Livelihood Changes After the 2004 Indian Ocean Tsunami Disaster: Case Study in Banda Aceh, Indonesia

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2004年インド洋津波災害後の生計手段の変遷：インドネシアのバンダアチェにおけるケーススタディ

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ADD	Village Allocation Budget
BAKORNAS PB	National Coordinating Agency for Disaster and Refugees Management
BBB	Build Back Better
BNPB	National Agency for Disaster Management
BRR	Rehabilitation and Reconstruction Agency
CFW	Cash-for-work
DFID	United Kingdom's Department for International Development
ETESP	Earthquake and Tsunami Emergency Support Project
IDR	Indonesia Rupiah
IOT	Indian Ocean Tsunami
IRTAP	Income Recovery Technical Assistance Program
JICA	Japan International Cooperation Agency
MDF	Multi Donor Fund for Aceh and Nias
NGO	Non-government Organisations
OISCA	Organization for Industrial, Spiritual and Cultural Advancement-International
OVOP	One Village, One Product
POSKO	Mediator centre between the villagers and the donors
RALAS	Reconstruction of Aceh Land Administration System
REKOMPAK	Community-based Settlement Rehabilitation and Reconstruction
SLF	Sustainable Livelihood Framework
SME	Small Medium Enterprise
TOGA	Tanaman Obat Keluarga (herb plantation)
UNDP	United Nations Development Program

EXECUTIVE SUMMARY

1. Background of dissertation

Disaster is a severe interruption to the normal function of community or society which brings about damages and affects the human, economy and the environment. How much communities suffered from the disaster impacts determines the vulnerability degree towards the hazard. Communities affected by natural disaster suffer many negative impacts which can last for years. In recent years, the number of disasters has been growing (EM-DAT, 2014). It is important to recognise that these local and national economic losses are increasing over the years. The overall losses for Asia are the highest in the world which stands at 40% (Munich RE, 2015) of which Indonesia is in the top 5 most regularly disaster-hit countries in the world (EM-DAT, 2014).

80% of the coastal areas in Indonesia are prone to tsunami disasters (Fahmi et al., 2017). In addition, there are about 41.8 million (20%) of the total Indonesian population settling in the coastal area (World Ocean View, 2010). Over the centuries, rising sea-level will cause inundation where populations have to cope with staying in that area or will be forced to find new settlements. These are one of the many setbacks that can limit the livelihood of the local people as well as affecting other aspects of their life. Additionally, the topography and geophysical location of Indonesia place the country in the volatile areas along the Pacific Ring of Fire. The 2004 Indian Ocean Tsunami disaster devastated Indonesia, especially the Aceh Province as it was located nearest to the earthquake's epicentre. The Magnitude 9 Richter scale disaster brought upon an earthquake and a tsunami that came shortly. People were killed, buildings and infrastructures were destroyed, and hectares of lands, coastal forests and mangroves were swept away by the tsunami. The tsunami also affected about 40% to 60% of the coastal communities that relied on natural resources for their livelihood (Zainun et al., 2007; McGranahan et al., 2007). Livelihood activities were impossible to continue due to the severe damages to transport vehicles and roads. The most impacted sector in terms of both numbers of deaths and capital destroyed was agriculture, particularly the fishery sector (Soesastro & Atje, 2005).

Following the disaster, the government and the international organisations started the reconstruction and rehabilitation work with priorities to reduce risk, rebuild communities and restore life back to normal. The 'Build Back Better' was the steering principle for disaster recovery in Indonesia which created opportunities to restore livelihood, improve living conditions as well as making communities more resilient. Given that livelihood was one of the main priority in disaster recovery, aid came in many forms. For instance, cash-for-work (CFW), microcredit program, training and skills development were given to the affected households during the relief period which lasted until the reconstruction period. Over the years, the affected communities have either intensified or diversified

their livelihoods, acquired access to public and private resources/assets, and developed relationship/partnership which supported in picking up their lives and achieving their desired livelihood goals.

2. Statement of Problem

The post-disaster response to natural disasters worldwide generally focuses on the physical reconstruction, giving less attention to the much-needed restoration for the livelihoods of the affected people. In the case of Aceh, livelihood restoration was given secondary consideration as attention and funding were more towards housing reconstruction (Masyrafah & McKeon, 2008). Donors lacked adequate knowledge and understanding of livelihood intervention programs (Steinberg, 2007) as well as lack competencies and capacities in livelihood recovery (Lloyd-Jones, 2006). Twigg (2006) also found that the reconstruction process created job locally in the short-term but livelihood opportunities were not sustainable once the aid program ended. The absence of pre-disaster mapping and preparedness of the affected area added to the overlooking of the livelihood restoration (BPS of Nangroe Aceh Darussalam & BAPPEDA, 2005; IFRC, 2005, 2006; UNORC & BRR, 2007). From the previous studies (Humanitarian Initiatives, 2001; Delaney & Shrader, 2000; Fallahi, 2007; CDA, 2006; Oxfam, 2010), there is universal agreement that the restoration of livelihood needs to be put forward as one of the priorities in the recovery process.

Therefore, it is essential to stretch the understanding of livelihood concept to enhance insights on the consequences of the various livelihood schemes given to the beneficiaries (Khan, Shanmugaratnam & Nyborg, 2015). In the post-recovery context, livelihood restoration is critical, and it is the primary pillar where physical and human assets, as well as the social networks, are rebuilt (Ellis, 2003). Livelihood recovery should be given more consideration as it is an essential part of an individual to move on with life and to regain their livelihood after the disaster.

3. Research Objectives

The objective of the study is to investigate the livelihood changes after the 2004 Indian Ocean Tsunami disaster faced by households in Banda Aceh by discussing the changes of the livelihood assets as well as the livelihood strategies taken, along with considerations of interventions by the government and non-government organisations (NGOs).

4. Methodology

The study selected two villages located in the northern part of the Sumatran Island in the Aceh Province, Indonesia. Gampong Pande and Gampong Lambung, both located in the city of Banda Aceh

were heavily affected; these villages were flattened and loss of three-quarter of the population during the 2004 Indian Ocean Tsunami disaster.

This study takes a multiple-method design of quantitative and qualitative data. Brannen (2005) emphasised that the multi-method research is not particularly any better, but it is somewhat another way to address the various matters posed during the study.

The fieldwork took place from November 2015 to September 2017. A pre-test was conducted in the initial stage before proceeding to the questionnaire survey. Fieldwork was carried out with the assistance of Syiah Kuala University student. Interviews with the key informant, households and NGOs as well as informal group discussions followed at a later time. This study collected statistical data in the initial stage and results were subsequently supplemented with qualitative data obtained from various sources (e.g. village office, local government office, library etc). For this study, the component factors (e.g. household size, occupation, house ownership etc.) of each capital (human, financial, physical, natural and social) had been fitted to the Indonesian context for better understanding and responding.

100 households for each village were selected using convenience sampling for both Gampong Pande and Gampong Lambung, respectively. For Gampong Pande, the sample size was 77 respondents, while Gampong Lambung was 93 respondents. All respondents involved voluntarily in this study were informed of the purpose of the study, and their responses were kept confidential.

5. Findings

• Gampong Pande

The impacts of the tsunami disaster brought upon drastic changes in the geophysical features of the wetlands in this village leaving permanent damage and destruction of natural resources such as the aquaculture ponds and mangroves. Households such as aquaculture pond farmer, fisherman and traditional cigarette maker who depended on the natural resource, were reduced in number and forced to opt for another livelihood. As of 2016, many households are conducting more stable livelihoods such as working in the civil service, entrepreneur or labourer etc.

Before the disaster, households had access to local credit (e.g. taking credit or small loans from established pond owners or informal credit system: *arisan*). Microcredits were introduced during the reconstruction period but mostly were unsustainable and failed. To-date, households are still relying on the *arisan* for daily kitchen expenses as well as for their children's pocket money.

Currently, the total population of this village has an almost equal number of residents and renters. The relationship between the renters and residents were found to be distant. The community was further

upset with the CFW introduced by the NGOs. The *Gotong-Royong* (mutual help) concept was flawed with the CFW system as people have the expectations of receiving rewards afterwards.

The interventions for Gampong Pande were found the in policies (e.g. land rights, housing, nature and environment, aquaculture, and historical treasure protection) and programs (e.g. microcredit scheme, training and skills development, and enhancing the local resources) implemented to improve the households' livelihood. For instance, house and land ownership along with better built public infrastructures, has improved the household's access and ability to conduct their livelihood activities. Households renovated their houses to create space for their businesses and bought a motorcycle to assist with their livelihood activities. As of 2016, the restoration and rehabilitation of the aquaculture ponds and mangroves are still undergoing with grants assistance from the government and local NGOs.

Households have taken up various strategies to achieve their desired livelihood outcome. The strategies taken by households were agricultural intensification (e.g. fisheries institutions, farming style and pond management, mangrove and aquaculture integration approach, poultry and livestock rearing, and home-grown food supply) and livelihood diversification (e.g. working with the government, offer casual labour, transportation business, small-scale business, and home-made products). Migration was not one of the chosen strategies for the households as Gampong Pande is strategically located within the city centre, having better public facilities and infrastructures which eases the livelihood activities of the households. Conversely, the in-migration activity is mostly people from other villages within or outside Banda Aceh city. Most in-migrants came due to marriage, buying land and house in Gampong Pande as well as job seeker coming in to rent. Renters mentioned that the location of the village is strategic as it is near to the city, offering good access to public facilities. Additionally, the house rent was cheap with pleasant living atmosphere.

• Gampong Lambung

The primary livelihood in this village before the tsunami was entrepreneurs, fishermen, aquaculture farmers, traditional Acehnese cake-makers, and private company employees. After the disaster, most of the aquaculture ponds were destroyed, and rehabilitation efforts were not made as the size was too small. This resulted in the transformation of the ponds to fishponds. The number of fishermen, aquaculture farmers, and traditional Acehnese cake-makers were reduced significantly with many households taking up more stable livelihoods such as entrepreneur or labourer.

Households had relied on the informal credit (e.g. *arisan* and *julo-julo* system) before the disaster. Similar to Gampong Pande, the microcredits introduced during the reconstruction period had failed. Currently, only the *julo-julo* (smaller credit) system still exists.

Gampong Lambung was acknowledged as the model village for its community-participation in planning the new village layout after the disaster. Before the tsunami, the house arrangement was messy with narrow alleys and irregular street patterns. Households donated 15% to 20% of their land for wider roads, better house and infrastructures arrangements, and for open green spaces. Extensions on the houses were made for the kitchen, bathroom as well as for storing livelihood-related assets and business.

Three-quarter of Gampong Lambung's population is made up of renters. Unlike Gampong Pande, the relationship is closer between the renters and residents. Most of the households participated in *gotong-royong* and attended local events. CFW was also perceived to have negative impacts on the society.

The interventions can be found through the policies (e.g. land rights, human rights, housing, and environment) and programs (e.g. training, skills development and local resource enhancement). Gampong Lambung has an 18 meters high evacuation building built by Japan International Cooperation Agency (JICA) which improved the livelihood of the households through the economic development program. Households received cross-stitch, oyster cultivation, organic vegetable gardening, fishpond, gemstone and sewing from the JICA program. The agency also utilizing the local resources (e.g. women's group, waste recycle and fishermen's group) to enhance the household's economic status.

Households in Gampong Lambung taken up agricultural intensification (e.g. fishpond, oyster cultivation, poultry and livestock rearing, and organic vegetable cultivation) and livelihood diversification (e.g. small-scale business, handicrafts, recycle goods, home-made products and conducting various other activities such as renting out or selling house/land etc). Migration was higher in this village compared to Gampong Pande due to the limited natural resources in the village for the household to utilize for their livelihoods.

6. Conclusion

This study was conducted after more than a decade since the 2004 Indian Ocean Tsunami disaster occurrence. As observed, households are no longer, or only a small number were found to be still involved in their previous livelihood, especially those who relied on natural resources. Household has opted for more stable, secured livelihood activities which could assist them to achieve their desired livelihood outcomes. The study presented with data related to both villages which provide and supplements the data insufficiency experienced by the villages and local government. This could be a useful source for future references.

CHAPTER 1: INTRODUCTION

1.1. Background of study

Disaster is a severe interruption to the daily function of a community or a society which causes damages and affects human, economy and the environment. Hazard, an external factor brought upon disaster, is an impact that is harmful and disrupts people's wellbeing. Hazard and disaster are different where disaster is a term used only when the impacts are affecting the human. For instance, a flood occurring in an area where there are only forests and no humans, it is a merely a meteorological event, but the same flood occurring in a city is likely to cause a disaster to the local population. The degree of vulnerability towards the hazard can be seen from the disaster impacts. Loss and damages do not occur to human lives but also, to the social, cultural, psychological, institutional, political and economic aspect (UK Aid & Practical Aid, 2011). Nature-initiated or man-made disasters become devastating when those who were affected are unable to cope (UK Aid & Practical Aid, 2011). In recent years, the number of disasters has been increasing almost annually. EM-DAT (2014) reported that the number of global natural disaster events is increasing from 1970 to 2014. From the period of 2000 to 2012, there were 2.9 billion people affected by the disasters and as many as 1.2 million had been killed. The total damages for that 12 years accumulated to about USD 1.7 trillion.

According to a report by Munich RE (2015), 33% of the 21,700 loss events occurred in Asia. Asia topped the number of fatalities at 69%, and the overall losses in Asia are the highest in the world which stands at 40%. Indonesia is ranked the third in the top 5 most regularly disaster-hit countries in the world, which China tops it all followed by the United States, the Philippines (fourth rank) and India (fifth rank) over the past ten years (EM-DAT, 2014). Additionally, there are also more than a billion people living in the low-lying coastal region throughout Asia. Mallick, Ahmed and Vogt (2017) found that the communities living along the coastal area are at-risk because they live in a high-risk environment. Over the centuries, rising sea-level has caused inundation where populations staying in that area have to cope with the risks or will be forced to find new settlements. Hence, this kind of setback limits the livelihood of the local people as well as affecting other aspects of their life.

1.2. The Impacts of Natural Disasters

Disaster is a natural occurrence that disrupts the economic sector by impacting the assets, productivity, output, employment as well as consumption. In this case, Hallegatte and Przyluski (2010) listed the natural occurrence as earthquakes, storms, hurricanes, tsunami, heavy rain, droughts, thunderstorm, droughts and lightning. These disasters, on a large scale, are becoming more frequent recently, causing massive destruction and affecting people all over the world. In addition, sudden, dramatic and unprecedented disaster is often the most severe as damages and losses can cause lifelines breakdown

and disruption to supply chains which may cause devastating impacts to the society (Strobl, 2010). A back-to-back disaster, for instance, an earthquake followed by a tsunami proved to be destructive exceptionally to an individual; where the number of household size, the total income of the family as well as their assets is significantly reduced. Table 1.1 shows the economic and social effects of natural disasters in general. It is important to recognise that these local and national economic losses are increasing in the coming years.

Table 1.1 Impacts of Natural Disasters

Type of effect	Earth-quake	Tsunami	Flood	Volcanic eruption	Cyclone	Drought and Famine	Fire
Temporary migration						X	
Permanent migration						X	
Loss of housing	X	X	X	X	X		X
Loss of industrial production	X	X	X		X		X
Loss of commerce	X	X	X		X		X
Loss of agricultural production (e.g. plant crops and harvest)		X	X	X	X	X	X
Damage to infrastructure	X	X	X		X		X
Disordered market and distribution	X			X	X		
Interrupted transportation systems	X		X				
Breakdown of communication	X	X	X		X		X
Panic							X
Social disruption	X				X		X

Source: Otero & Martin (1995)

Disasters are usually associated with economic damages and losses that amplify the poverty level, which may challenge the works of alleviating poverty (Strobl, 2010). In the case of tsunami, the waves washed away both lives and homes as well as damaging other productive assets, infrastructure and other facilities of survival. Disaster also causes permanent disappearance to vulnerable local economic activities in which these activities will have to move to another area where it is less risky or sometimes, cannot be recovered at all (Hallegatte & Przyluski, 2010).

Communities affected by natural disaster suffer many negative impacts which can last for years. Dunne and Mohne (2003) explained the negative impacts can be “loss of output and earnings; disruption of social cohesion; loss of social amenities such as housing; disruption of infrastructures (roads, railways, and bridges); forced short- and long-term migration; disruption of marketing, distribution and communication systems; breakdown of social order; and the resurgence of diseases.”

