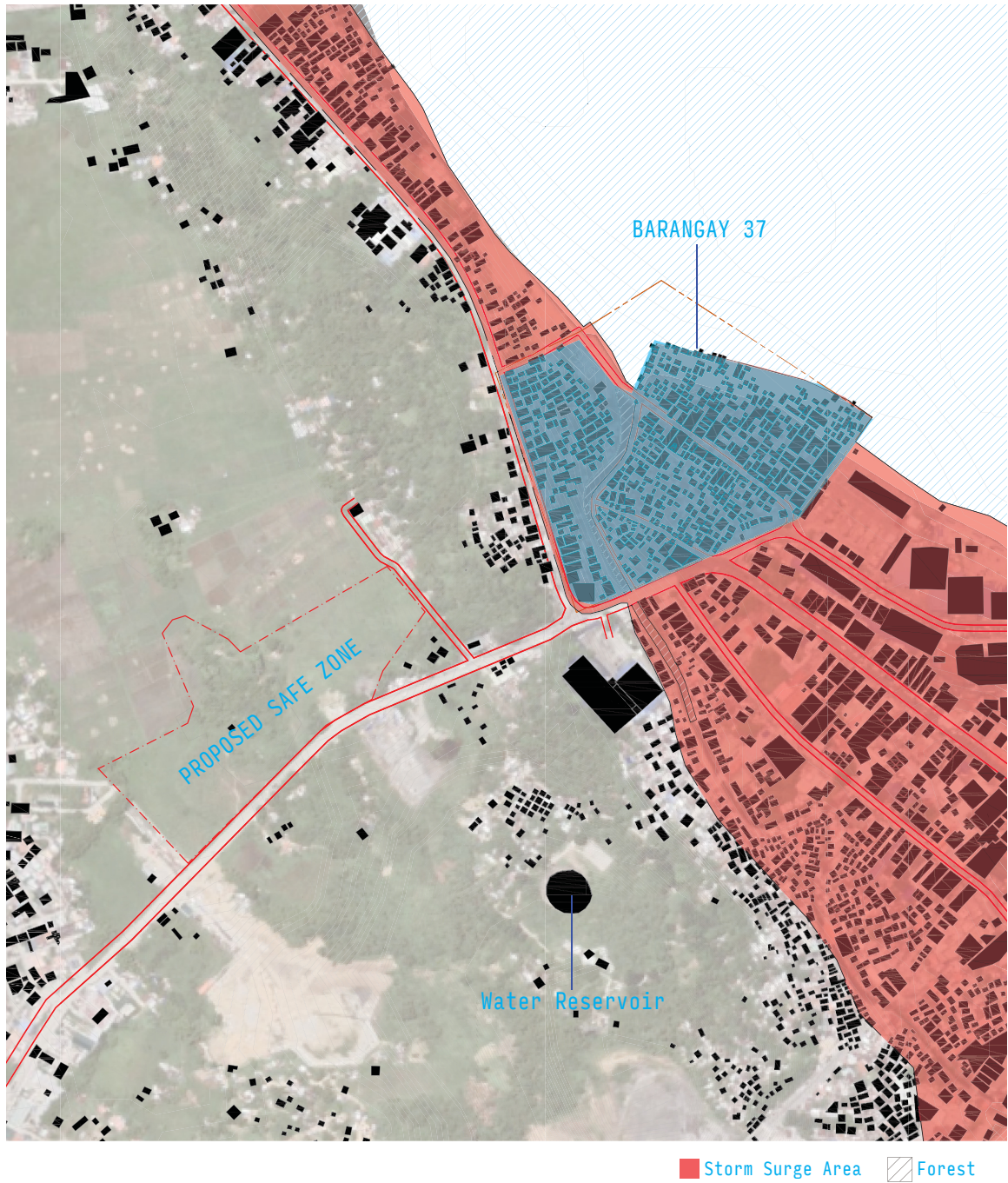
Housing Design

The design allows housing units derived from the traditional Filipino architecture called Bahay Kubo and Bahay-Na-Bato. Using wood construction and corrugated metal sheets, a pitched roof with foldable overhangs will serve for the heavy rainfall and tropical sun during the hot and wet seasons. In addition, the design of the house will adapt to the division of programs, much like the bahay-kubo and bahay-na-bato.

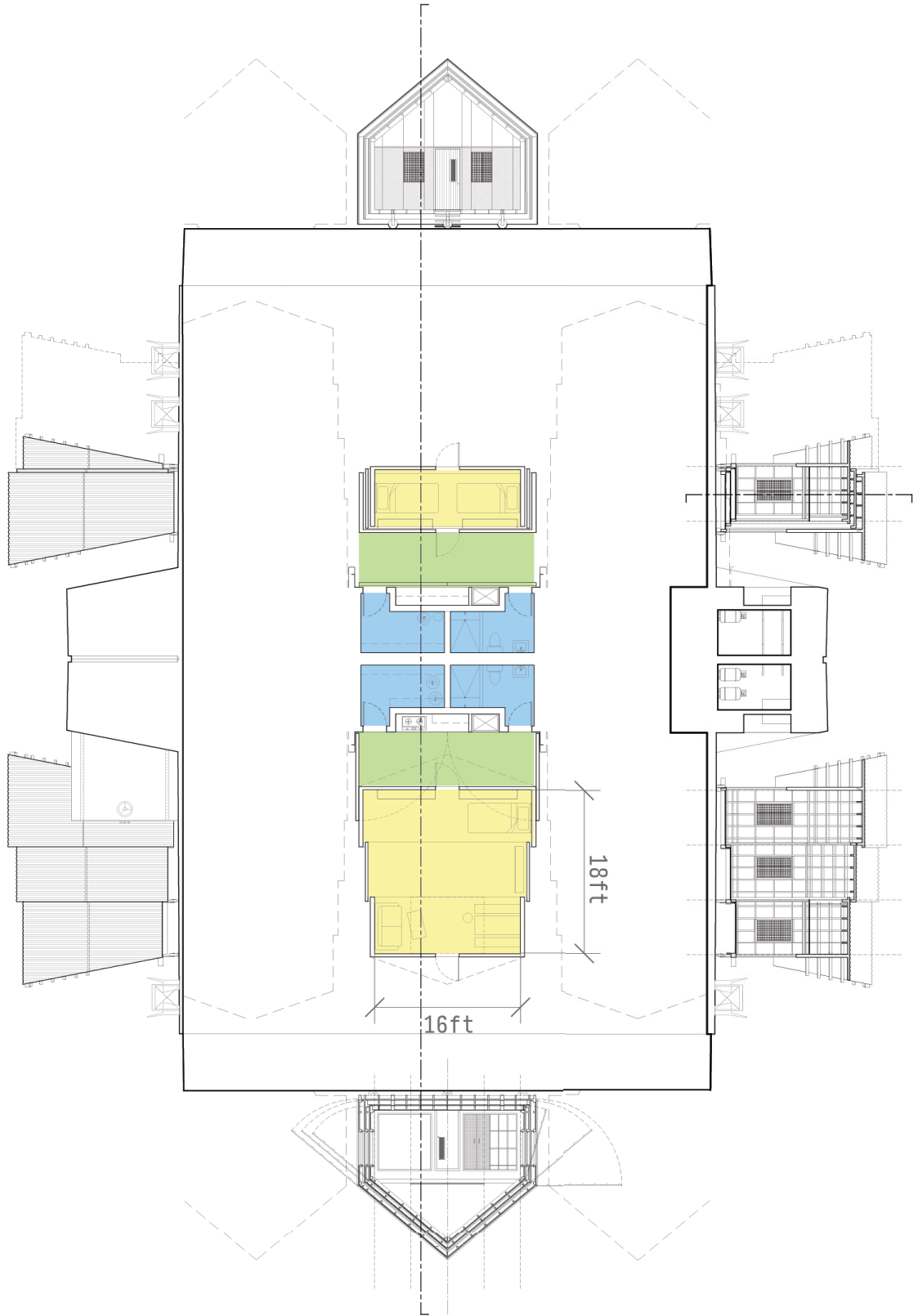
The dwelling part of the house will separate itself from the supporting utilities. These supporting utilities will be in