This also corresponded to Davies et al. (2008), on how disasters significantly impact on people's livelihood: influencing the livelihood opportunities, disrupting people's livelihood as well as the environment that people relies on, reduces people's ability to cope and amplifies the vulnerability of the poor. In the case of drought, the absence of rain in an extended period results in water shortage which influences paddy farmer, aquaculture farmer as well their livestock. On the other hand, coastal communities who rely on natural ecosystems from the sea or mangrove are also highly susceptible to disaster (Adger et al., 2005). Additionally, fishermen in less developed countries are also affected whereby they do not have or have little savings, credit access or other income source to recover their livelihood (Oliver-Smith & Hoffman, 2002).

The cost of disasters affects both short and long-term development of a country as flows of products and services are disrupted, interfering with the government budget and payments, disturbing not just the country's economic growth but also the income distribution and the poverty reduction efforts. Furthermore, social structures and the environment are also among the recipients of the disaster impacts.

1.3. Natural Disaster in Indonesia

Indonesia is a sovereign state located in Southeast Asia with territories spread out in Oceania which houses more than 17,000 islands with a total of land size of 1,904,569 km². The World Bank recorded about 261.1 million people living in Indonesia as of 2016 with over 141 million (56.7%) were occupying the Java region only. Java has the most population living on the island on earth. Jakarta, the capital city of Indonesia, is located on the west of Java. Fahmi, Syamsidik, Fatimah and Al'ala (2017) found that 80% of the coastal areas in Indonesia are susceptible to tsunami disaster. In addition, there are about 41.8 million (20%) of the total Indonesian population settling in the coastal area (World Ocean View, 2010) (see Table 1.2).

Table 1.2 Countries with populations living in low-lying coastal areas (10^3)

China	India	Bangladesh	Indonesia	Vietnam	Japan	Egypt	USA	Thailand	Philippine
127,038 (10%)	63,341 (6%)	53,111 (39%)	41,807 (20%)	41,439 (53%)	30,827 (24%)	24,411 (36%)	23,279 (8%)	15,689 (25%)	15,122 (20%)

Source: World Ocean Review (2010)

Situated along the equatorial line, Indonesia is a tropical country which experiences relatively even climate all year-round. There are two seasons in Indonesia, wet season (November to March) and dry season (April to October). The average temperature in the coastal plains is about 28°C while in the inland side, and mountainous area is about 26°C. The southeast monsoon season in Indonesia starts from June until October, and the northwest begins from November to March.

The topography and geophysical location of Indonesia place the country in the volatile areas along the Pacific Ring of Fire. The country that has abundant active volcanoes and being on top of active oceanic trenches proves to be disastrous especially during a tsunami event. The National Disaster Management Authority (BNPB) of Indonesia records of 200 years showed that Indonesia is also prone to flooding, strong wind, landslide and drought.

According to the BNPB, Indonesia had already experienced about 600 natural disasters only in the first quarter of 2015 of which 97.8% of the disasters were landslides, floods and strong wind. Table 1.3 shows the total damages and frequency of disaster hazards in Indonesia. Additionally, BNPB (2015) reported that the top 3 provinces with the highest number of disaster events are Central Java, West Java and East Java.

Table 1.3 Total damages from disasters in Indonesia from 2000 to 2015

Disaster	Event Count	Total deaths	Total affected	Total Damages (USD)
Earthquake	43	8,490	7,279,346	6,400,000,000
Riverine flood	68	1,691	3,560,528	5,600,000,000
Tsunami	6	167,052	590,684	4,500,000,000
Wildfire	5	19	410,064	1,000,000,000
Flash flood	33	1,788	1,027,867	247,000,000
Ashfall	17	367	423,520	186,000,000
Landslide	39	1,330	336,628	115,000,000
Drought	2	11	15,000	1,000,000
Storm	4	25	14,265	1,000,000
Epidemic	10	1,190	96,340	N/A

Source: EM-DAT (2015)

After the 2004 Indian Ocean Tsunami (IOT) disaster, the number of casualties increased considerably such as the Mentawai tsunami in the same year, the 2006 earthquake that caused the tsunami disaster in the Southern Java, the 2009 Padang Earthquake as well as the 2010 Mount Merapi volcano eruption. Records showed that from 2004 to 2010, about 43 big earthquakes had been recorded compared to 1992 to 2004, there was only 12 big earthquake occurrence (USGS, 2011).

1.3.1. 2004 Indian Ocean Tsunami Disaster Impacts

The 2004 IOT disaster occurred at about 7.59 am (Indonesian time) on December 26th, 2004 with the epicentre located approximately 160 kilometres (km) to the west coast of Sumatra Island. This unprecedented disaster devastated not just Indonesia but also many other countries such as Sri Lanka, India, Thailand and Maldives (BRR & World Bank, 2005) (see Figure 1.1 and see Table 1.4). The Magnitude 9 Richter scale earthquake, was the third largest earthquake ever recorded and the deadliest natural disaster recorded in history (see Figure 1.2 and Figure 1.3). The 2004 IOT disaster created

new importance in understanding and estimating the devastation caused by natural disaster (Rose, 2009). Rose also stated that in most assessments, the term 'direct impacts' denotes the losses suffered such as damages of properties, interruptions to the businesses as well as loss of lives.

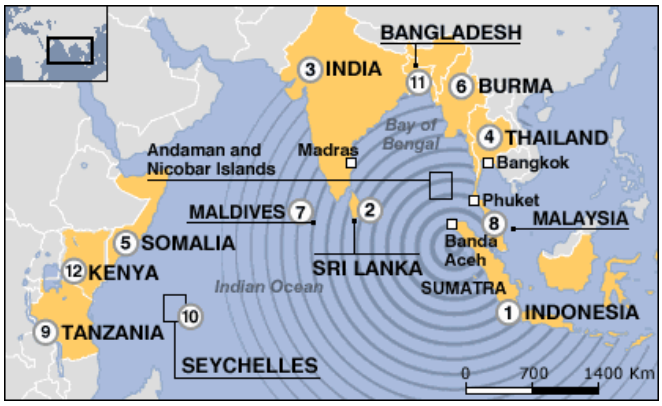

Figure 1.1 Affected areas in the world after the 2004 Indian Ocean Tsunami (Source: BBC News, 2005)

Table 1.4 Demographic and economic impacts of the 2004 Indian Ocean Tsunami Disaster

Demographic impact	**Indonesia**	**India**	**Sri Lanka**	**Thailand**	**Maldives**
Population loss (incl. missing) /total whole population (in million)	167,540 /214.7	16,269 /1,064.40	35,322 /19.2	8,212 /62	108 /0.293
Damage and Losses					
Damage (USD in million)	2,920 (66%)	575 (47%)	1,144 (79%)	508 (23%)	450 (75%)
Losses (USD in million)	1,531 (34%)	649 (53%)	310 (21%)	1,690 (77%)	153 (25%)
Sectoral (% of total damage)					
Housing	48%	34%	36%	4%	21%
Physical infrastructure	22%	14%	24%	5%	27%
Social sector	10%	2%	7%	2%	7%
Productive sector	12%	46%	32%	89%	28%
Other	9%	5%	1%	0%	16%

Source: Indonesia BRR (2005), quoting Satkorlak Report (2005)

Figure 1.2 Ruins in Banda Aceh after the 2004 Indian Ocean Tsunami Disaster
(Source: Japan Times, 2014)

Figure 1.3 Massive destruction in Banda Aceh after the 2004 Indian Ocean Tsunami Disaster
(Source: The United Nations, 2004)

Figure 1.4 Affected areas in Aceh Province after the 2004 Indian Ocean Tsunami Disaster

(Source: Government Indonesia, SATKOLRLAK PBP 2005)

Aceh Province (see Figure 1.4) suffered the highest losses being located nearest to the epicentre of the earthquake with 167,052 people killed, and 590,684 individuals further affected (EM-DAT, 2016). There was no historical precedent of the intensity and size for the 2004 IOT disaster occurrence (Prendergast et al., 2012). As for the public sector, 669 government buildings, 517 health facilities, and hundreds of education facilities became non-functional. Infrastructures were also gravely affected where over 3,000 kilometres of roads, 14 seaports, 11 airports, and 120 bridges were damaged (BRR & International Partners, 2006; BRR, 2006). Livelihood activities were impossible to continue due to the severe damages to transport vehicles and roads.

Around 78% of the destruction fell upon the private sector in Aceh of which 139,195 homes were destroyed or severely damaged, 73,869 hectares (ha) of productive land were destroyed, loss of 13,828 of fishing boats, 27,593 ha of aquaculture ponds vanished, and 104,500 small and medium-sized enterprises (SMEs) were wiped out by the disaster (BRR NAD-NIAS, 2009). The total estimated damage and loss was about 97% of Aceh Province's GDP (BAPPENAS, 2005). Aceh was already in the fourth of the poorest province in Indonesia prior to the disaster, became the second poorest province after the 2004 IOT disaster.

Socio-economic activities were paralysed as thousands of hectares of land were swept away by the tsunami. The tsunami also affected about 40% to 60% of the coastal communities that rely on natural resources for their livelihood (Zainun et al., 2007; McGranahan et al., 2007). For the environmental part, as much as 16,775 ha of coastal forests and mangroves as well as 29,175 ha of reefs were lost. The most impacted sector in terms of both numbers of deaths and capital destroyed was agriculture, particularly the fishery sector (Soesastro & Atje, 2005). The Ministry of Marine Affairs and Fisheries confirmed the death of about 55,000 fishermen and aquaculture workers and another 14,000 more were reported missing. The combined figure of workers in both categories makes up half of the total fishermen population in Aceh. About 66% to 70% of small-scale fishing fleet and equipment was destroyed as well (FAO, 2005a). Due to the vast extent of the devastation, the ability of households to continue their previous livelihood was reduced and resulted in forcing many households to change their livelihood.

1.4. Literature Review in Disaster Context

Disaster recovery is explained by the United Nations General Assembly (2016) as 'The restoration or improvement of livelihoods and health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community or society, following the principles of sustainable development and "build back better", as to avoid or reduce disaster risk in the future.' Following the disaster, government, aid donor and NGOs often hasten to start with the reconstruction and rehabilitation period where priorities are made to reduce risk, rebuild communities and restore life back to normal (Ingram, Franco, Rio & Khazai, 2006).

Also, livelihood is among one of the International Recovery Platform (IRP)'s themes in recovery, which also includes the private sector, shelter, environment, infrastructure, governance, gender, health, psycho-social issues and climate change. The IRP was established in 2005 after the second United Nations World Conference on Disaster Reduction in Kobe, Japan to address gaps and limitations in the context of post-disaster recovery, focusing on being the global platform for sharing experiences and lesson related to the 'Build-Back-Better' (BBB) concept.

IRP defined livelihood as 'Training in skills, employment generation programs, credit programs, agriculture and associated trades, and other economic activities'. For this study, livelihood is defined as having one or more activities performed by the households that generate cash such as the selling of livestock or crops, salary, rents and remittance while in-kind payment in the form of personal consumption of agriculture produces, exchange of consumer products between communities and payment-in-kind through food (Ellis, 1998).

In the case of the 2004 IOT disaster, the BBB was the steering principle for disaster recovery which created an opportunity to restore livelihood, improve living conditions as well as making communities more resilient in Indonesia. The BBB was also advocated in other countries such as during the 2005 Hurricane Katrina, the 2005 Kashmir earthquake in Pakistan, the 2008 Cyclone Nargis in Myanmar as well as the 2010 Haiti earthquake. This concept was among the policies generated to address the vulnerabilities and also strengthen the social, economic and the environmental settings of the impacted communities (United Nations General Assembly, 2016). The reconstruction period after a disaster is crucial as Twigg (2006) stated that reconstruction could be an opportunity to tackle livelihood vulnerabilities in a long-term period for the poor community and household as well as empowering them. Hallegatte and Przyluski (2010) found that efficient reconstruction can facilitate the economic activity by developing new economic sectors, supporting and leading the activity to become better than before the disaster event. Reports have shown that apart from damaged houses, aid was also much needed in areas such as livelihood (IRP, UNISDR & UNDP, 2010). Emphasise has been made on the importance of restoring people's capacity to regain their livelihood and to return to normalcy as soon as possible but also to heal emotionally after the devastating event. The government together with the NGOs make the first move in restoring people's lives and livelihood. Gradually, more aids came in the form of livelihood programs: cash-for-work (CFW), food distribution and training program which are supposed to help the victims to strengthen their living income. During this recovery period, communities diversify their livelihood, acquired access to new public and private resources/assets, and develops new relationship/partnership. After more than a decade since the 2004 IOT disaster, the BBB concept has guided and moulded the Indonesian government's disaster recovery as well as the policies (UNICEF Indonesia, 2014).

1.5. Statement of Problems

The post-disaster response towards natural disaster worldwide generally focuses on the physical reconstruction. Past studies, such as in Gujerat (Humanitarian Initiatives, 2001), Nicaragua (Delaney & Shrader, 2000), Iran (Fallahi, 2007), Indonesia (CDA, 2006) and Haiti (Oxfam, 2010), there is a universal agreement that the restoration of livelihood should be put forward as one of the priorities in

the recovery process. Zaidi et al. (2010) mentioned that reviving livelihood that was impacted by the disaster is more complicated than to restore it back to its pre-disaster level. Unfortunately, the local economy rehabilitation is not usually acknowledged as one of the top priority to be reconstructed after a disaster. This might be because the aid organisation has none or few competencies in livelihood recovery or micro-entrepreneurship specifically (Lloyd-Jones, 2006).

In the case of Aceh's 2004 IOT disaster, the livelihood restoration was given lesser consideration and funding were allocated more towards housing reconstruction (Masyrafah & McKeon, 2008). Majority of the donors lacked adequate knowledge and understanding of livelihood intervention programs (Steinberg, 2007). Twigg (2006) found that the reconstruction process created jobs locally in the short-term but was not sustainable after the aid program ended. The absence of pre-disaster mapping and preparedness of the affected area also delayed the livelihood restoration efforts (BPS of Nangroe Aceh Darussalam & BAPPEDA, 2005; IFRC, 2005, 2006; UNORC & BRR, 2007). Regardless the many achievements by the Indonesian government, there have been many dissatisfactions among the local people in the recovery process particularly on the restoration of their livelihood (Nazara & Resosudarmo, 2007). Burke and Fan (2014) found that many Acehnese felt that their 'recovery period' is still unachieved as many struggled to make a living even after more than a decade has passed. In addition, previous research conducted by (Fritz Institute, 2005) found that livelihood restoration programs implemented by the government and the NGOs were rated poorly.

Hence, it is essential to stretch the understanding of livelihood concept to enhance insights on the consequences of the various livelihood schemes given to the beneficiaries (Khan, Shanmugaratnam & Nyborg, 2015). In the post-recovery context, livelihood restoration is critical and acts as the primary pillar where physical and human assets are rebuilt as well as the social networks (Ellis, 2003). Livelihood recovery should be given more consideration as it is an essential part of an individual to move on with life and restore livelihood back after the disaster. According to Neri, Scuteri and Miniati (2008), the economic rehabilitation should be included in the first stage of relief to ensure no wastage or redundancy of emergency aid as well as lessening the aid dependency among the recipients.

Generally, in the aftermath of a disaster, aid response is essential in assisting affected people in securing their livelihood (Thorburn, 2009). Although there are plenty of studies on livelihood, little research has been done on livelihood changes in tsunami-stricken areas. It is essential to know how a household's livelihood progresses after a disaster and the various livelihood schemes that influence the beneficiaries of livelihood assistance (Thorburn, 2009). Livelihood is one of the fundamental global concern that needs consideration particularly during a crisis or disaster (Humanitarian Initiatives UK, 2001; CDA, 2006; Delaney & Shrader, 2000; Fallahi, 2007; Oxfam, 2010). The

experiences of the disaster recovery efforts especially in livelihood assistance may provide useful lessons on how intervention can be delivered and the kinds of aid to be allocated to the affected households.

1.6. Research Objective

The main objective of the study is to investigate livelihood changes after the 2004 Indian Ocean Tsunami disaster faced by households in Banda Aceh by discussing livelihood assets changes as well as the strategies the households have taken, with considerations of the interventions by the government and non-government organisations (NGOs).

1.7. Case Study Location

The study was conducted in the northern part of the Sumatran Island in Aceh Province in Indonesia (see Figure 1.5[1]) in the city of Banda Aceh (see Figure 1.5 [2]). The 2004 IOT disaster tsunami waves ranging from 4 meters (m) to 39 m high struck the western shore and affecting as far as 5 km into the low lying area into Banda Aceh city area (Iemura, Pradono, Sugimoto, Takahasyi & Husen, 2011). Banda Aceh city suffered heavy damages which includes the destruction of physical facilities such as roads, markets, electricity, government offices etc., destroying more than 250 coastal communities and affecting about 300,000 others (Hooke et al., 2007). From the historical records of and the geological studies on Banda Aceh, tsunami disasters had previously occurred around the 13th and 14th century (Rubin et al., 2013; Sieh et al., 2015). Banda Aceh is at risk due to its closeness to the where the Indo-Australian and Euroasia plates collide with each other. The damage and loss from the disaster have certainly impacted on the household's livelihood.

Two villages (Gampong Pande in Kutaraja District and Gampong Lambung in Meuraxa District) were selected for the study (see Figure 1.5 [3]). These two sites were selected because both were heavily damaged by the 2004 IOT disaster as both were wiped out entirely and experienced loss of three-quarter of their total population.

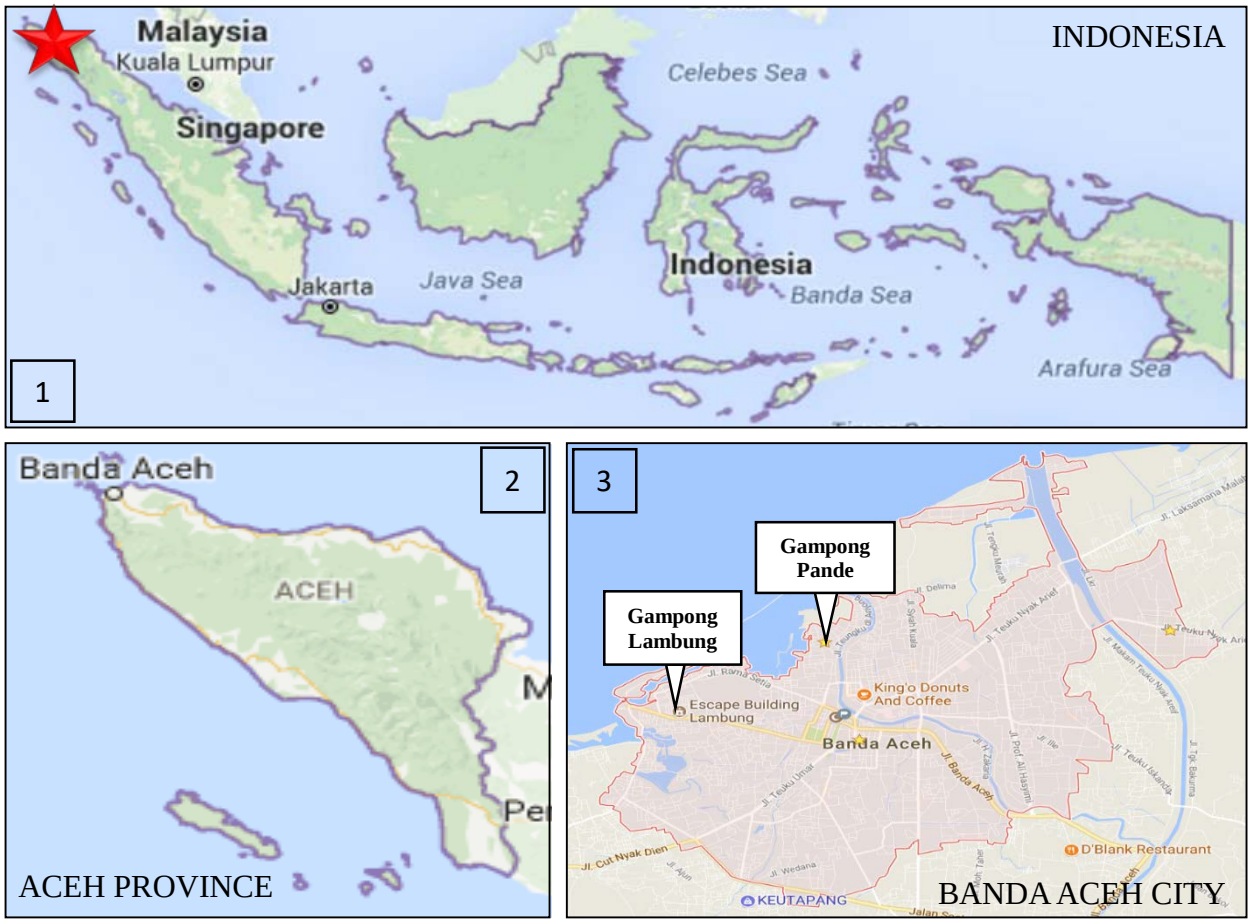

Figure 1.5 Location of the two case studies villages in Banda Aceh

Table 1.5 Details of the two sites

Village	Gampong Pande	Gampong Lambung
District level	Kutaraja	Meuraxa
Area size	256 ha	52 ha
Population	891 people (as of 2016)	647 people (as of 2016)
Household	258	194
Damage	Deep inundated (water depth: >3m), houses were destroyed entirely	Deep inundated (water depth: >3m), houses were destroyed entirely

Table 1.5 summarises the two selected sites. Both were labelled 'ground zero' immediately after the disaster. Initially, the government prohibited any housing reconstruction to be conducted there. These two cases provided great opportunities to examine the livelihood changes during the three periods (before the tsunami, reconstruction period and current condition). Since both are strategically located within 3 to 5 kilometres to the city, the recovery process started swiftly with emergency and relief phase before moving to the medium and long-term plan. Both areas experienced almost similar disaster impacts and recipients of aid assistance and hence, became a valuable source of data for the understanding of livelihood progresses.

1.8. Methodology

The study views household's livelihood as systems that can provide an understanding through the obtained assets, the selected strategies, and the social and economic context in which the livelihood is formed. The research framework in this study was adapted from the Sustainable Livelihood Framework (SLF) by the UK's Department for International Development (DFID).

The study started with the investigation of the impacts of the 2004 IOT disaster on the household's livelihood. The permanent loss of aquaculture land and mangroves had forced households to change or diversify their livelihood assets by opting for new livelihoods. The household's livelihood changes are described and assessed using the five assets (human, financial, physical, natural and social) from the SLF framework.

These household's assets are examined at three different stages (before the disaster, reconstruction period and current condition). The changes of household's livelihood are facilitated by the interventions from the government and non-government organisations (NGOs) where households were given access to restore and improve their livelihoods. Households can either take up single or multiple strategies depending on their need in recovering their livelihoods. Additionally, the strategies are also influenced by the extent of the livelihood assets owned by the households. The current condition of the household represents the livelihood outcome achieved by the households based on the livelihood assets created from the processes; the intervention received as well as the strategies are taken. In this study, the primary focus is on the household's livelihood changes and the interventions that give rise to the household's current condition. Figure 1.6 describes the framework of the research.

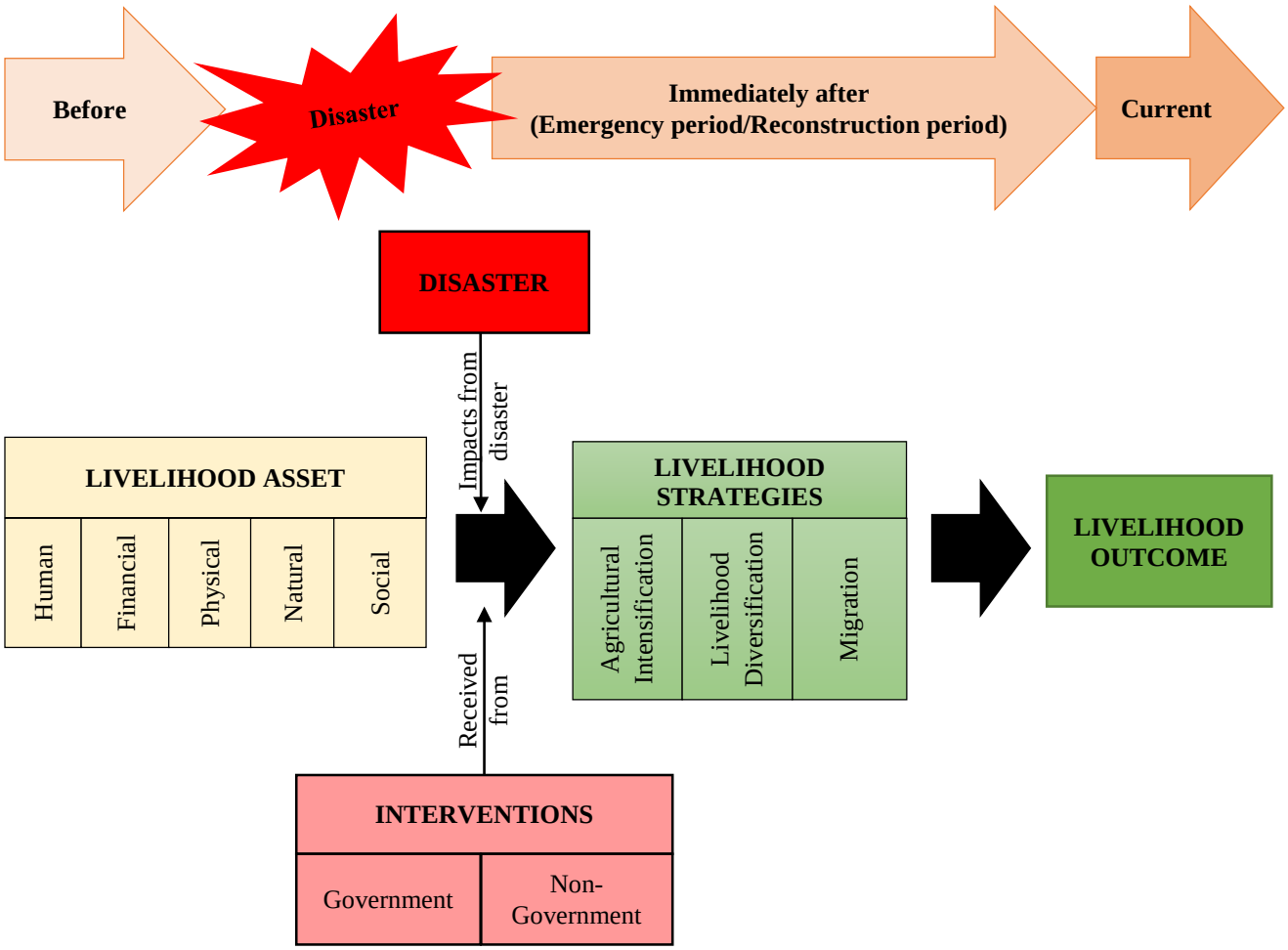

Figure 1.6 Conceptual Research Framework

1.8.1. Research process

The fieldwork was conducted from November 2015 to September 2017. To get an overview of the study process, Figure 1.7 exhibits the flow of the study process, the tools employed and the outcome achieved.

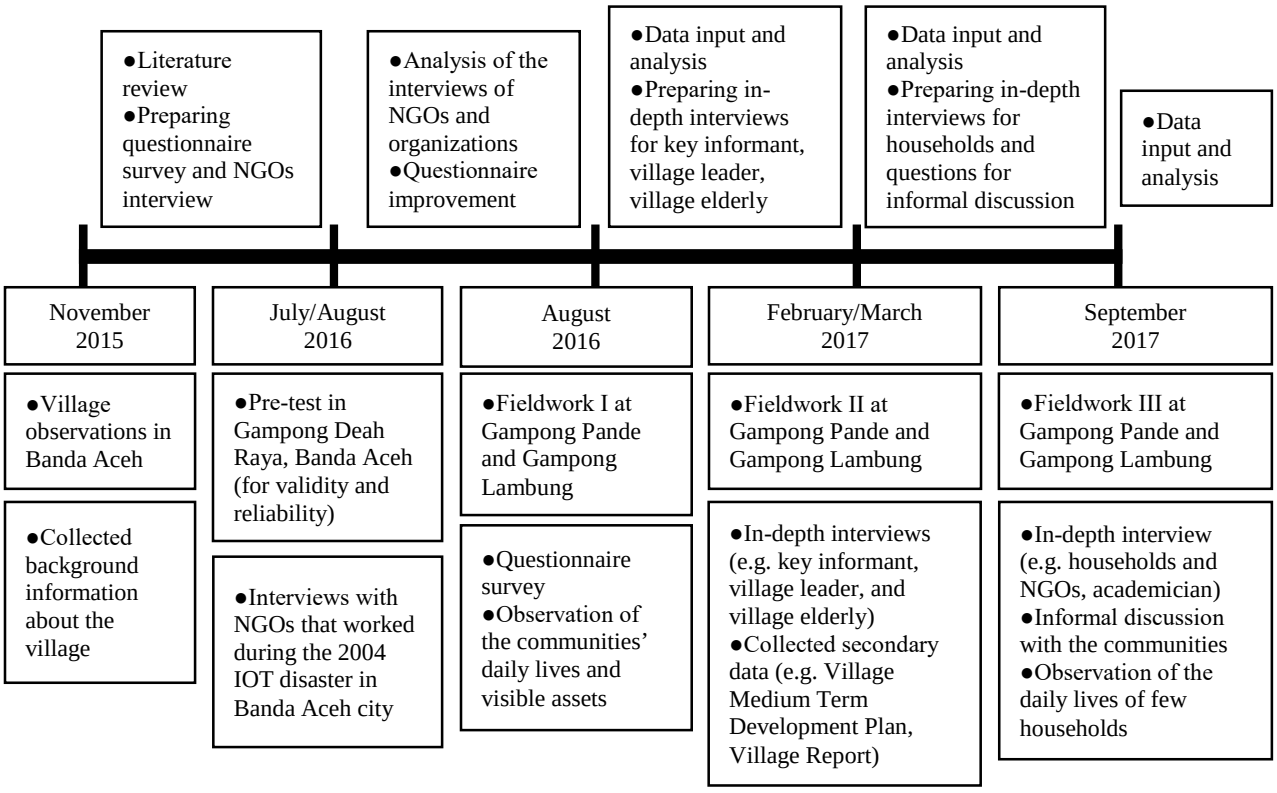

Figure 1.7 Flow of research process

1.9. Thesis Structure

This thesis consists of contents which are presented in seven chapters as indicated in Figure 1.8.

Chapter 1 Introduction

This chapter presents an overview of the whole dissertation which includes the background information, literature reviews which give rise to the significance of the study. The purpose and objectives of the study and the conceptual framework are explained in this part. A brief description of the two case studies, methodology and the research process flow are also covered in this chapter.

Chapter 2 Livelihood and Disaster Recovery

This chapter presents an outline of the livelihood concept in the disaster recovery settings, in particular, the changes and the strategies households take to restore their livelihood. This chapter draws on the institutional and policy background of post-disaster livelihood recovery in Indonesia.

Chapter 3 Methodology

This chapter features the methods and tools applied in the study. Topics discussed covers the research design, data collection, sample selection, instrumentation and measurement as well as data analysis and ethical consideration.

Chapter 4 Livelihood Changes in Gampong Pande

This chapter focuses on the local people's livelihood in a historical village after the 2004 Indian Ocean Tsunami disaster. Livelihood changes are observed from the period of before the tsunami disaster, reconstruction period and current livelihood condition. Five livelihood assets (human, financial, physical, natural and social) are adopted from the Sustainable Livelihood Framework (SLF) to facilitate the livelihood changes analysis. Interventions in the form of aid and support from the government and the NGOs were identified as well as the livelihood strategies taken up by the households to achieve their livelihood goals.

Chapter 5 Livelihood Changes in Gampong Lambung

This chapter focuses on the local people's livelihood in a successful redevelopment village after the 2004 Indian Ocean Tsunami disaster. Livelihood changes are observed via five assets of SLF from the period of before the tsunami disaster, reconstruction period and current livelihood condition. Aid and support received from the government and the NGOs, be it local or international can be understood here together with the livelihood strategies opted by the households to achieve their livelihood goals.