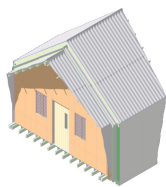
Concept sketch of temporary shelters



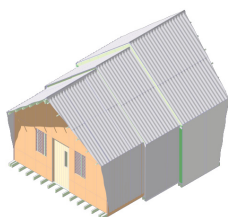
Existing Barangay 37 and the proposed safe zone



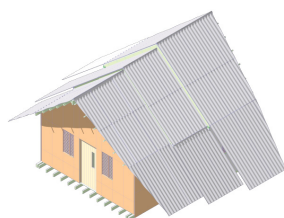
Orthographics of housing, mobile unit and utility core



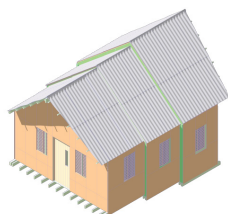
TEMPORARY/TRAVEL MODE



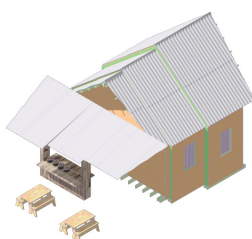
DWELLING MODE I



OVERHANG MODE



DWELLING MODE II



VENDING MODE

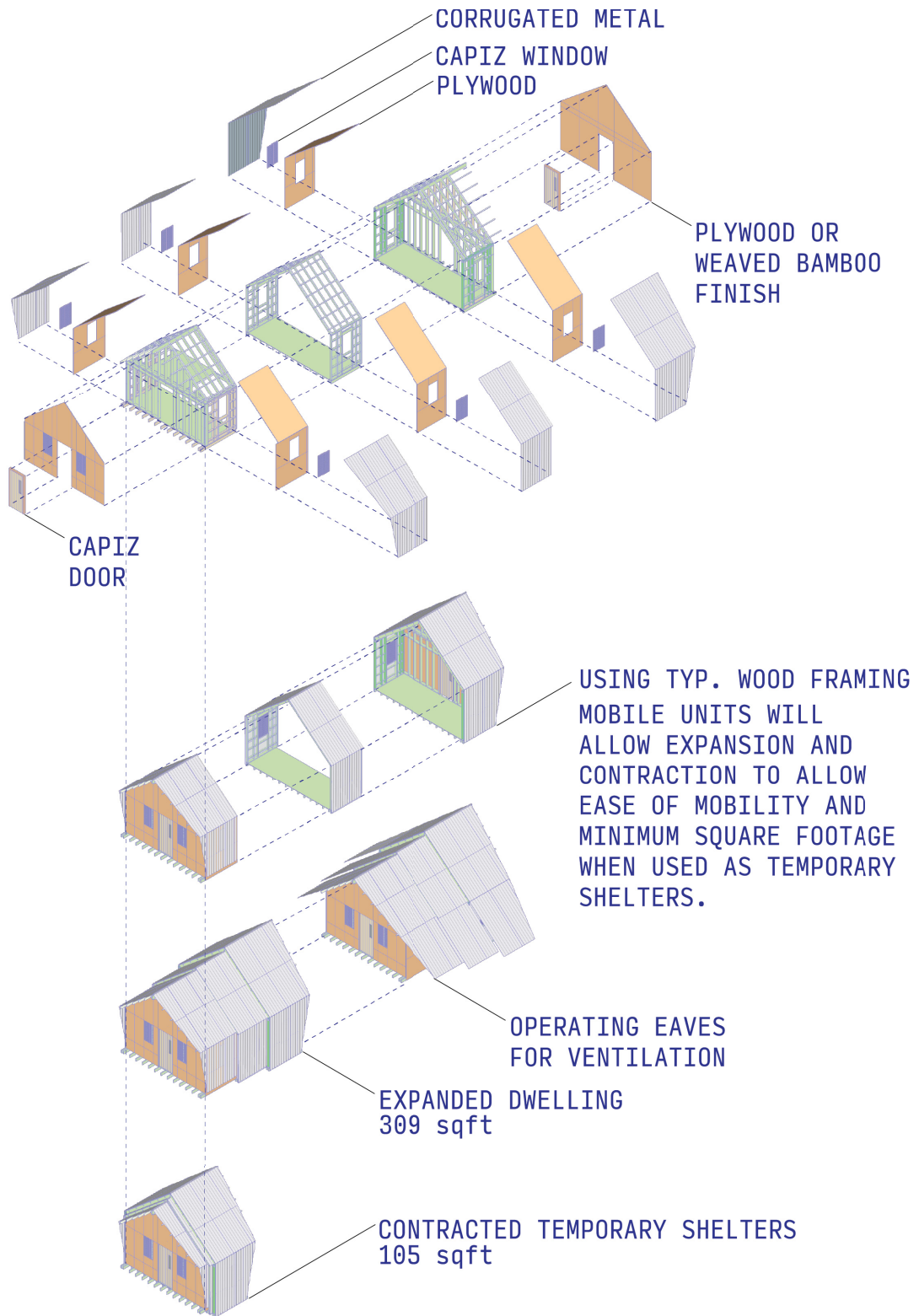
Mobile unit modes

the permanent utility core. They will serve as the primary support for the mobile dwelling units, which include a bathroom, a kitchen, and storage, bringing an evolved tradition of separated programs from the Bahay-Kubo and Bahay-na-Bato that results in comfort and continuity of traditional practices within a house. The grounded utilities will be affixed to a permanent infrastructure in the coastal settlements, while the living spaces will act as one-room dwellings. As these modules must travel to the safe zone, the house will contract into a smaller unit that can fit the local roads. The mobile units will stand on steel wheels, allowing ease in traveling to safe zones using the proposed rail system along the public road and acting as stilts to elevate the floors above the ground.

The mobile units can transform into different modes to accommodate the diverse needs of the existing Barangay 37. Furthermore, the lightweight structure, much like the bahay-kubo, allows the Bayanihan that suggests the temporariness translated into the dwelling units and provides mobility and transportation with the community's help.

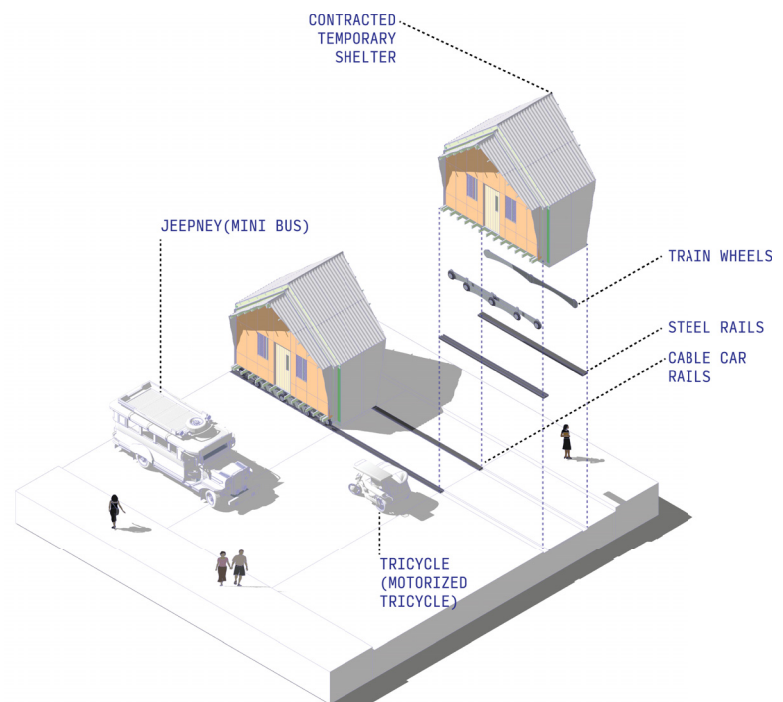
During the pre-impact phase, the mobile units contract into the temporary or traveling mode guided by the Sphere handbook, an international standard for temporary settlements. The mobile units can then be contracted to a minimum of 3.5 square meters (37 sq ft) of living space per person, excluding cooking space, bathing area and sanitation facility that will then be provided in the safe zone (Sphere Association 2018, 245).