Chapter 6 Livelihood Changes in Gampong Pande and Gampong Lambung

In this chapter, the transitions of livelihood changes and its rationales of opting for a different livelihood for both of the villages are discussed. Points discussed include livelihood assets, the interventions received and the strategies taken by the households in both villages. Additionally, key lessons from the livelihood recovery efforts are also reflected in this chapter.

Chapter 7 Conclusion and Recommendation

Details of each chapter are summarised. Limitations of the study and recommendations for the post-disaster livelihood recovery and future implications are also provided.

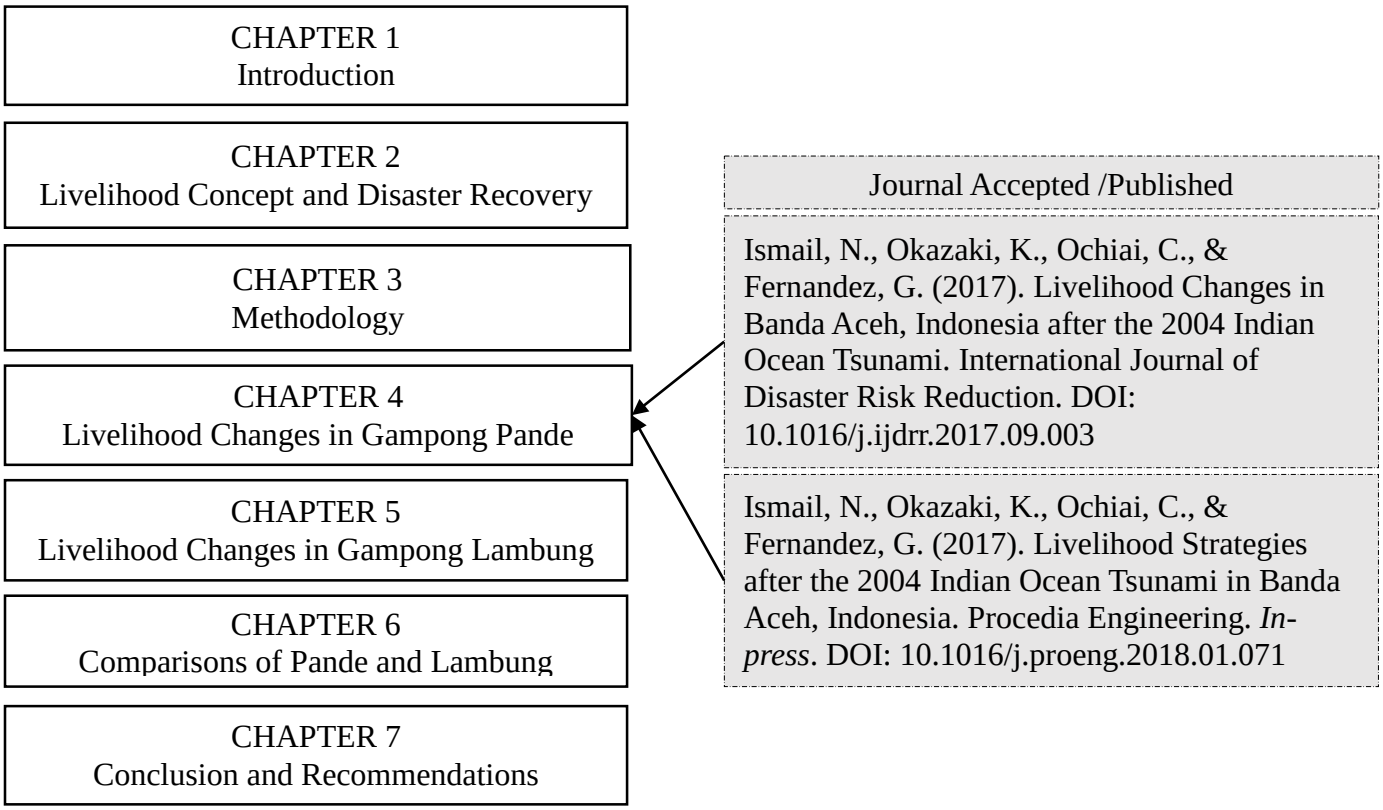

Figure 1.8 Structure of Thesis

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CHAPTER 2: DISASTER RECOVERY AND LIVELIHOOD

2.1. Disaster Recovery

Haas et al. (1977) proposed a conceptual framework for the disaster management cycle in which disaster recovery progresses in four stages: Preparedness, Relief/Response, Recovery and Mitigation. The framework aims to reduce or prevent potential damages from hazards, to ensure speedy and appropriate support for the affected people, and to attain fast and effective recovery (Warfield, 2008). Each stage consists of specific actions to be carried out to reduce vulnerability towards disaster. 'Preparedness' is where the knowledge and capacities are developed to handle an emergency situation so that people can anticipate, respond and recover from the impacts of the future disaster. 'Relief/Response' includes actions taken pre-, during or immediately after a disaster to save life and property, reduced health impacts, to ensure public safety and to meet the basic sustenance needs of the affected people. 'Mitigation' actions are activities that can minimise or prevent the disastrous impacts of an unavoidable hazard. 'Recovery' is the restoration of improvement of economic, social, physical, cultural, environmental assets, systems and activities of the affected communities, according to the BBB concept to prevent or reduce future disaster risk and making it safer for the people (UNISDR, 2017).

2.2. Concept of Recovery

'Recovery' does not only comprise of the reconstruction of physical structures such as housing and infrastructures; but also the social and economic aspects as well. Governance is as important as these aspects are mutually interdependent (Oliver-Smith, 1991; Nigg, 1995). 'Recovery' is often regarded as the last, longest and most expensive phase (Phillips, 2015), as well as one of the least, understood the part of the disaster management cycle (Smith & Wenger, 2006; Berker, Cortez & Wenger, 1993). The variety of 'R' expression is frequently employed in the post-disaster settings where terminologies such as 'reconstruction', 'rehabilitation', 'restoration' and 'recovery' are usually confused. Table 2.1 shows the differences of each term.

IEDC (2017) classifies 'recovery' into two phases: short-term phase and long-term phase. The short-term lasts from six months to twelve months where businesses already started delivering services. In this phase, there is a transition from response activities in the recovery effort. On the other hand, the long-term phase can go up to many years after a disaster which includes actions and strategic planning to tackle more critical disaster impacts. The purpose at this stage is more towards returning the people's lives to normal or improved level. FEMA (2011) reported that 'recovery' does not have any standard ending period but can be seen from the similarities of the 'recovered' conditions demonstrated. The 'recovered' conditions are when communities successfully overcome the physical,

emotional and environmental impacts of the disaster; re-establishes an economic and social relationship with the community and business counterparts as well as the entire community demonstrates the capability to be prepared, responsive and resilient in dealing with consequences of the disaster.

Table 2.1 Differences of Terms

Term	Explanation
Reconstruction	Emphasized on the physical rebuilding of structures which were destroyed or damaged in a disaster
Rehabilitation	Restoration which focuses more on the human than the physical-built things with the implication of raised restored level than before the disaster
Restoration	Rebuilding the physical and social patterns to pre-impacts level
Recovery	Attempts of bringing the post-disaster level to some level of acceptability which may differ than the pre-impact level

Source: Quarantelli (1999)

After a disaster, the approaches taken to livelihood recovery emphasised on the people and their priorities for development. Most of the approaches empower the people to build on their opportunities, assist in accessing assets as well as having a policy and institutional environment to reduce poverty. The impacts of the disaster are different depending on certain factors such as types of natural disaster and the geographic region of the disaster occurrence (Strobl, 2010). Most of the time, recovery works are being made to cater for the most pressing needs of the people. For instance, in the case of a hurricane/tsunami/earthquake event, people lost their house which is one of the primary needs of the people. Hence, most of the reconstruction works focused on fulfilling the basic need first. The importance of immediate restoration of people's livelihood after a disaster occurrence has gained attention in the recent years.

2.3. Origins of Livelihood Concept

Livelihood is known as 'a means of securing the necessities of life' according to the definition found in the Oxford Pocket Dictionary of Current English (2010). Livelihood is identified as having enough supplies and flow of food and cash to meet basic needs. To be able just to meet the basic need is not enough as having security to ensure steady returns is critical in a household environment. Security refers to acquiring ownership of, access to, resources and income-generating works which include money and assets to offset risk, reduce shocks and still having enough for emergencies. However, there is no international standard definition yet for post-disaster livelihood recovery (Régnier et al., 2008).

The term livelihood is broad in the sense of defining the factors that determine the livelihood of a household. Livelihood is not limited to a household doing only one activity to meet their needs, but

instead, consist of multifaceted, contextual, various and dynamic strategies (Chambers, 1995; Scoones 1998, 2009). Back in the 1980s, the livelihood concept was recognised as an alternative to 'employment' in describing the struggles people had to go through to earn a living (Scoones, 2009). Livelihood was used to demonstrate people's view of their needs. Hence, livelihood can also be interpreted as the measures and capabilities people utilise to support themselves to have their basic needs (e.g. food, a place to stay, clothing and social relationship) fulfilled. Assets or capitals are required to acquire these basic needs.

According to Ellis and Freeman (2005), the livelihood concept and the research about it were cultivated within the development of economics. This concept was used to tackle the reduction of poverty in marginal economics and underdeveloped countries (Bebbington, 1999). Ellis and Freeman (2005) described livelihood as the resources that people possess which enabled them to have the capacity to earn a living.

Ellis (1998) stated that livelihood comprises of both cash earnings (e.g. selling of livestock or crops, salary, rents and remittance) and in-kind payment (e.g. personal consumption of agriculture produces or exchange of consumer products between communities). Ellis also found that livelihood includes social institutions, gender relations and property rights which assist a person to sustain his standard of living. On the other hand, Appendini and Zoomers (2001) explained that livelihood is where an individual or a group of people earning a living by attempting to meet their consumption needs and economics necessities while coping with uncertainties and reacting to new opportunities and making the best decisions for their livelihood. De Haan and Zoomers (2005) suggested that livelihood also includes non-material aspects of the well-being and should be seen as a dynamic and holistic concept.

Sustainable livelihood is the maintenance or enrichment of resource productivity for a long duration. There are many ways a household can gain sustainable livelihoods such as through possession of the land, livestock or forests through permanent occupation with sufficient payment or a variety of range activities (WCED, 1987a). Chamber and Conway (1991) then proposed that livelihood exists in the form of capabilities, assets in the form of material and social resources, an activity that is necessary to make a living. They also emphasised that sustainable livelihood is the ability to deal and recover after facing shocks and stresses, maintain or improve its capabilities and asset for the present or future, while not depreciating the natural resources.

2.4. Sustainable Livelihood Framework

The Sustainable Livelihood Framework (SLF) is a widely used tool to understand various factors and their interactions that may affect a household livelihood. According to Farrington (2001), the

Sustainable Livelihood has developed into three clear ways: as a concept, as a framework and a set of principle for action. Initially, the SLF was to alleviate the poverty level back then during Blair's administration (Solesbury, 2003a, b). Besides United Nations Development Program (UNDP), Oxfam, CARE and Institute Development Studies, DFID are among one of the leading agencies/donors that develops and formulates the framework livelihood-based approaches to the fundamental development of policy and practice (Ashely & Carney, 1999). This approach has been widely adopted by various other agencies dealing with livelihood works and hence, described as the 'official' guidance for SLF. DFID describes that the SLF emphasis on the people and does not need to be necessary in a linear manner or even envision the reality. The established framework is a versatile, flexible and an adaptable tool and any part of the framework can be picked-up for planning and management purposes. Additionally, the SLF is also created by multiple different drives and factors that are constantly changing. The SLF (see Figure 2.1) by the DFID recognised four main components in the livelihood system:

1. *Vulnerability context*: People living in locations that are exposed to risks, shocks and facing trends or seasonal changes over time
2. *Livelihood assets*: People have assets that are functional for them to make a living
3. *Livelihood strategies*: Decisions/choices people make to earn a positive livelihood outcome
4. *Policies, institutions and processes*: Giving people access to livelihood activities, vulnerabilities information about their living surroundings

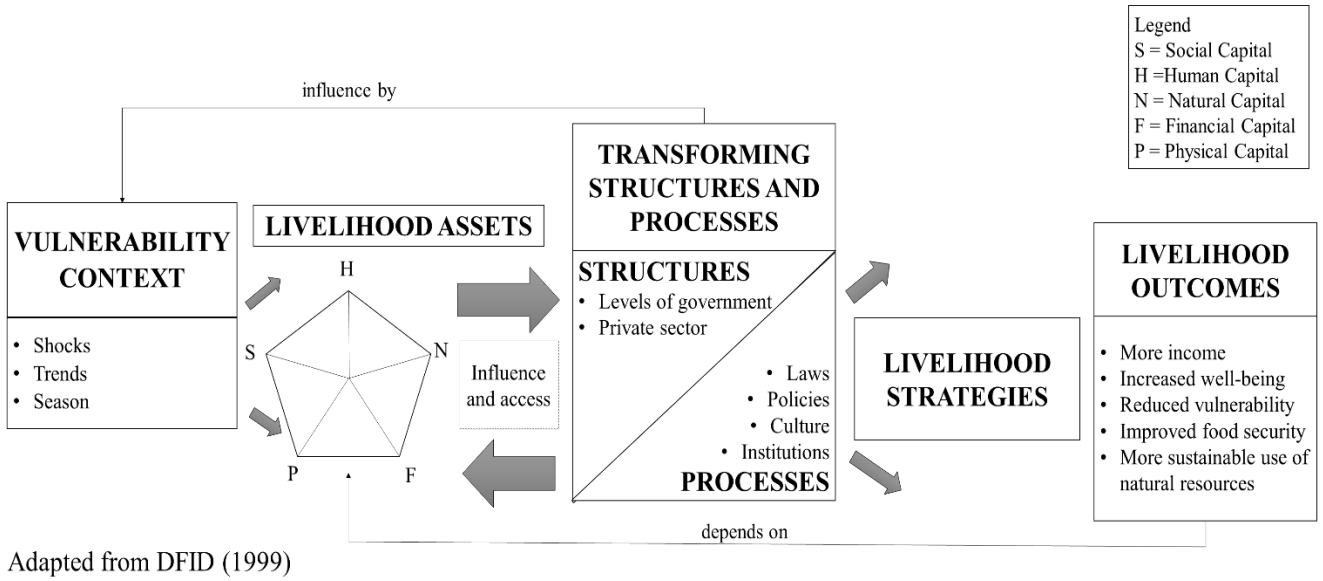

Figure 2.1 Sustainable Livelihood Framework

2.4.1. Vulnerabilities

Vulnerabilities exist in the external environment where people are exposed to shocks (e.g. conflict, economic shocks, human/crop/livestock health shock, natural shocks), trends (e.g. national/international economy, governance, technology, population) or seasonal pattern changes (e.g. prices, production, health, job opportunities) when they do not have the capacity to respond appropriately. Vulnerabilities bring forth direct impacts, either negatively or positively towards people's livelihood, particularly the assets and the opportunities in the pursuit of their livelihood outcomes.

2.4.2. Assets

Assets are expressed as capitals that can be used directly or indirectly to generate a livelihood. From the SLF, the livelihood assets are depicted as a 'pentagon' which forms the core of the framework. Livelihood assets here refer to the natural, physical, human, social and financial upon which are built and accessed by people. These assets can be stored, accumulated, traded or assigned to generate income (Rakodi, 1999). Assets can also be lost which affects the person or household economics level in term of security, quality of life and the coping strategies (Frankenberger, Luther, Becht, & McCaston, 2002.). After a disaster event, people resort to short-term coping strategies due to decreasing income of food supply (Brugere, Holvoet & Allison, 2008). The common coping strategies taken are conservation of household expenditure through using own savings, utilising food stocks, gifts from others, livestock selling and selling of own assets (Ellis, 2000). The terms of 'capital' and 'assets' are used interchangeably in most livelihood studies conducted. The ownership of assets is not an essential factor in contributing to the livelihood as long as the household has access to it (Morse & McNamara, 2013). The assets can either help people to cope better or become worse in facing the vulnerabilities.

To form a livelihood, people must combine the tangible and intangible capitals they have control over and access (Chambers & Conway, 1992). The livelihood and the assets are very much affected by the shocks (e.g. outbreaks of human disease, economic crisis, natural disasters, trends (e.g. price hike for essential food, change of occupation) as well as seasonality (e.g. climate change, job uncertainties due to seasonal change, fluctuations of product price due to change of season). The assets can either help people to cope better or become worse in facing the vulnerabilities. The assets owned by a household are used as the means of living and to build a satisfactory living environment in the context of interacting with vulnerability (Scoones, 1998). Households rely on their own available assets or the assets of the community when dealing with vulnerabilities (Fakhruddin & Rahman, 2015). The combination of personal and community assets can also improve household's resilience to disasters

(Heltberg et al., 2013). These resources play an essential role to enable the people to recover, especially from natural disaster. Bebbington (1999) stated that the assets that a person have work more than just a resource for making a living, but also gives them the power of capability to act, to reproduce, to change the rule as well as to use and transform the resources. Table 2.2 shows the DFID's description of each of the livelihood assets in the SLF.

Table 2.2 Livelihood Asset Description

Asset	Description
Human	Represent the skill, knowledge, ability to labour as well as the number of household members, education, skills and health of the member, to pursue different livelihood strategies and achieve their livelihood goals (DFID, 1999a).
Natural	Land, water and biological resources (e.g. marine life, crops cultivated, forests, ponds, and biodiversity).
Financial	Consists of regular inflow of money or savings, remittance, pensions, aid as well as credit or loan which provided people with different livelihood options.
Physical	Created by the economic production. The basic infrastructure (e.g. housing, water, energy, transport, roads, irrigation works, and communication) and the immediate goods such as livestock, tools, equipment.
Social	Consist of social resources such as networks, membership of groups, the relation of trust, and exchanges that can help in collaboration and economic prospects.

Source: DFID (2000)

2.4.3. Livelihood Interventions

Tackling underlying issues such as boosting economic activities and giving consideration of the overall picture of an economic system during the post-disaster situation where the primary focus of the recovery interventions by the government, donors and NGOs (BRR Book Series-Economy, 2009). Emphasis was put in the recovery of both the public and the people's assets as well as strengthening the economic foundation for the people in the long run. The access to the livelihood asset is influenced by the skill and labour (human capital), start-up capital/physical infrastructure (physical capital), natural capital that forms the basis for productivity, as well as social networking and relationship (social capital).

From the SLF, DFID defined the 'structure' as the hardware which is made up of public and private organisations that carry out the functions at various levels such as implementing policy, delivering services, purchase and trade that affect livelihoods. 'Structure' can also facilitate movement in the labour market, reduce risks, increases the efficiency of an investment or can also limit choices and restrict access (e.g. caste system or market monopoly). One example of 'structures' in public sector is legislative bodies from local to national level, executing agencies of ministries and department, judicial bodies as well as half-government agencies whereas private sector agencies can be of

corporations and commercial enterprises, civil society organisations and NGOs of local, national or international level.

On the other hand, DFID described ‘process’ as the software that operates and interact at various levels like structures and at times, having overlapping and differences between them. The ‘process’ regulates the household’s livelihood assets through institutions, culture, policies and laws, both formal and informal. ‘Process’ grants access to other assets and provides incentives such as market introduction and cultural restrictions which influences the household’s decision in choosing livelihood strategy that best fit them. Scoones (1998) stated that ‘process’ also indirectly covers the politics and power structures in addressing the course of livelihood changes.

Additionally, the IRP classified the livelihood interventions into three intersecting phases (1), (2) and (3). The phases responded to the immediate, short- and long-term needs of the disaster-affected population. The period of each phase is based on the type of disaster and the intensity of the damage. The intervention activities usually take place simultaneously, but the recovery rates for each household or communities differ accordingly. The strategies can be achieved through access to assets and the structures and processes that can improve the livelihood outcome.

(1) Livelihood Provisioning

During the emergency period, the type of livelihood provisioning actions is in general made up of delivering essential items such as food and non-items (e.g. health assistance) which is much needed for survival. In the case of the 2004 IOT disaster in Banda Aceh, food items and health assistance were among the first aid provided by the international NGOs.

(2) Livelihood Protection

In this phase, the goal is to safeguard, restore and rebuild the assets pertained to productive livelihood activities which then is employed to start an existing or taking up a new livelihood. Examples of the interventions of livelihood protection are fixed income and food transfers, restoration and improvements of the infrastructures, food-for-cash- or CFW activities as well as business start-up provisions of livelihood-related assets such as machinery for bakery or fishing equipment.

(3) Livelihood Promotion

As defined by IRP, livelihood promotion is an intervention that seeks to stimulate and boost the household livelihood to be more economical, sustainable and environmental-friendly as well as to become more resistant to face future disasters. In livelihood promotions, development activities are introduced to improve household’s resiliency with the intention to meet and sustain their basic daily needs. Some of the approaches of livelihood promotions are livelihood diversification, alternative

income-generation activities, and financial services via insurance or loans as well as market establishments.

2.4.4. Livelihood Strategy

The term livelihood strategy refers to ways of using assets and combining them in pursuit of livelihood outcome (Chambers & Conway, 1992). The strategies can either be negatively or positively influenced by the transformation of structures and processes. The more options and flexibility people have in their livelihood strategies, the better chances of them to hold up or to adapt to vulnerabilities (DFID, 1999). There are three main livelihood strategies defined by (Scoones, 1998) (see Table 2.3).

Table 2.3 Livelihood Strategies

Strategy	Description
Agricultural intensification	Gaining livelihood from agricultural-related activities (livestock, aquaculture pond, forestry) by intensifying/increasing the number of output per unit by using capital (external inputs and policy) or labour (own labour and social resources)
Livelihood diversification	A broad portfolio of non-agricultural income-earning activities that assumed by households to stand shocks or stress which copes either temporarily or permanently or a combination of various livelihood activities
Migration	Movement to a different place either by involuntary or voluntary means or due to effects (e.g. reinvestment in agriculture, business or consumption at home or migration site) and movement patterns (to or from different locations)

Source: Scoones (1998)

2.4.4. Livelihood Outcome

Outcomes are not only achieved for income maximising, but it is also essential to understand the priorities of the people regarding ‘what’ and ‘why’ they do what they did and the challenges they faced (DFID, 1999). For those living in poverty, people would try to get out of their situation by accessing available assets as livelihood is influenced by the various assets, the number of assets as well as the balance between those assets (DaCosta & Turner, 2007). People living in the coastal areas, particularly those from the poor-income levels or the urban-poor households adopt a range of activities and strategies to make a living (Reid et al., 2009). These activities made up their livelihood which depended on their existing assets, skills, social relationship, accesses to aid/support/social security.

2.5. Disaster Management in Indonesia

Located in a highly disaster-prone area, the Government of Indonesia has an inevitably proactive approach to reducing disaster risk which entails to address and manage environmental risk as well as to respond to immediate threats. Before the 2004 IOT disaster, the country was steered by a disaster management agency that mainly focuses on the emergency response (mandated by Presidential

Decree (Perpres) No. 3/2001). The emergency response worked at two levels: (a) National level: lead by the National Coordinating Agency for Disaster and Refugees Management (BAKORNAS PB) mainly dealing with displacement issues; (b) Provincial/District level: lead by Unit of Implementation Coordination for Disaster and Refugee Management (SATKORLAK PBP) and the Unit of Implementation for Disaster and Refugee Management (SATLAK PBP).

After the 2004 IOT disaster, the Indonesian government realised that the recovery effort from the massive scale of destruction should be given attention as well. Hence, Rehabilitation and Reconstruction Agency (BRR), an agency that corresponds to a ministry was set-up to manage the recovery works and, to coordinate NGOs and donors for the 2004 IOT disaster and the 2005 Nias Earthquake. The 2006 Jogjakarta Earthquake improved the post-disaster recovery system by incorporating not just emergency response and recovery process, but also mitigation and preparedness. In 2007, the Disaster Management Law (24/2007) was enacted by the government, along with the Presidential Regulation (Perpres) No. 08/2008 by which the National Agency for Disaster Management was established. Other establishments also included the Implementation of Disaster Management (Government Regulation No. 21/2008), Funding and Management of Disaster Aid (Government Regulation No. 22/2008), and Participation of International Institutions and Non-Government Foreign Institutions in Disaster Management (Government Regulation No. 23/2008) (IRP, 2014). These regulations are more extensive and have transformed the government's disaster management approach. The disaster management cycle from BPNB (2012) starts with preparedness, response, recovery and mitigation and prevention which works from pre-, during and post-disaster period.

2.6. Livelihood Recovery

2.6.1. Recovery in Indonesia after the 2004 Indian Ocean Tsunami

Many types of income recovery program strategy and instruments are put down by both the government and the NGOs for the people to restart their livelihood. Most livelihood programs are to rebuild and develop livelihood to offer affected people social protection, building community infrastructure or developing local economic projects or interventions for the beneficiaries.

The Asian Development Bank (ADB) assisted the Indonesian Government in the post-disaster reconstruction under the Earthquake and Tsunami Emergency Support Project (ETESP) in 2005. The multisector package of USD 290 million was to be implemented from 2005 to 2008, consisted five primary sectors: (a) livelihood restoration, (b) social service, (c) community infrastructure, (d) physical infrastructure and (e) fiduciary oversight (ADB, 2009). Among the five sectors, housing reconstruction (c) was the most critical and most significant spending of USD 72.5 million (25%)

from the total ETESP funds. For the livelihood restoration, assistance was focused on agriculture (USD 32 million), fisheries (USD 30 million) and, micro- and small-scale enterprises (BRR Book Series-Economy, 2009). The BRR reported housing reconstruction gained the highest priority in the early stage of the reconstruction phase, followed by livelihood restoration, and physical and social infrastructure afterwards (see Figure 2.2). Restoration works started with the agricultural sector first as this sector suffered the severest impact of all. Livelihood restoration was in linear form as it is not able to progress quickly due to enormous complex challenges such as large amount of debris to be cleared for building houses or farming as well as to identify landowners for land consolidation purposes (BRR, 2006).

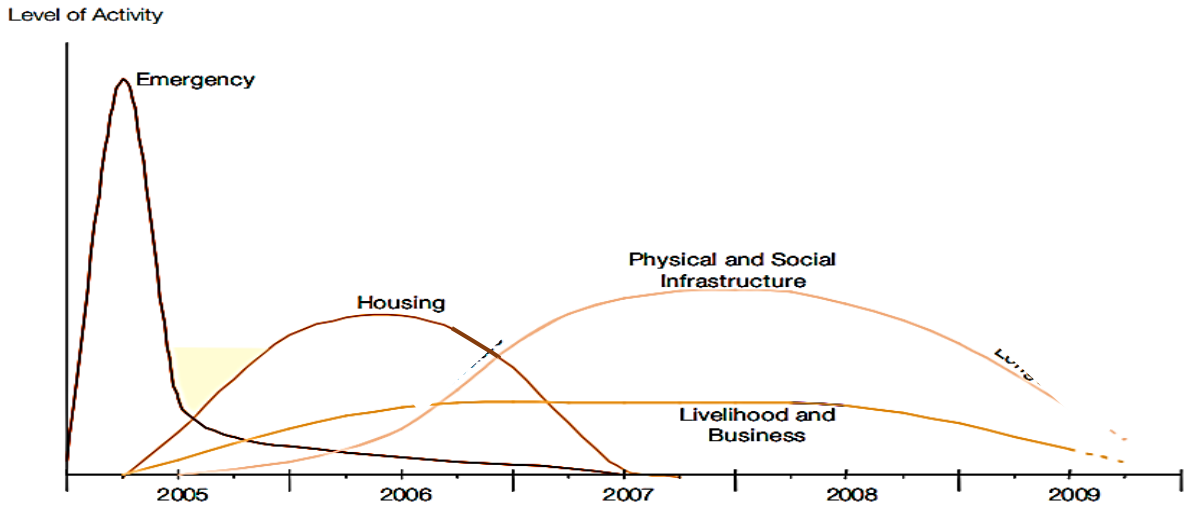

Figure 2.2 BRR's Timeline for Emergency and Recovery Effort after the 2004 IOT Disaster (Source: BRR, 2006)

Another fund, the Multi Donor Fund for Aceh and Nias (MDF) received a total of USD 676.08 million from 15 donor countries, was managed by the World Bank (Delegation of the European Union, 2012). While Aceh was still in their emergency period, another M8.7 earthquake occurred on March 2005 in Nias, a small, poor island located in North Sumatra Province. Hence, the fund was set-up to support the reconstruction and rehabilitation of affected areas in Aceh and Nias.

Table 2.4 Working areas of MDF for the reconstruction

	Area	**Allocation (USD)**
1	Community's recovery	202 million
2	Extensive infrastructure and transport recovery	217 million
3	Improving the government and capacity building	40 million
4	Sustaining the environment during the recovery	57 million
5	Boosting the overall recovery process	56 million
6	Livelihood support and economic developments	58 million

Source: MDF (2012)

The balance fund was spent on administrative expenses (USD 12.9 million), appraisal, supervision and monitoring costs (USD 10.2 million) and about USD 44.3 million were allocated for all other uncommitted projects to enable spending from the extension process. The MDF was scheduled to end in 2010, received an extension until 2012. The extension was for allowing several critical reconstruction projects that were running late as well as for ensuring efficient changeover from BRR to BAPPENAS and other agencies such as the central, provincial and local government (ADB, 2009).

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CHAPTER 3: METHODOLOGY

3.1. Introduction

This chapter focuses on the tools and methods that were used in this study, which includes the research design, data collection, sampling population and sample selection, instrumentation and measurement, and data analysis.

3.2. Research Design

3.2.1. Multiple Method

This study takes a multiple-method design of quantitative and qualitative data together. Brannen (2005) emphasised that the multi-method research is not certainly any better, but it is somewhat another way to address the various matters posed during a research study. Creswell and Clark (2011) stated that previous studies on livelihood have been using multiple-method which applies either the quantitative methods (e.g. questionnaire survey) or qualitative methods (e.g. interviews, focus groups). When describing the details or trends of a situation, neither quantitative nor qualitative data are adequate by themselves (Ivankova, Creswell & Stick, 2006).

The multiple-method helps to build a more comprehensive understanding of the livelihood changes in Banda Aceh after the 2004 IOT disaster. Furthermore, Yin (2015) stated that the general idea is that each research methods offer different knowledge as each serves different functions. This study employs the multiple-method to achieve deliverable results which is better than mono-method studies. However, Brennen (1992a) warns that the multiple method approaches create tensions due to the differences of theoretical perspectives. This can be resolved by considering the relationship between the data as a result of the usage of various methods.

This study began with collecting statistical data in the initial stage and results were supplemented with qualitative data subsequently. Ritchie and Lewis (2003) found that there were numerous occasions in social science studies where the numerical data from the findings required further explanation. The sequential approach denotes the existence of phases during an investigation where one part is emerging from or are following the other (Cronholm & Hjalmarsson, 2011).

The dominance of qualitative data is because some statistical data on pre-disaster condition of the villages cannot be retrieved due to loss of documentation from the tsunami. Wordings, photos and narratives are incorporated to supplement and provide useful meaning to the statistical data (Johnson & Onwuegbuzie, 2004). The detailed account of qualitative method explores, describes and also explains the complexities of the data in actual life which may not be captured from a survey or experimental research (Zainal, 2007). Hence, with the qualitative approach, this study acquired

explanations for the livelihood changes taken by the respondents as well as obtaining other related information such as the village history, the livelihood situation of before the disaster, reconstruction period and current condition.

3.3. Data Collection

Inspection and observation of the targeted villages were conducted in the initial stage (November 2015) and followed by literature reviewing works to understand about disaster recovery and livelihood changes. After finalising the indicators for the livelihood assets, a questionnaire was prepared, and a pre-test was conducted from the last week of July to the first week of August in 2016.

For the convenience of the respondents, the questionnaire was made in English Language and was translated into the local language, Bahasa Indonesia. This was done to ensure that the respondent understood the content of the questionnaire. The Indonesian version was retranslated into the English Language to ensure the meaning of the intended questions remained the same.