The Sphere Handbook, a framework and guidelines for temporary settlements and other disaster-related planning, will guide the modules and site strategies in the safe zone

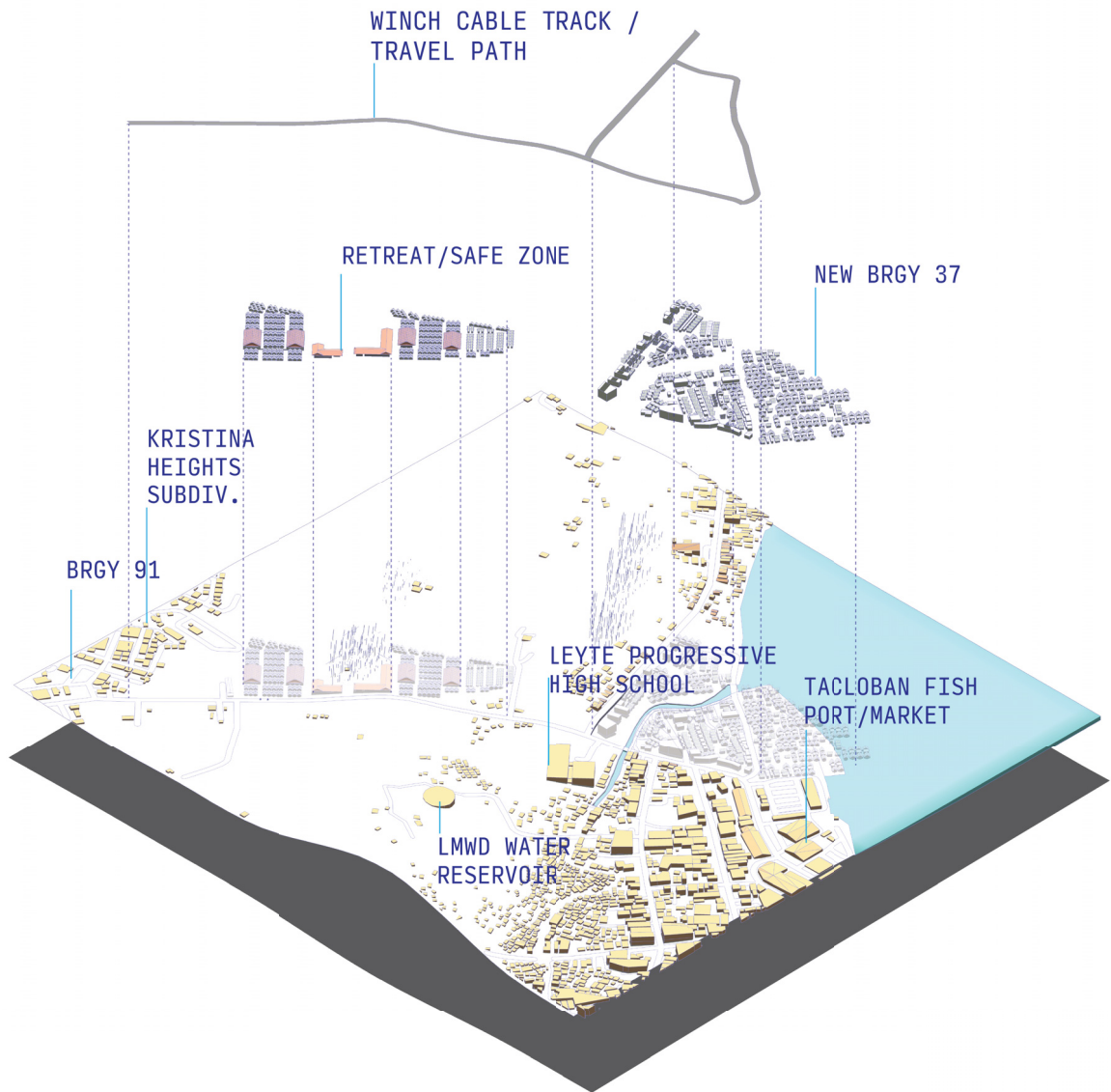


An exploded axonometric showing materiality and modes

and the module housing design. As mobile units are designed based on the vernacular and contemporary architecture, the community can live with dignifying houses rather than alienating tent-like shelters and letting them move in and out of coastal and retreat sites. The Sphere Handbook provides international guidelines for temporary settlements that list supporting programs for refugees to be used in temporary accommodations. It also gives minimum dimensions for temporary shelters that allow the design to be fit for human standards; the mobile units will allow each to expand and contract to the required square footage according to the Sphere Handbook. Instead of viewing the future through technological changes, this proposes another way of looking at speculative design through Climate Risk. This design then redefines the living culture in coastal settlements in the Philippines, changing the IDPs living situation from involuntary displacement to voluntary relocation.



Mobile units on railing tracks



A site axonometric showing both sites and proposed tracks



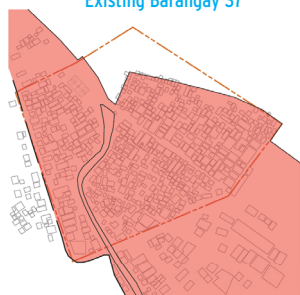
Bayanihan of Barangay 37, a movement to the safe zone along Quezon Blvd.