A pre-test was performed to determine the appropriateness of the questionnaire to the target respondents. The pre-test was conducted in Gampong Dhea Raya, in Syiah Kuala District, located about 6 kilometres away from the Banda Aceh city. This village has similarities to the targeted villages such as the geographical features and the household livelihoods. The pre-test was performed on five households to test the consistency of the questionnaires and also to find out the level of understanding of the potential respondents later on. Through this pilot test, the researcher had the opportunity to understand the flaws of the questionnaire and was able to amend the instrument to suit the respondent better.

After making some improvement on the questionnaire, Fieldwork I took place at two villages (see Table 3.1), Gampong Pande and Gampong Lambung, in Banda Aceh in August 2016. A questionnaire survey was carried out with the assistance of a trained local university student from Syiah Kuala University. The student assistant supported the researcher throughout the whole two years of fieldwork. Before each fieldwork begins, the student assistant was briefed on the research purpose and the outcome expectation of the fieldwork. The researcher went through the questionnaire together with the student assistant and explained the livelihood context for better translation during the interview process later. There were some missing data of the respondents as some questions were left unintentionally, while some others were purposely left out as they were not able to recall their experiences before, during and immediately after the 2004 IOT disaster. After Fieldwork I, quantitative data was organised, inputted and analysed. Then, interview questions were prepared for the key informant, the village leader, village elderly.

Fieldwork II was carried out at the end of February until early March in 2017 to get more in-depth information to understand the livelihood recovery experience of disaster-affected households. Following Fieldwork II, qualitative data were organised, transcribed, inputted and analysed. The study collected qualitative data until information was consistent and no more new information attained. Hancock, Ockleford and Windridge (2009) stated that the information saturation is when new data from new cases do not contribute to the development of existing information.

The last fieldwork, Fieldwork III, took place in September 2017 with in-depth interviews with the households and informal discussion with the communities at each village. The research also went to interview with some NGOs and academicians from Syiah Kuala University who worked with the donors during the 2004 IOT disaster in Banda Aceh. The study also adopted participatory observation to study the housing condition, natural environment, and village life to add more information to the dataset.

For Gampong Pande, the study managed to collect five in-depth case studies, one informal group discussion, and a series of 15 semi-structured interviews which included the key informant, the elderly, village leaders, livelihood beneficiaries, and an archaeologist. For Gampong Lambung, the study collected seven in-depth case studies, two informal group discussions (4 women each group) and 13 semi-structured interviews which included the key informant, village leaders, and livelihood beneficiaries. The study also included five interviews with the NGOs who were involved with the livelihood recovery in Banda Aceh during the 2004 IOT disaster (see Figure 3.2). Secondary data such as those from literature reviews, Pande Village Medium Term Development Plan (GPMDP) (see Figure 3.3) and Lambung Village Medium-term Development Plan (GLMDP) (see Figure 3.4), journals, and reports from the international and local organisations, statistical data, and books from relevant sources were also collected.

Figure 3.1 Interviews with respondents who were affected by the 2004 IOT Disaster

Figure 3.2 Interviews with NGOs who have worked during the 2004 IOT Disaster

Figure 3.3 Gampong Pande's Medium Term Development Plan and Village Report

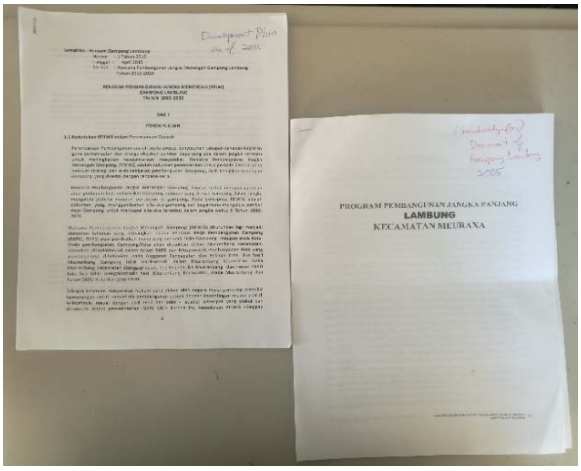

Figure 3.4 Gampong Lambung's Medium Term Development Plan and Village Report

3.4. Population and Sample Selection

The population size given by the Village Office for both Gampong Pande and Gampong Lambung as of 2016 was 782 people with 224 households and 701 people with 209 households, respectively. The targeted population was villagers in the respective villages. All respondents were eligible to participate in the study. 100 households in each village were selected using convenience sampling. This method was selected as the survey was conducted during the daytime on a weekday and sometimes a weekend, where most of the households were not in their house due to work or temporarily being out to send their children to school or conduct groceries shopping. Households who were at their house during the day were the available respondents during the fieldwork. For Gampong Pande, the sample size turned out to be 77 respondents, while Gampong Lambung was 93 respondents. Samples of the respondents in Gampong Pande were women (65%), within the age range of 25 years old to 75 years old, with an average age of 41 years old while in Gampong Lambung, it was 18 years old to 71 years old, with an average age of 39 years old.

3.5. Instrumentation and Measurement

Items from the questionnaire were developed from the livelihood assets from various types of past livelihood studies (See Appendix 2-1 and 2-2 for the complete questionnaire). For this study, the component factors (e.g. household size, occupation, house ownership, etc.) of each asset (human, financial, physical, natural and social) had been carefully selected and fitted to the Indonesian context for better understanding and responding.

3.6. Components in Livelihood Framework for the study

Impacts of the 2004 Indian Ocean Tsunami disaster

The research considered the 2004 IOT disaster impacts of the affected households and their livelihood assets for the study. The impacts of a disaster result in disturbance as well as can impede socioeconomic development and harm people's livelihoods (Schipper & Pelling, 2006).

Livelihood Asset

The study looks at the livelihood changes through examining the assets at three different stages (before the disaster, reconstruction period and current condition). The research employed the five components (human, financial, physical, natural and social) of livelihood asset and developed a set of indicators for each of the livelihood assets. The indicators were chosen based on the literature reviews, and also past livelihood studies were done by organisations and NGOs. Different types of assets, such as pond land, skills, credit, and labour, were positioned differently depending on which were the most relevant to the type of livelihood the households were engaging. Table 3.1 summarises the selected component factor for each of the livelihood assets.

- Human

This study included household size, educational completion, occupation and health in the human capital factor. Goh et al. (2001) employed the number of household members which reflected the number of dependents in the household, the number and types of income and the economy of scale in consumption. The educational completion and occupation of the household demonstrate the employment stability, skill and re-employability. Goh et al. (2001) found that the pre-disaster number of household members is an essential indicator of the ability of the household to restore their livelihood. Meikle et al. (2001) pointed out apart from education and skills which are commonly used asset by the urban poor; health is essential to ensure the person can work and make a living.

- Financial

Factors such as total monthly income and other types of available financial resources (e.g. livestock, credit, saving) were used in this study. This is to understand the primary sources of access to finance the households of before, during and after the disaster. This factor is the most versatile (DFID, 1999) because it can be converted into other types of capital as well as a direct source of livelihood outcomes. Additionally, the availability and accessibility of credit are essential for the urban poor as to decrease their prospect of falling into severe debts (Meikle et al., 2001). Caution needs to be taken as definitions are overlapping at times. For instance, the livestock, crops, or land owned by household is ambiguous as it can be classified as financial assets or physical asset, or it can also be considered in the natural assets. Additionally, another asset which also is overlapping is the social support or claims received from higher authorities which can fall in as either a social asset or can stand alone as a political asset. Gailard (2013) also found that people also depend on political capital for their livelihood.

- Physical

In this study, the physical assets are limited in scope. It is divided into (1) housing, (2) other household assets (e.g. vehicle ownership, land, fishing equipment, media appliances; television, radio, handphone), and (3) public facilities (e.g. energy for lighting and cooking, drinking water source). For (1) component, this study follows the research of Moser and Felton (2007) where they stated that housing is the most critical component of physical capital. According to the World Bank (2000), physical assets consist of plant equipment reserve, infrastructures and other productive possessions owned by individuals, businesses and the public sector. Component (3) was taken up because the physical infrastructure such as roads and energy is essential to develop non-farm activities for people living in urban areas which also emphasised by Rakodi (1999).

- Natural

For this study, aquaculture and mangrove were selected as the targeted villages were located in the coastal area and the people relied on the natural resources (e.g. wetlands) for their livelihood activities as well as for food supply. Ali et al. (2008) included pond as their component in the natural capital as it was considered as part of the environmental goods to support livelihood production for those involved in agricultural activities.

- Social

Elements such as (1) trust among neighbours, (2) local community participation and (3) relationship with authorities are included as the component factor of social capital in this study. Minamoto (2010) pointed out that social capital can also be broken by how livelihood assistance is given after an event of a disaster. For component (1), trust component was picked up from the cognitive, social capital

where trust is the result of the human interaction and can be understood through people's expectation (Grootaert & van Bastelaer, 2002a). Component (2) and (3) were taken into the study to understand how this relationship between the people and the organisation/donor/government play a role in the people's livelihood (Grootaert & van Bastelaer, 2002a). Additionally, Grootaert and van Bastelaer (2002) also demonstrated in their study that the component of 'local community participation' is a relevant indicator for the Indonesian context. Putnam (1993) emphasised the importance of social networking as an informal support means which represent by norms, trust and relationships that facilitate and coordinate mutual benefit.

Intervention by Government and NGOs

Intervention refers to the assistance that comes from both external and internal helps to enhance the livelihood strategies. The interventions denote the role and the responsibilities of the authorities in implementing policies and delivering services that affect livelihoods.

Strategies taken by households

The study assumes livelihood strategy as any activities that can provide a variety of means of obtaining food, cash and assets. There are three main livelihood strategies: agricultural intensification, livelihood diversification, and migration (Scoones, 1998).

- Agricultural intensification

The agricultural intensification refers to the application of non-land resources by amplifying the amount of labour or investments (e.g. money) on a farm to improve the value of the output per hectare (Tiffen et al., 1994' Hussein & Nelson, 1999). The intensification process can take place due to, for example, technology usage that increases productivity or shifting to other output that has a higher value. Among the activities taken for agricultural intensification is the useage of natural or chemical compost, better seedlings (plant/animal), and employing animal traction/technology, multi-/relay-cropping as well as changes to the site by adding irrigation or conservation of land (Wolmer, 1997). Carswell (1997) identified the intensification process as a good option that ought to be practised and encouraged in the agricultural systems.

Table 3.1 Information collected and tools used for the research

Asset	Component factor	Past study/Case-study	Reference	Principal tool (Quantitative)	Other tools (Qualitative)
Human	Household size	Identification of vulnerable groups and coping strategies in Korea	Goh et al. (2001)	Questionnaire	Secondary data
	Presence of adults in household				
	Education level	Sustainable livelihoods: Lessons from early experience	DFID (1999)	Secondary data	Key informant
	Health status	Sustainable urban livelihoods: Concepts and implications for policy	Meikle et al. (2001)		Secondary data
	Occupation	Sustainable livelihoods: Lessons from early experience	DFID (1999)	Questionnaire	Household interview Secondary data
Financial	Total monthly income				Household interview
	Other financial resources: -livestock -credit/loan -savings	Sustainable urban livelihoods: Concepts and implications for policy	Meikle et al. (2001)	Secondary data	Household interview Key informant Informal group discussion
Physical	House ownership	Sustainable livelihoods: Lessons from early experience	DFID (1999)	Questionnaire	Informal group discussion
	Other assets that can improve livelihood	The construction of an asset index measuring asset accumulation in Ecuador	Moser & Felton (2007)		Household interview Informal group discussion
	Access to infrastructure	A capital assets framework for analysing household livelihood strategies: implications for policy	Rakodi (1999)		Household interview Observation
Natural	Aquaculture ponds (size and type)	Assessment of the livelihood status of the fish farmers in Bagmara upazilla under Rajshahi district	Ali et al., (2008)	Secondary data	Household interview Key informant Informal group discussion
	Mangrove area (size and functionality)	Coastal resources, livelihoods and the 2004 IOT in Aceh, Indonesia	DFID (1999) Griffin et al. (2013)		Key informant Informal group discussion
Social	Participation and relationship with neighbours	Understanding and measuring social capital The prosperous community Social capital and livelihood recovery: post-tsunami Sri Lanka as a case	Grootaert & van Bastelaer (2002) Putnam (1993) DFID (1999) Minamoto (2010)	Questionnaire	Household interview Informal group discussion
	Relationship with village leader, local government, and community				
	Trust				

Source: Compiled by the authors

*For relationship with higher authorities, the scale used is '1' for very dissatisfied, '2' for dissatisfied, '3' for satisfied, and '4' for very satisfied.

*For trust, the scale used is '1' for not at all, '2' for not so much, '3' for fairly yes, and '4' very much.

- Livelihood diversification

The livelihood diversification is a process by which a household form various portfolio of occupations and social support to survive and to improve their livelihood (Ellis, 1998). The diversification also is to cope financially as well as to decrease the risk of depending on natural resources (Bailey & Pomeroy, 1996; Allison & Ellis, 2001). The diversification of livelihood offers households a more secured and higher income prospects, an increase of the human capital regarding experiences, skills and innovation (Ellis & Allison, 2004) as well as smaller risk exposure to vulnerabilities (Morse & McNamara, 2013). Typically, the process involves widening the range of either on-farm or off-farm income sources or both (Ellis 2000; Barret et al., 2001).

Livelihood diversification increases human capital, mainly the experience, skills and willingness to transform (Ellis & Allison, 2004). The earnings from diversification provide the household with cash resources which offers more options for the household. This in return reduces the vulnerability of the household who depended on seasonal income. Diversification does not just amplify the human capital but also can lessen the poverty level (Ellis & Allison, 2004).

Livelihood diversification is determined by a few factors such as seasonality, risk strategies, labour market, failure in the credit market, asset strategies and coping behaviour and adaptation (Ellis, 2000). Additionally, remittance and earnings can offer better options for households by providing cash resources which can be easily utilised. The study identifies the livelihood diversification as the types and number of income generating activities taken up by the household. Murdoch (1995) found that low-income individuals and households who are living with risk (e.g. living in disaster-prone areas) and having no insurance scheme to cover them are innovative in handling risks.

- Migration

Another type of livelihood strategy is migration, a form of household seeking ways to generate income by moving elsewhere to make better investments by providing cash for household expenditures (Hussein & Nelson, 1999). Countries like Bangladesh, Ethiopia and Mali were found to conduct migration as one of the household's livelihood diversification strategies (McDowell & de Haan, 1997).

The livelihood outcomes are the results of the livelihood strategies. The livelihood outcome also helps to explain the output of the current livelihood, identifying people's motivation behind their

behaviours, their priorities and their response to new prospects. Other than increased income, outcomes also can be seen from increased well-being, reduced risk to vulnerabilities, improved food security, and more sustainable use of the natural resources (donor's perspective).

3.7. Analysis

As there are no specific method or tools set for livelihood analysis, the primary key is to be flexible and accommodating by using a range of methods as the case requires (Ashely & Carney, 1999). This study assessed the household's livelihood changes by examining the livelihood assets based on the SLF by DFID, the strategies taken and the aid assistance received to regain or restore their livelihood after the 2004 IOT.

In this study, the unit of scale taken is at the household level. Households consist of one or more person (e.g. single person household or groups of people) who resides in the same house and shares the same meal (Ahmed, 2015). This study defines the household size as the total number of people living under the same roof and taking a meal from the same kitchen under the rule of the head of the family. Family members who are abroad (staying outside the city or abroad) but is still not separated from the household were included in the computation of the household size.

The livelihood assets are considered at the unit scale of individual, household and community. Scoones had pointed out the apparent differences in the scale level regarding the livelihood effects. At the individual level, it is effective to take up a combined set of livelihood strategies, but there are positive and negative impacts on each of the household members or the community. For instance, an agricultural intensification taken up by a member of the household may successfully provide an opportunity for another person's livelihood. However, the other agricultural intensification activity may interrupt the other's strategies such as through changing the labour, land, credit, or market. It is important that the identification process is to be comprehended in a dynamic and sequential context (Scoones, 1998). For example, a well-doing agricultural intensification strategy may due to reasons such as having access to natural resources (e.g. aquaculture pond) with financial capital (e.g. credit).

For the quantitative data, a questionnaire survey was conducted with the respondents in the initial phase of the study. A descriptive statistic such as percentages, tables, means, and charts was used to summarise the results of the analysis. As for qualitative data, this was done through the key

informant interviews, informal group discussions and also through participant observation. These generate item content for a measure of subjective matters.

A descriptive analysis approach is taken to describe the complex activities and interactions of the households which highlight the various strategies households taken up to make a living. The process of identifying the available livelihood resources as well as comprehending how livelihood resources are combined and sequenced is an essential step in the livelihood analysis process. The interviews which were recorded in written notes and audio recordings were transcribed, coded, assigned to different themes, and summarised. Figure 3.5 displays the tools and data collected for the study.

3.8. Ethical Consideration

Consent from the village head was obtained to be able to conduct the surveys. Letter of permission also was submitted to the local government offices for the statistical data and maps received. All respondents involved in this study were informed of the purpose of the study, and their participation was voluntary, and their responses were confidential. Consent to participate in the study was assumed when the respondents returned the completed questionnaire.

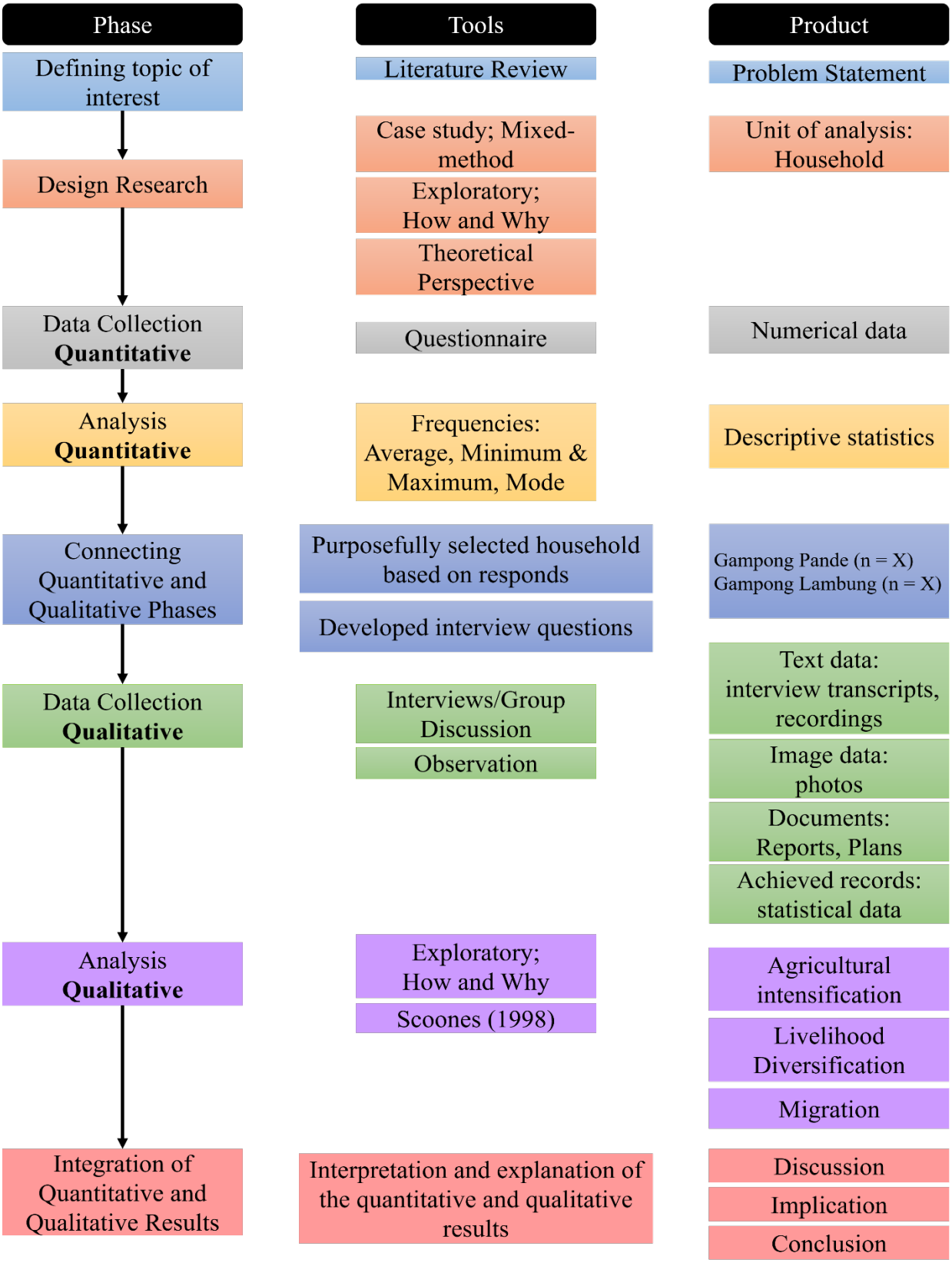

Figure 3.5 Tools and information collected

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CHAPTER 4: LIVELIHOOD CHANGES IN GAMPONG PANDE

4.1. Background of Gampong Pande

Gampong Pande is located in Kuta Raja District, one of the nine districts in Banda Aceh City (see Figure 4.1). Gampong Pande was established in the 12th century as the central government of the Kingdom of Aceh Darussalam. There are many ancient tombs (see Figure 4.2) which can be found in the village. During that period, the majority of the people were craftsmen specialising in iron, stone and precious metals. After more than 80 decades, physical and geographical changes such as wetland formation took place in the village. Most of the people gradually rely on natural resources for sustenance and cash income. The primary livelihood of Gampong Pande was aquaculture pond farmer, fishermen, and *Nipah* cigarette producer until 2004, before the tsunami occurrence. There are 860 people (450 male, 410 female) in about 251 households living in Gampong Pande as of 2016. This village is categorised as non-poor where the average monthly income of the population is higher than the poverty line, Indonesia Rupiah (IDR) 427, 970 (USD 40) (Kutaraja District Office, 2015).

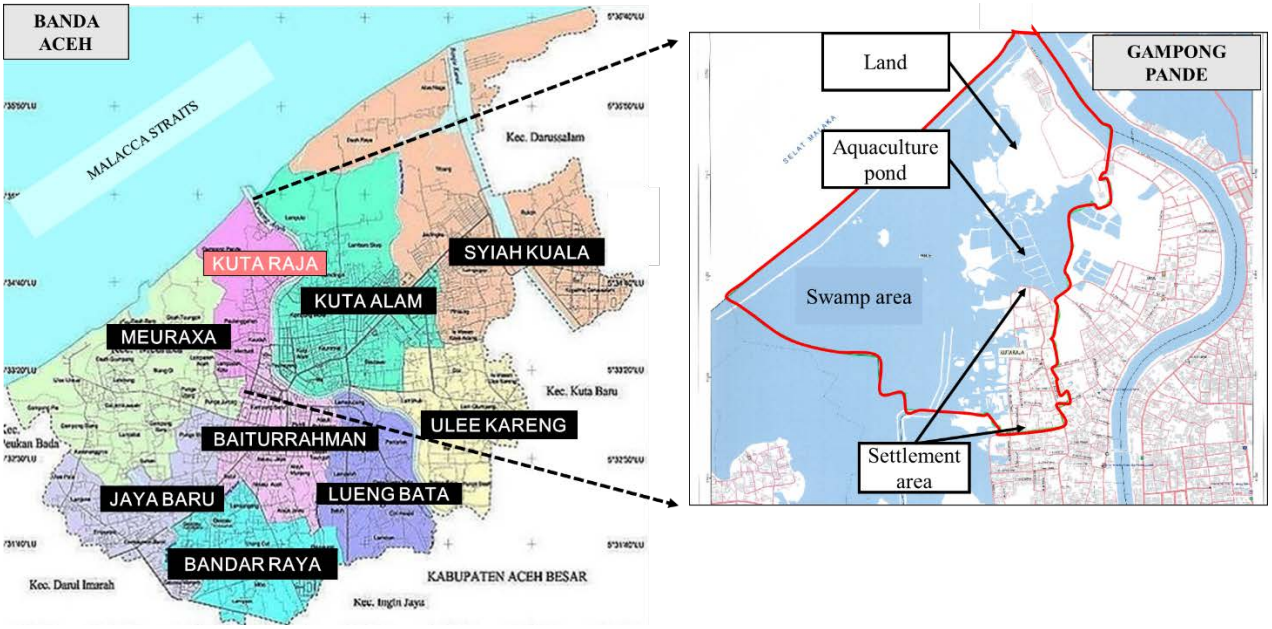


Figure 4.1. Gampong Pande's location and the current land use as of 2016

(Source: Kutaraja District Office)

Gampong Pande's soil structure is made of sand and peat soil. The village's topography is flat with 257 ha in size; 57 ha for settlements, facilities and infrastructures, and 200 ha are wetlands comprising of aquaculture pond and mangroves. The location of the village is less than 2 kilometres to the ocean (see Figure 4.3).

Figure 4.2 Ancient tombs in Gampong Pande

Figure 4.3 Distance to the ocean

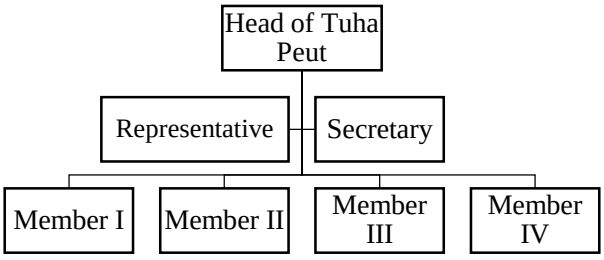


Figure 4.4 Tuha Peut Structure

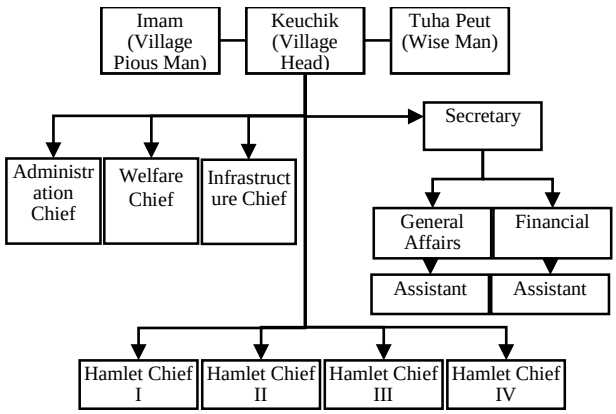


Figure 4.5 Village Structure

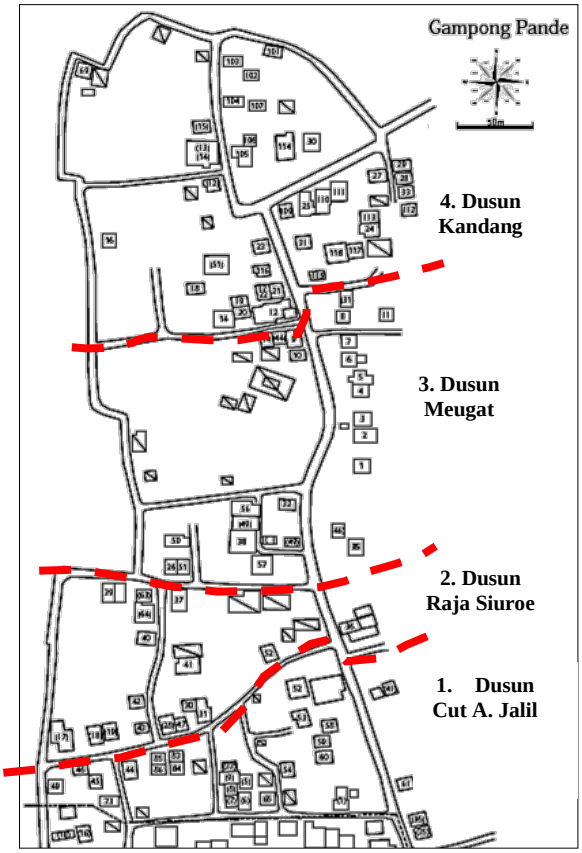


Figure 4.6 Hamlets in settlement area

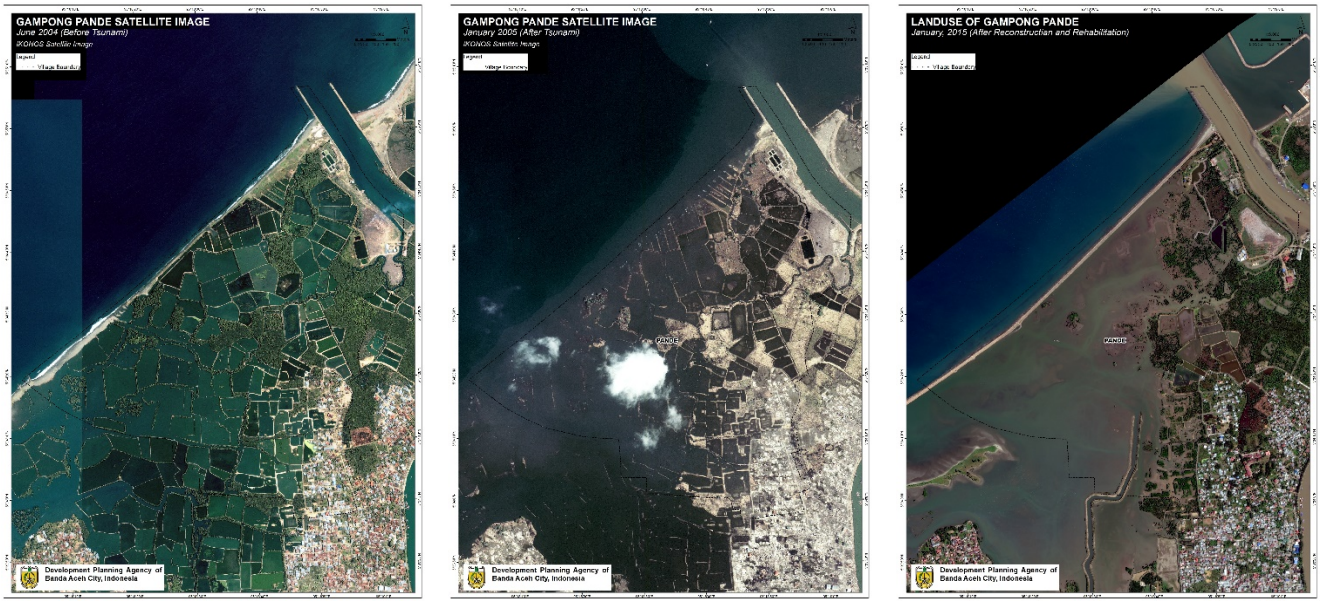
In Gampong Pande, a society called Tuha Peut is made up of 'wisest man' that governs the village (see Figure 4.4). This system applies to all other villages in the Aceh Province. Tuha Peut and the 'Pious Man' advises the Geuchik (Village Head) in the village administration system. Tuha Peut is an official village administrator that represents the village, that meets up to solve the problems that arise within the village or even at family or individual level. The society empowers and lets the villagers to be involved and make decisions regarding the village. For instance, immediately after the tsunami, the remaining Tuha Peut of Gampong Pande gathered and re-established themselves to reconstruct their village. They were entirely involved in rebuilding the village, especially during the spatial village planning and village mapping. There are 7 members of Tuha Peut in Gampong Pande. There are eight responsibilities that Tuha Peut needs to carry out:

1. To discuss the Reusam Gampong (local rules and regulations) with the Geuchik
2. To implement the Islamic law and custom in the village society
3. To preserve the custom, norms and local culture that has advantages to the society
4. To carry out legislative functions such as discussing, formulating as well as approving the appointment of Geuchik based on the Reusam Gampong
5. To come up with the village's financial budget (APBG)
6. To oversee the Reusam Gampong on the APBG implementation, execution of decisions and other policies by the Geuchik
7. To accommodate and channel the village's aspiration to the government on behalf of the villagers
8. To implement the other tasks and functions as assigned to the rule of order Tuha Peut

For the village management structure (see Figure 4.5) in Gampong Pande, there are 12 people working with the Village Head: Kepala Seksi Pemerintahan (Village Governance Chief), Kepala Seksi Kesejahteraan (Village Safety Chief), Kepala Seksi Pelayanan (Village Service Chief), Kepala Urusan Umum (Chief of General Affairs) and Staf Pembantu Umum (General Staff Assistant), Kepala Urusan Keuangan (Chief of Financial Affairs) and Staf Pembantu Umum (Financial Staff Assistant) and four Village Chief for the four Hamlets (Dusun Cut A. Jalil, Dusun Raja Siuroe, Dusun Meugat and Dusun Kandang) (see Figure 4.6).