Mobile units are coming to the proposed safe zone



Existing Barangay 37



Typhoon Event



Semi/Permanent Buildings



Re-Building



Renewed Barangay 37

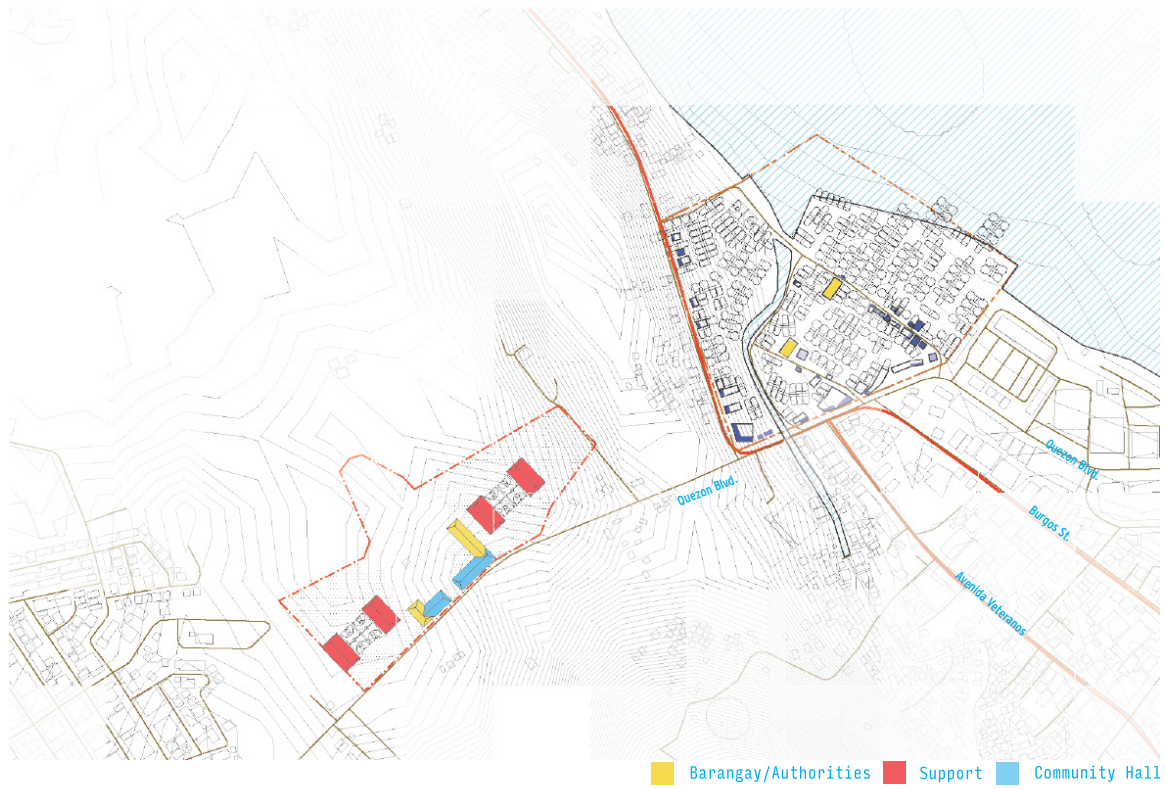
Development Phase

Reprogramming Sites

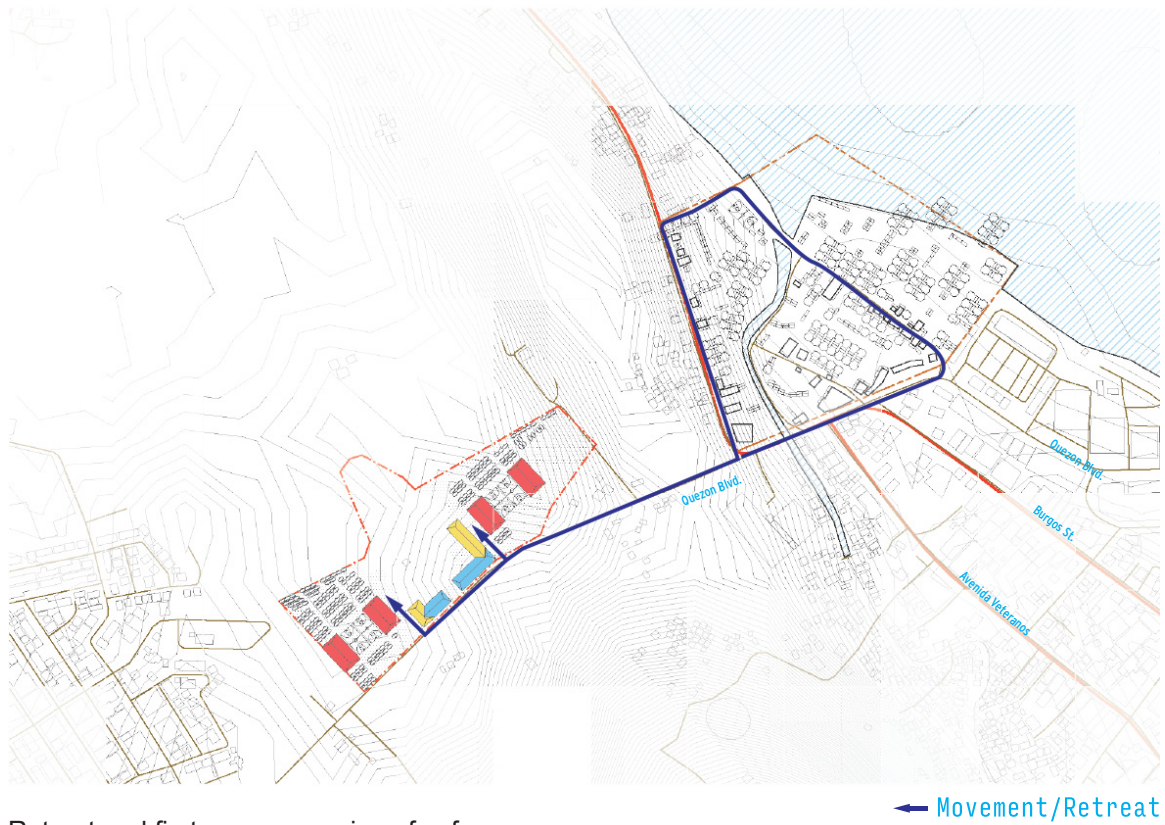
As the thesis envisions the future of coastal settlements in Tacloban City, it sets its design in the future that caters to IDPs' new cultural group. The project requires a new design for Barangay 37 that accommodates the new housing units. The project then redesigns the coastal settlement based on existing programs like the Barangay Hall, Market Square, Basketball Court and Existing Chapels in the new master plan. In addition, we can then add new programs like daycare, educational space, and transit stations and docks to support the settlers further and allow the continuity of their traditions and lifestyle. While the mobile dwellings are transported to the retreat site, the utility core of the houses that contains the kitchen, the storage and other grounded and permanent side of the housing will be left behind. These utility cores made from durable material could act as water barriers to divert storm surges protecting the rest of the area.

Travelling Technology

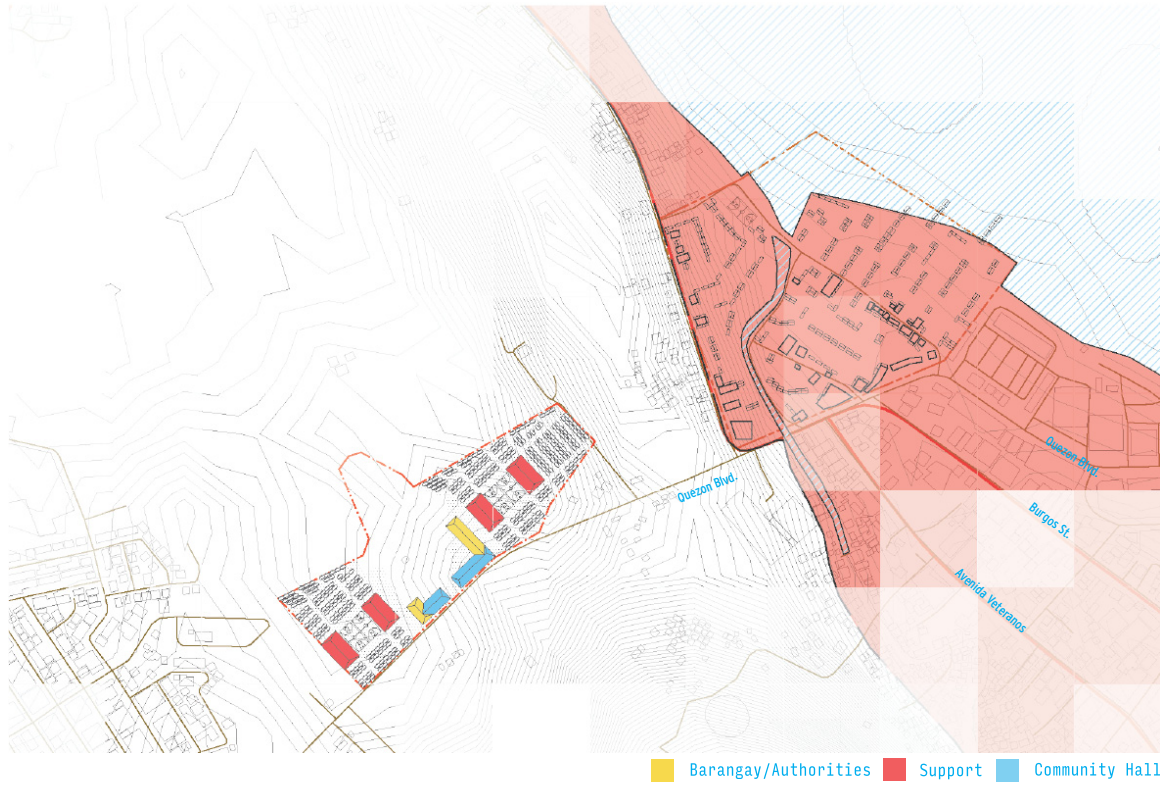
An added railing system along the existing roads will help the housing modules permit to travel through with an assistance of a cable winch to speed the movement during the retreat. This method reinterprets the practice of Bayanihan, through modern infrastructure. This distinctive element of Filipino culture of unity and camaraderie will be the method of mobility and is activated through forewarned storms and super typhoons. This traveling technology can allow the government to include additional manpower in this traveling phase in their DRR frameworks. Furthermore, the government can allocate existing policies and budgets to this infrastructure rather than spending it on new housing that displaces IDPs further.



Pre-impact phase programs



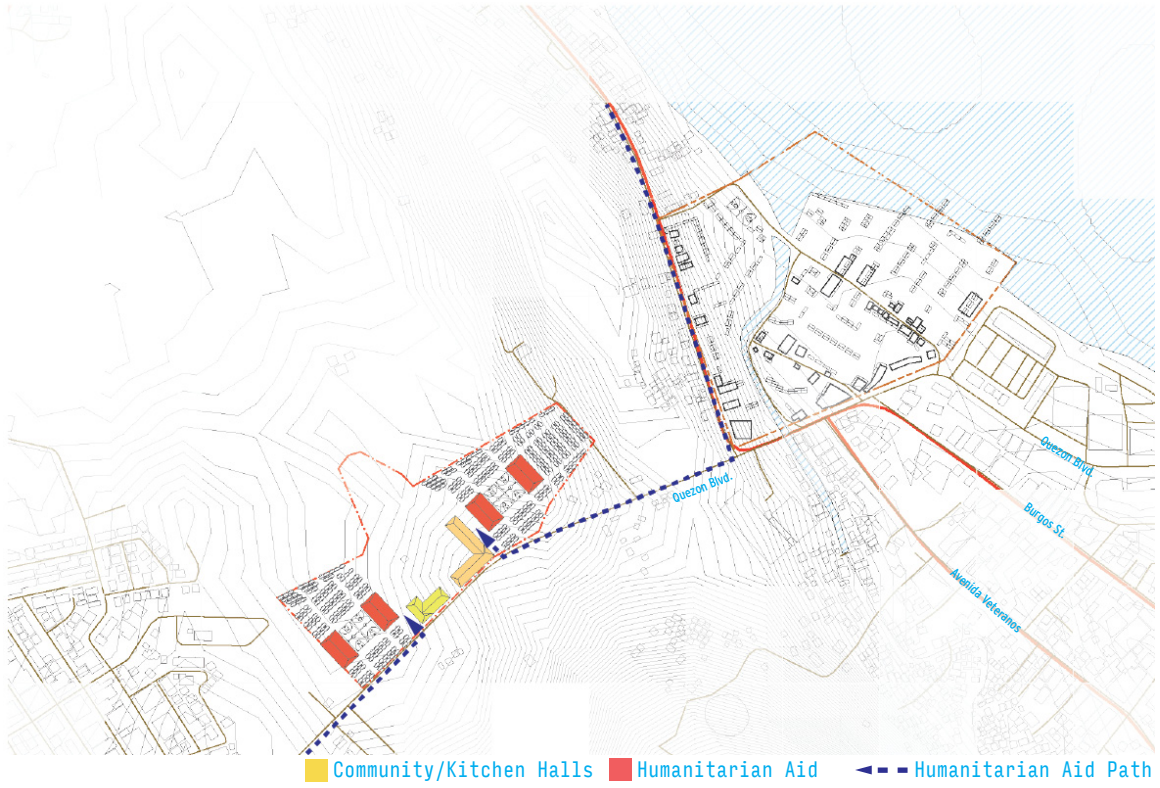
Retreat and first reprogramming of safe zone



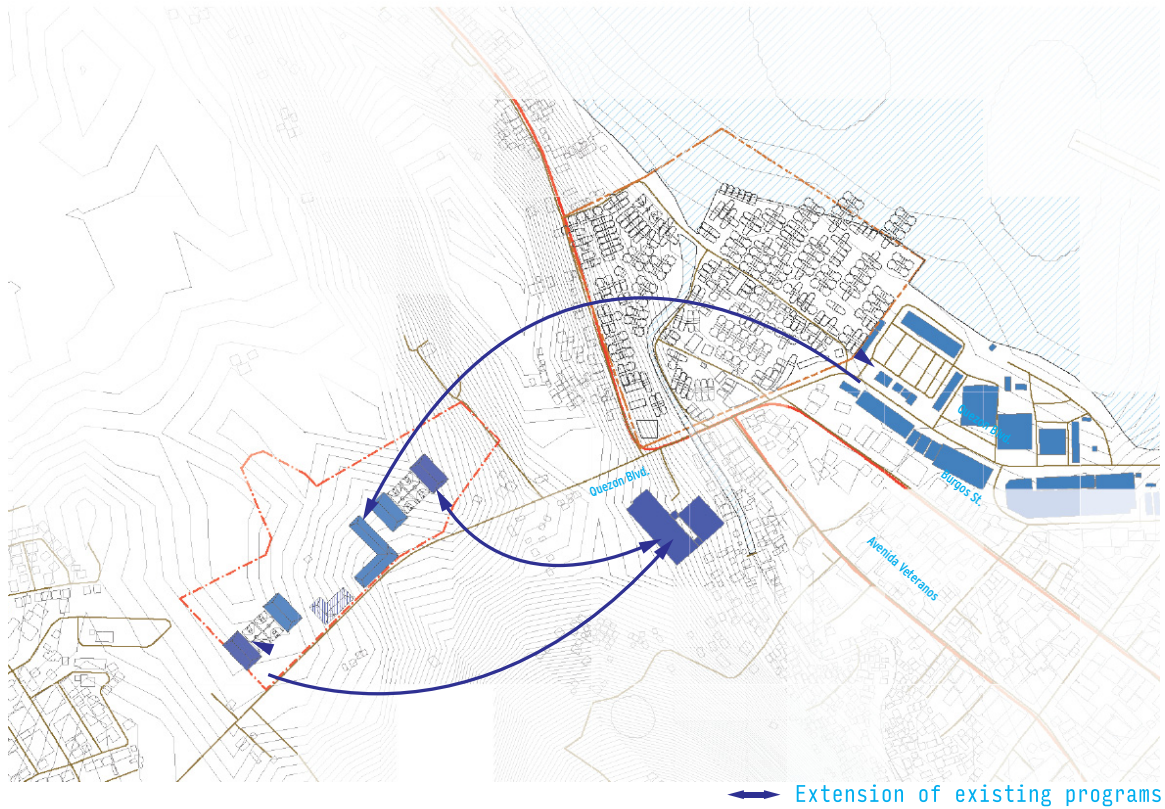
Storm surge event and a completely evacuated Barangay 37



Mobile units are in temporary mode at safe zone as the typhoon occurs



The safe zone reprograms support buildings for international and national humanitarian aid



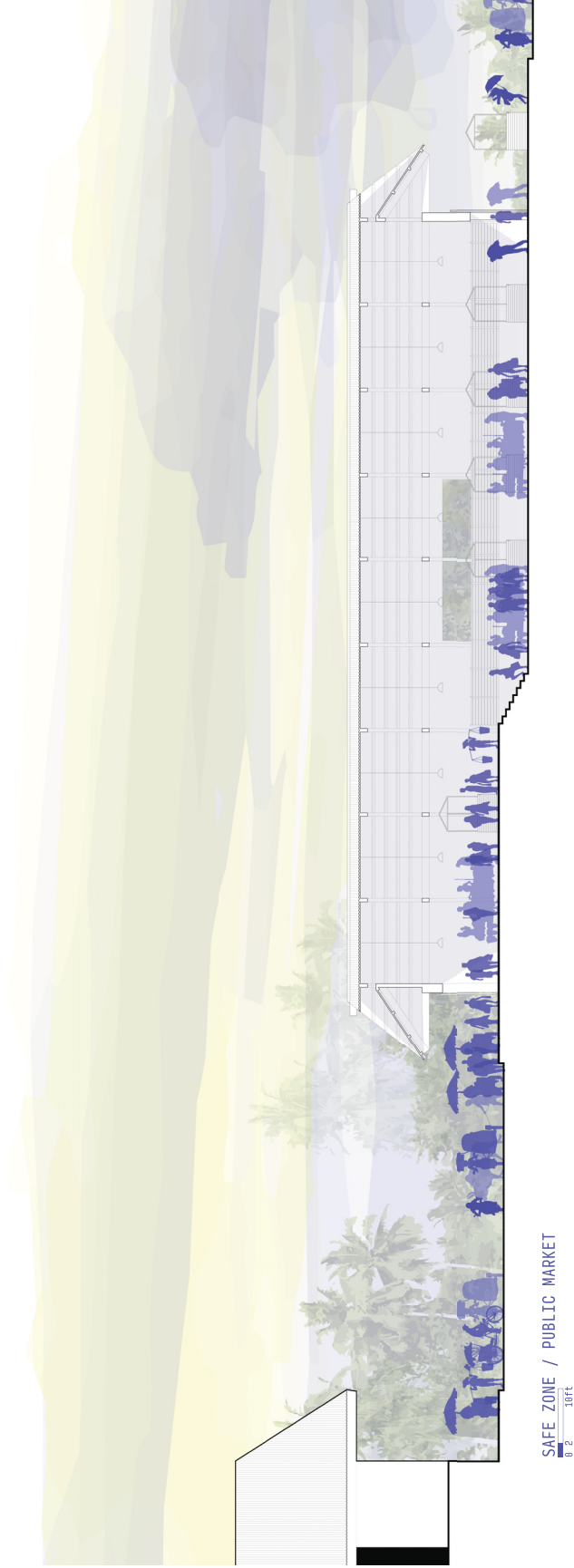
Retreat and reprogramming the safe zone for the city



Humanitarian aids are setting up in the safe zone as mobile units in temporary mode post impact

As the retreat proceeds, the safe zone will allow the New Barangay 37 and other communities to temporarily settle on site and shelter their owners and vulnerable families using the modules. The safe zone will also accommodate the authorities (NGUs, RGUs, and LGUs) and relocate with the community. Designated spaces for the authorities and permanent support buildings will serve the traveling community in the safe zone. Bathrooms, community halls and kitchens can be of service during and after the typhoon event. As the typhoon settles, national and international humanitarian aid can provide emergency assistance in the community hall and other support buildings. This safe zone will continue to be useful until the community can safely return to coastal settlements.

Once the authorities deem the emergency situation over, the community can safely return to their settlements. The safe zone will then be reprogrammed to accommodate the overall city and nearby neighborhoods. The large open



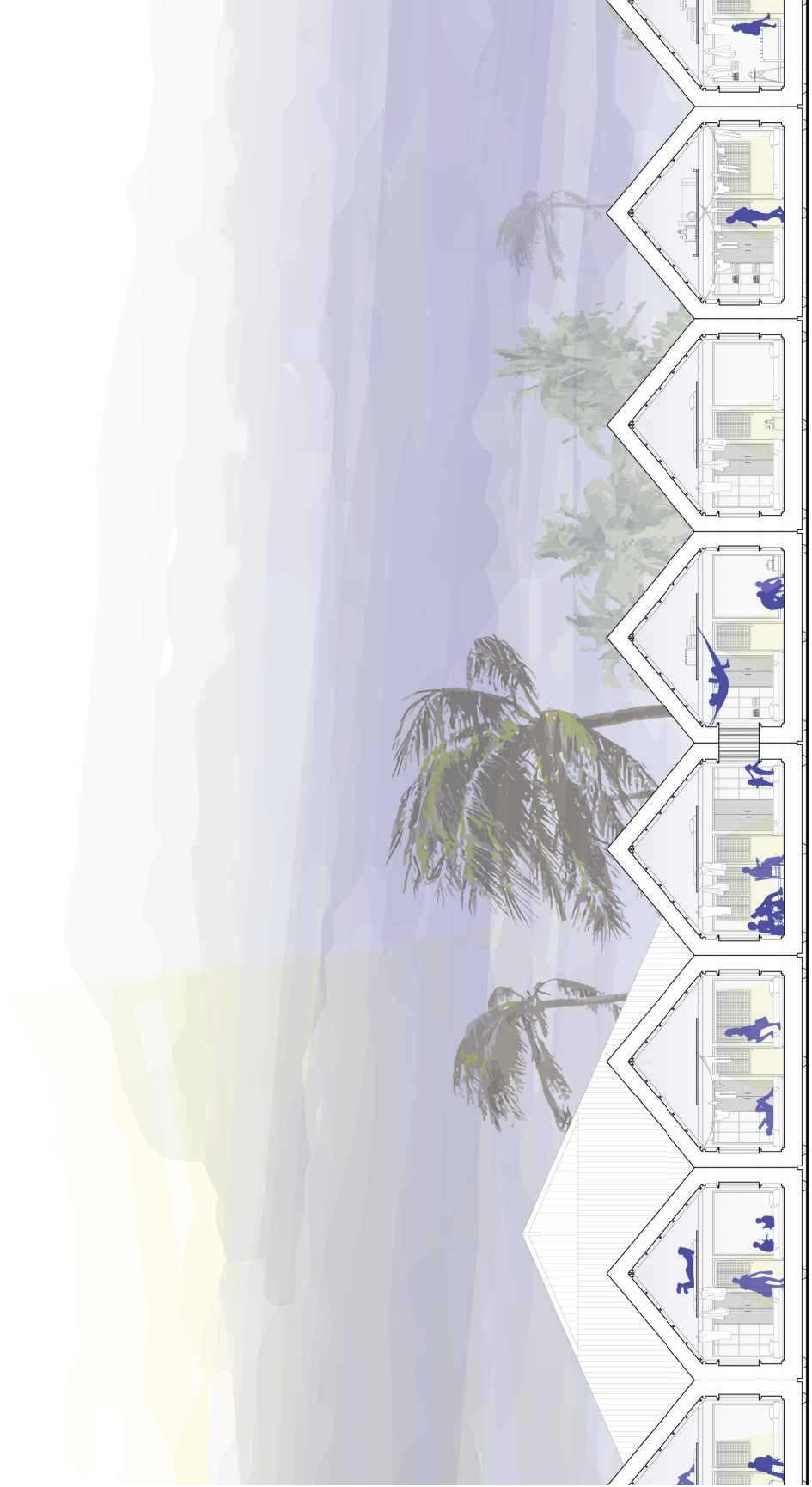
SAFE ZONE / PUBLIC MARKET
0 2 10ft

Support building in the safe zone acting as a public market



TEMPORARY SHELTERS/ TRAVEL MODE
8'2" 10ft

Mobile units are in temporary mode while in the safe zone



Inhabited mobile units in temporary mode



Pintados-Kasadyaan festival in safe zone



Night market and sporting events

space can become a market square, expanding the reach of the fishing market on the waterfront to reach faraway communities. The retreat site can host festivals such as the Pintados and Sangyaw festivals. Sporting events by the nearby high schools can occur in the open court, and night markets are encouraged to expand on the nightlife in Tacloban City, creating a vibrant city throughout the year.



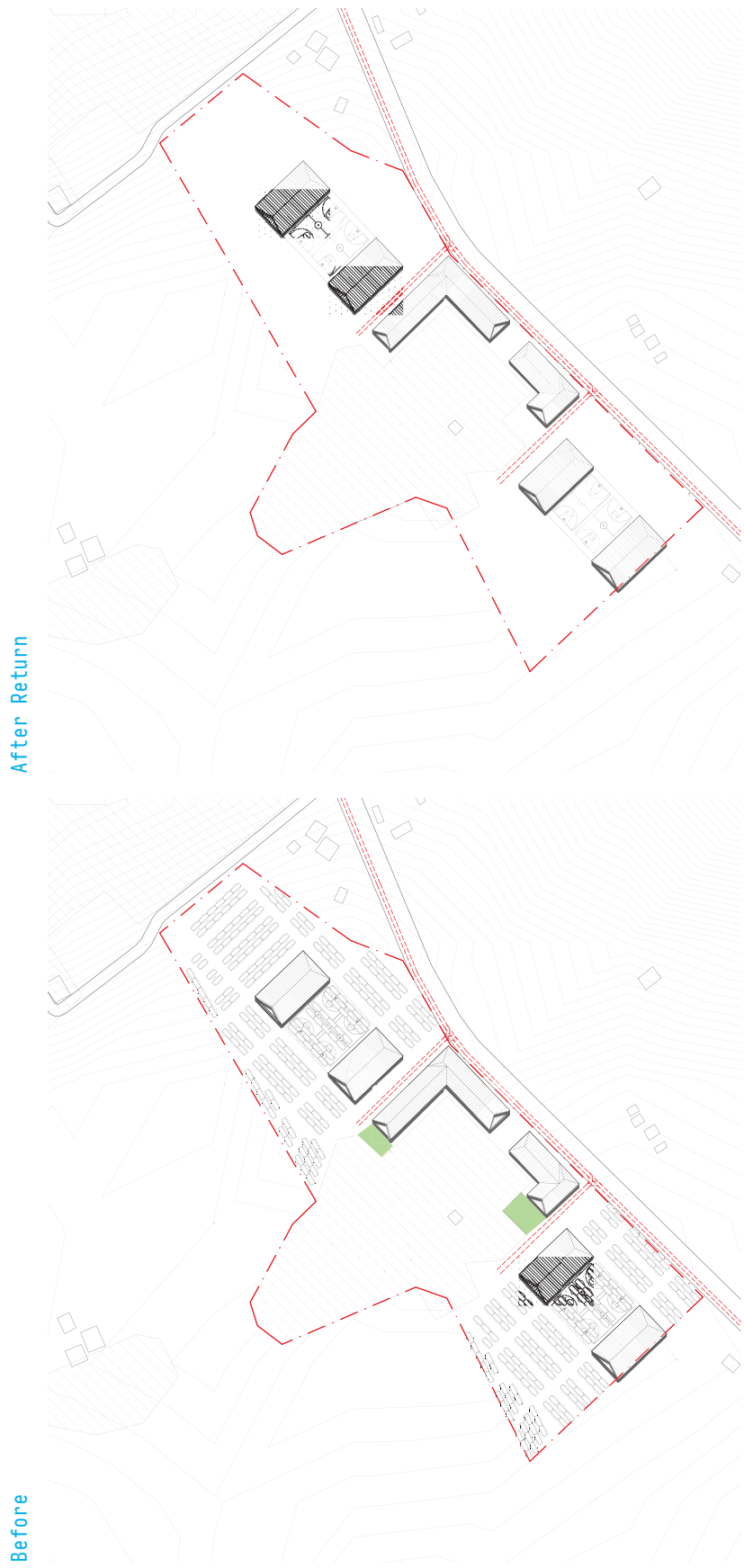
After Retreat

Before

0 70 210ft

■ Amenities on New Barangay 37 - - - Railing/ Tracks

Before and after the retreat, the permanent utility core will act as a storm surge barrier



After Return

Before

Temporary units are huddled together to fight against harsh winds

Chapter 7: Conclusion

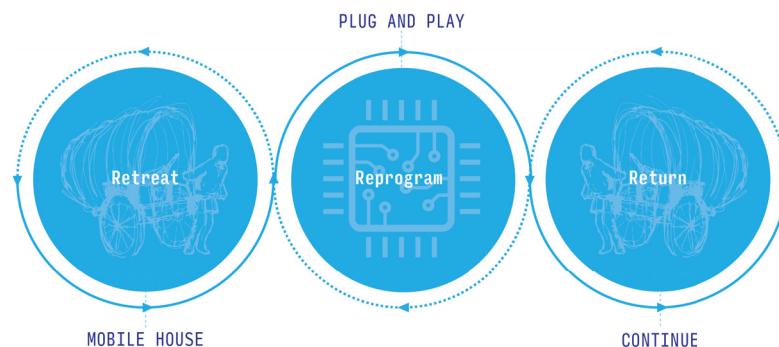
Design Outcome

As an architecture student, it is easy to get lost within the boundaries of reality and ask what is possible and feasible, denying the imaginative freedom that grounds projects. The contemporary-speculative architecture of the projects shows how design can be both possible and imaginative in terms of the possibility of being built. Architecture for displacements can draw ideas to such processes and learn to see and push ideas in the boundaries of what is achievable and impossible to help those in need of proper shelter. The design is of speculative nature yet based on grounding information and frameworks of today's governmental plans and mitigations. The thesis began with a concern about displacements and informality after disasters. However, the research in news reports and policies exposed issues in a dystopian-like situation of Internally Displaced in the Philippines. The climatic change driven by the Anthropocene brings a recurrence to the disastrous typhoons that then results in a tradition-like displacement giving IDPs a setting to adapt to that forcefully suggest a wet apocalyptic cycle.

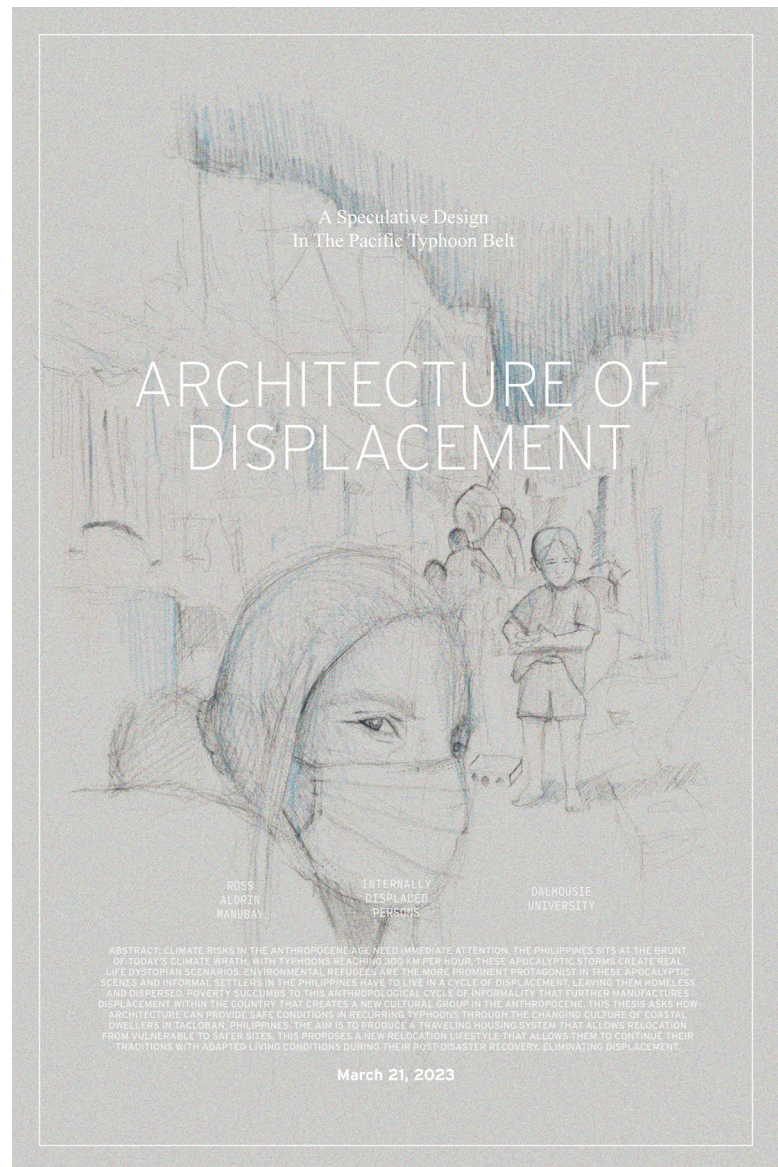
As the project views the future architecture in coastal settlements in The Philippines and proposes a different way of looking at climate architectures, rather than heavily relying on technologies and innovations of resilient architecture and engineering, the design speculates on the changes in lifestyle and social norms, making better living conditions for IDPs that changes the involuntary displacement to voluntary relocation. This "displacement" turned into a "relocation" cultural group also proposes another way of looking at speculative design but through Climate Risk in

the near future. Through the Anthropocene, we experience such climatic changes and worsening risks, especially for human conditions, creating more disastrous events worldwide. The Philippines sit at the front of the casualties, although this doesn't mean other countries won't have the same need for their displacement group, this however, the evolving climate change and risk directly targets and drives the future cultural practices of IDPs in the Philippines; giving rise to an option to how to mitigate the issue through temporary housing and pushes humanitarian architecture in the Philippines to a contemporary-speculative but yet traditional-like architecture, a modern version of the bahay-kubo and Bayanihan in its core.

This design is less exposed to flying debris and flash floods, which addresses the temporary tent shelter provided in overcrowding situations in evacuation centers. In addition, the concept allows relocation that should reduce the feeling of being displaced as the people relocate with their house, a familiar piece of home they can take during a typhoon, avoiding the mental and physical repercussions of displacement. This project gives them ownership and sees themselves in a more dignifying scenario as they are not entirely displaced but merely temporarily relocated, rather



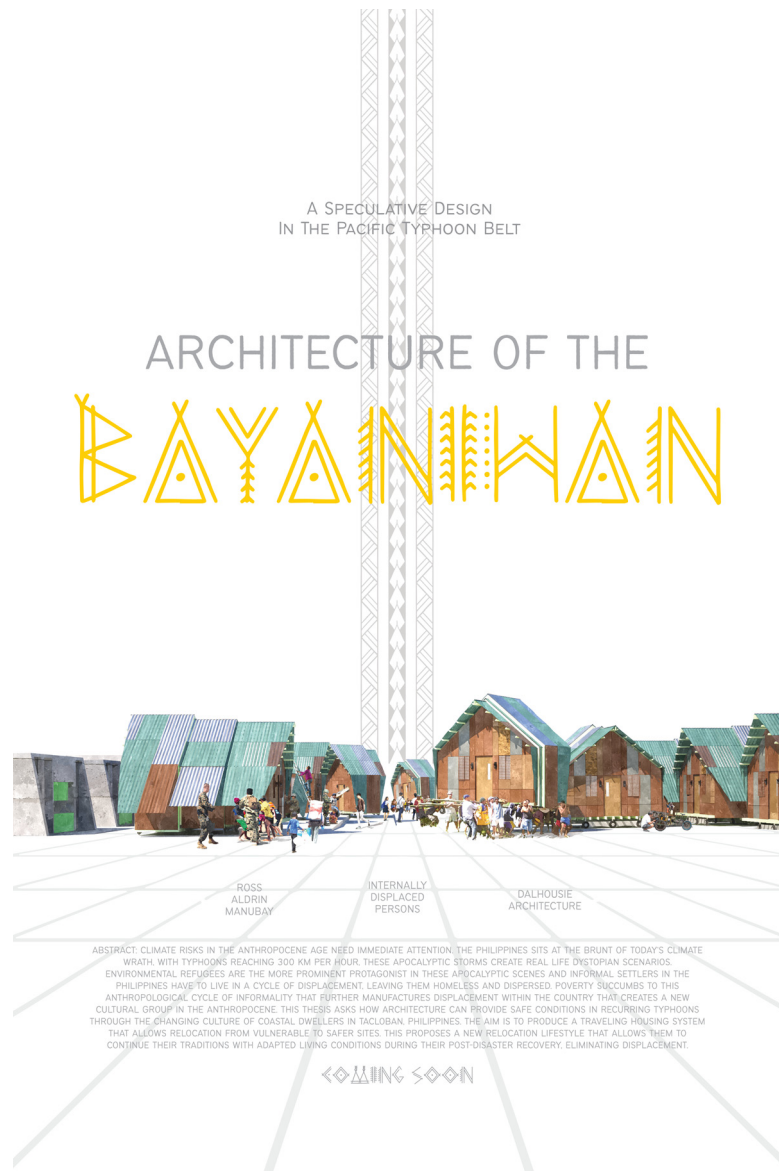
New living cycle



A wet apocalypse film poster for existing displacement cycle

than given a tent and a few provisions that make them like just another number in the system.

Avoiding further displacements and mitigating the failures of The Philippine government and humanitarian aid, this project allows the government to spend its finances on this new design and adopt a new framework that works with the strategies rather than do more displacing-housing projects. As a result, they can redirect their strategy towards a similar approach of temporary housing, resulting in a new way



A wet salvation film poster for existing displacement cycle

of living in coastal settlements, and adapting to this new relocation practice.

The housing design becomes a critique of the national and international humanitarian architecture that brings further unintentional displacement to IDPs by providing them with inadequate frameworks and alienating shelters. These tent-like shelters result in further displacement not just physically but also mentally displaced to a new unrecognizable setting. This design outcome results in the opposite by allowing

IDPs an option to relocate with a part of their home, bringing a familiar environment to their temporary retreat. The plug-and-play programs within the safe zones allow humanitarian and cultural programs during and after the retreat that renders the new cultural group a part of an ecology of living practices during the coming Anthropocenic age, as it allows communities like Barangay 37 to relocate and continue their cultural traditions that dissipate the idea of being displaced

This thesis points out that humanitarian and climate architecture is in the same category of providing livable and culturally appropriate housing for displaced families and individuals. This project should result in a new living culture and a relocation lifestyle in coastal Philippines that redefines the involuntary IDPs into a Voluntary Relocation Group.

Architecture moves in this project can find more resolving matters as this project develops in different design scales. Implementing the design alone will require the government to reframe its current policies and disaster risk reduction plan. It shall take a new approach that brings existing mitigation strategies but in cohesive planning with specific



New Barangay 37

timeline objectives of this retreat, reprogramming and return cycle. With the added railing infrastructure, the Bayanihan will bring opportunities for trades and skills to be shared with the common people. This infrastructure changes societal norms as it utilizes mobility, not just for the retreating community but also for economic gains like transportation systems for public use, port shipping, and other allowed mobility improvements in the city. The safe zones support the evolving need and amenities of the neighboring communities, further providing use to extend the fish and public markets and utilizing the space to reprogram for other surrounding contexts. This thesis brings a speculative nature to the architecture programs and design and changes the existing urban landscape by redesigning social norms and imagining this whole system as a world-building for vulnerable coastal settlements in the Philippines. This approach of providing better housing to those in need allows other parts of the world to bring various design forms and programs. The reprogramming of sites can vary through different cultural aspects and limitations on the proposed safe zone, depending on what surrounding communities need, bringing a specific set of rules that collectively think about ecological designs and evolving environments for the people who are in these vulnerable settings for the rest of the Anthropocenic change.



A modern bayanihan

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