4.2. Impacts of Disaster on Gampong Pande

Gampong Pande was heavily devastated from the 2004 IOT disaster as the village was entirely swept away. Figure 4.7 shows the village condition of pre-disaster, immediately after disaster and 11 years after the disaster. The disaster swept away 79% of the village population (see Table 4.1) and destroyed all houses, infrastructures as well as reduced the total size of the aquaculture ponds (see Table 4.2) and mangroves (see Figure 4.8).



June 2004 January 2005 January 2015

Figure 4.7 Gampong Pande's change using satellite imagery before and after the tsunami (Source: Kecamatan Kuta Raja, 2016)

Table 4.1 The total population and households of Gampong Pande

Details	Before tsunami (~2004)	Immediately after tsunami (2004~)	Current (2016)
Total population	1199	254	860
Total household	204	153	251
Family size	5.8	1.6	3.4

Source: Development Plan Gampong Pande (2005), Kuta Raja District (2005) and (2017)

Table 4.2 Wetlands Size in Gampong Pande

	Before 2004	Immediately after disaster	2007	2015
Aquaculture pond land	167 ha	14 ha	23 ha	18 ha
Mangrove	23 ha	15 ha	N/A	48 ha

Sources: Griffin et al. (2013); Aceh Government and GTZ- SLGSR (2007), GPMDP (2016), Saputra et al. (2016)

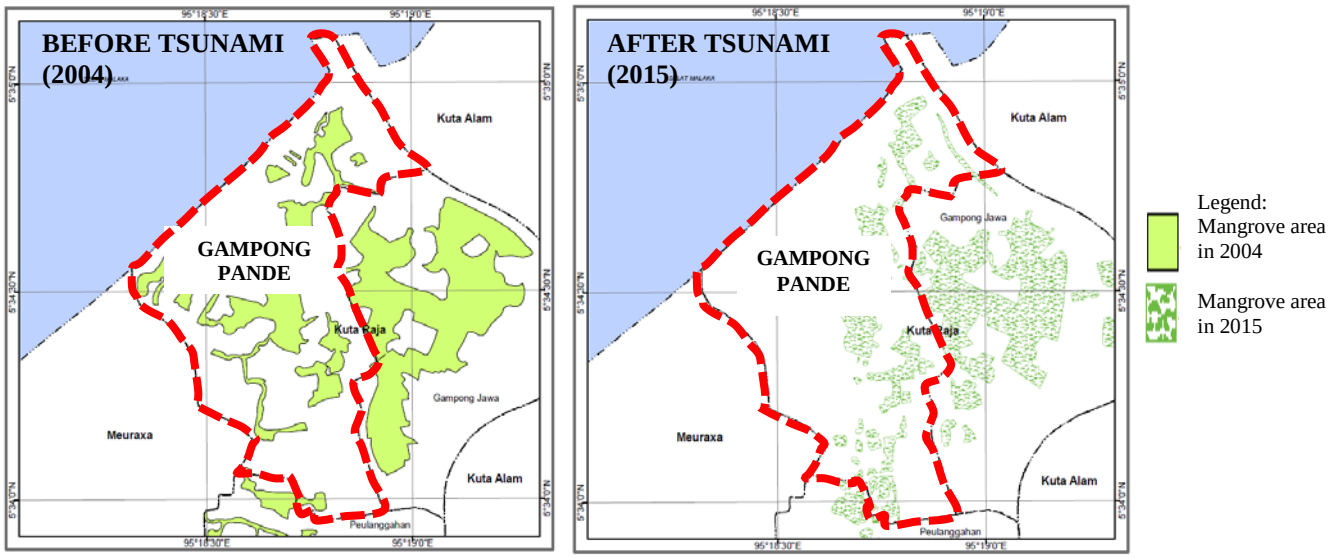


Figure 4.8 Mangrove area in Gampong Pande before and after the tsunami

(Source: Saputra et al., 2016)

4.3. Condition of Livelihood Assets Before Tsunami Disaster, Reconstruction Period, and Current Condition

From the NAD-Nias (2011) report, the relief/emergency period in Banda Aceh city lasted from January to March 2005. Immediately after the disaster occurred, the initial relief period was set at six months after the disaster. However, it was changed after the establishment of Presidential Instruction No. 1 of 2005; Emergency Response Stage, which then shortened the relief period to 3 months. Following that, the rehabilitation phase took place from April 2005 until December 2006, and the reconstruction started concurrently from July 2005 until December 2009. The followings are the five livelihood assets (human, financial, physical, natural and social) that went through significant changes after the tsunami in Gampong Pande.

4.3.1. Human Capital

Before disaster

The pre-tsunami population of Pande was 1,199 people (689 male, 510 female) (Kecamatan Kuta Raja Dalam Angka, 2005). The average family members were 5.8 people in a household. Due to data insufficiency as data were lost during the tsunami, socio-demographic data (e.g. education, health and income) of the households before the disaster were unobtainable.

From the interview results, the livelihood of the households depended primarily on natural resources such as the aquaculture pond, mangrove and sea. The scale of aquaculture during this period was big as most of the ponds were managed by local owners themselves [R12 and R13]. Pond owners bought the electrical machines with own funds and also employed other households as well. The minority of non-farming employment in Gampong Pande consisted of construction labourers, small businesses, and government sector employee. Apart from working at the aquaculture ponds, households also make *Nipah* cigarette (see Figure 4.9) and fishermen.

Figure 4.9 Traditional *Nipah* cigarette

During Reconstruction Period

After the tsunami disaster, there were only 254 survivors (175 male, 81 female) in Gampong Pande. Many women became the household head after the tsunami as the 2004 IOT disaster perished many male lives. The average number of households decreased tremendously to only 1.6 people per household.

Livelihood activities were disrupted as supply chains were interrupted and networks were broken due to the high number of deaths in the fisheries sector. During this period, people living under the poverty line increased to 33% immediately after the disaster due to loss of jobs. The international organisations and NGOs provided daily necessities as well as livelihood support in the form of business start-up, snack-making, handicrafts training and skills to help the affected households to regain livelihood.

From the survey results and in-depth interviews [R9, R10 and R11], households participated in the temporary CFW program sponsored by a relief organisation. CFW was a vital source of income

for the disaster-affected households. The amount of wage paid depended on the work type, skills required to accomplish the work, and working hours. Tasks included removing and burying corpses, clearing debris, cleaning houses and public facilities (e.g. roads, drains), and construction of temporary shelters. People taken up the CFW because they wanted to improve their economic condition as well as they realised that they needed to rebuild the village as well.

Households were back to work within a year after the disaster happened. However, household income did not necessarily return to their pre-disaster level. Like any other affected coastal villages, households in Gampong Pande could not return to their previous occupation for quite a long time after the tsunami. On the other hand, there were also people who did not work/continue working. They do not have enough capital to restart their businesses while some mentioned that they do not have the fishing facilities/equipment to go back to the sea. Hence, most of them resorted to working at the reconstruction sites where they do not need any capital to work as a construction worker. Others who did not work mentioned that the aid (e.g. rice and drinking water) was continuously provided throughout the first two years after the tsunami disaster [R15]. There were also households who went fishing in the sea by borrowing or sharing physical fishing gears or looking for smaller fish, crab and prawn in the remaining ponds, canals and mangrove area. Those fishermen reported that their hours in the sea increased immediately after the disaster.

Current Condition

As of August 2016, the total population of Gampong Pande is 860 people (251 households); 450 male and 410 female. From the 77 households surveyed, 31% have a family size of up to 3 members, 48% have 4 to 5 family members, and 21% have more than 6 family members. The average family size in Pande is 4, with 2 adults and 2 children per household. 79% of the households surveyed stated that they had experienced at least one or more deaths in the family due to the 2004 IOT disaster. The reduced household size decreased the number of available labour which consequently reduced the number of livelihood activities the household engaged in. The average age of the household head was 41 years old. 96.1% of the respondents are in the productive age group which ranges from 15 to 65 years, according to the Indonesian employment age range.

Regarding education level, the study found that 54% of the total population either did not attend school at all or did not complete elementary school or high school while 37% had finished at least high school. The education requirements to become an aquaculture farmer, fisherman or traditional

Nipah cigarette producer is either low or non-existent as the jobs are more towards the physical labours.

The labour quality in Gampong Pande is good as most of the villagers are healthy and able to work. From the secondary data, only 0.3% of the residents suffered from contagious illness (e.g. tuberculosis). Households have access to healthcare within their village which conducts health-related activities for the villagers. The availability of the health centre lowers the risk of prolonged illness and to ensure the villagers can conduct their livelihood activities.

From the 77 households surveyed, there were 14 job types conducted before the tsunami, about 8 types of jobs during the reconstruction period, and 20 job types in the current year. The most common jobs now are businesses (26%), civil service (12%), labourer (12%), fishmonger (10%) and driver (9%). The survey also found out that there was a decrease in the number of brackish shrimp aquaculture farmers (see Figure 4.10) from 3% to 1% and fisherman from 6% to 3%. The disaster took many lives of fisherman, aquaculture farmer and traditional *Nipah* cigarette maker, resulting in only a small number of them.

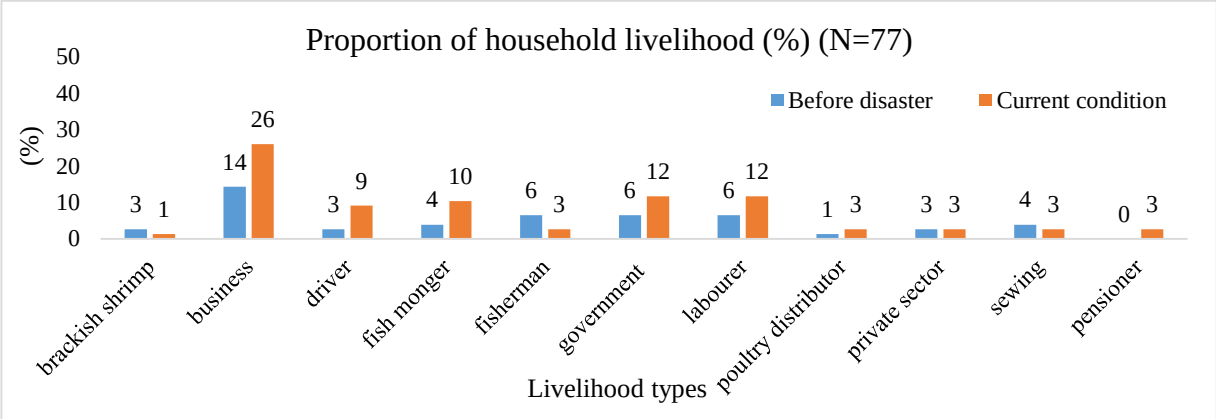


Figure 4.10 Changes in household livelihood composition

4.3.2. Financial Capital

Before disaster

Households' incomes were mainly from the natural resources (e.g. aquaculture ponds, traditional *Nipah* cigarette and fishing) in the village. The group discussions revealed that villagers drew on informal credit from better-off established pond proprietors in Gampong Pande. The financial resources such as credit at the local level and bank facilities were infeasible before the tsunami as

the villagers did not trust and utilise such services as they have the perception of involving in the *Riba* (usury) which is sinful in Islam.

During Reconstruction Period

Due to the loss of aquaculture pond land and mangroves, households lost their income sources as they were unable to go back and work on their previous livelihood activities. The study also found out that the informal financial resources in Gampong Pande was weakened due to the deaths of the proprietors and loss of existing capital. Households had barely enough to cover their daily expenditure to enable them to save. Hence, microcredit was offered by the NGOs to reduce poverty and vulnerabilities to disasters by providing a quick relief while simultaneously supporting livelihood recovery.

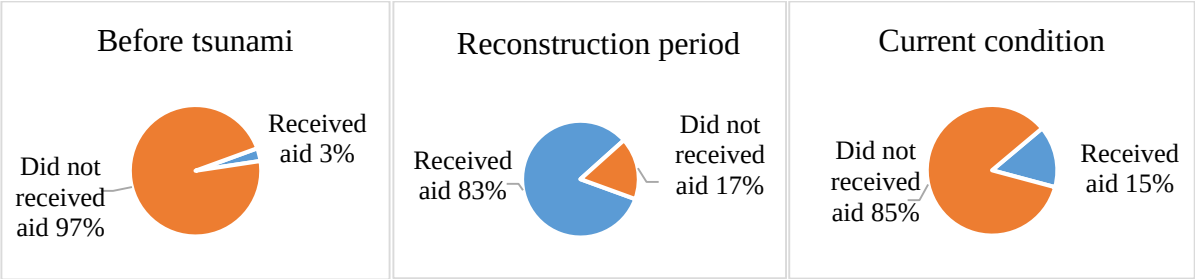


Figure 4.11 Social security beneficiaries (N=77)

From the discussion with the households, help came during the first week after the disaster. Donors from many countries stepped in, and enormous aid came in covering from cash to basic daily necessity. During this period, 83% of the households reported that they received aid from both the government and the NGO (see Figure 4.11). The CFW provided the households with a regular income for about 2 to 3 months after the disaster by offering a minimum daily wage of IDR 50,000 (USD 5) at that time. In other parts of Aceh, the CFW usually lasted from six months to a year (Doocy et al., 2006). The average monthly household income in Banda Aceh was USD 297 with 93% coming from CFW programs (Doocy et al., 2006). Due to the strong resistance from the village leader [R1] against CFW, the program did not last long. He considered that CFW was diminishing the social spirit of Gotong-Royong in the villagers. CFW prompts people to anticipate monetary reward at every activity conducted and thus, residents were only motivated to participate in community-based activities should there be some monies at the end of the program. Additionally, there is also another CFW from an Australian NGO where they provided IDR 1,500,000 (USD

120) for business start-up for each household [R1]. However, there were neither assessments nor monitoring or even evaluation that took place. This is due to the reason that money needs to be spent before the period ends by the organisation. The households eventually did not use the funds to start up any business as the money was used for some other more urgent expenses deemed necessary at that time [R1].

Some households stated that they do not even need to work because the donors were providing everything. [R9] recalled that the food aid lasted from 2005 till to 2008 and people were having an easy life as the food supply was abundant and constantly available. The food aid supported household's livelihood and their assets such as providing education to the children and rebuilding roads. The donors/NGOs provided livelihood aid in terms of livestock program, village midwife-assistant training, sewing and other skills (e.g. handicraft, embroidery) for the affected households.

The microcredit initiatives were also introduced in Pande from Betaco Family Group which granted USD 6,000 to support the women at Pande to create new job opportunity from July to November 2007. Other relief agencies such as Indonesia Red Cross and American Red Cross also offered capacity building and training as well as skill development through activities such as beads making, sewing, snacks making and packaging. Provisions of assets to support business such as machines, tools, equipment and raw materials were supplied as a start-up. Most of the program was not sustainable. This may due to the organisations did not have substantial capacity in carrying out livelihood activities (Cohen, Abdul Aziz & Shallon, 2009). Furthermore, the failure also was attributed to the lack of interest in the offered training, the business type, and also the trend effect where people participated just because everyone else was doing it. With this attitude, the program was short-lived as people began to look for work that could bring more steady income to them.

Current Condition

From the survey results, the monthly household income as of September 2016 was in the range of IDR 1,000,001 to IDR 3,000,000 (USD 115 – USD 345). 8% of the households were earning less than IDR 500,000 (USD 37), 17% were earning between IDR 500,001 and IDR 1,000,000 (USD 37 to USD 74), 42% were earning in the range of IDR 1,000,001 to IDR 3,000,000 (USD 74 to USD 223), and 6% were earning more than IDR 3,000,001 (USD 223) (see Figure 4.12). The average monthly income for Gampong Pande households as of September 2016 was at IDR 1,515,065 (USD111). 67% of the households in the village earned slightly lower than the 2016

Aceh Province's minimum wage, IDR 2,118,500 (USD 157) (Department of Labour and Population Mobility, 2016).

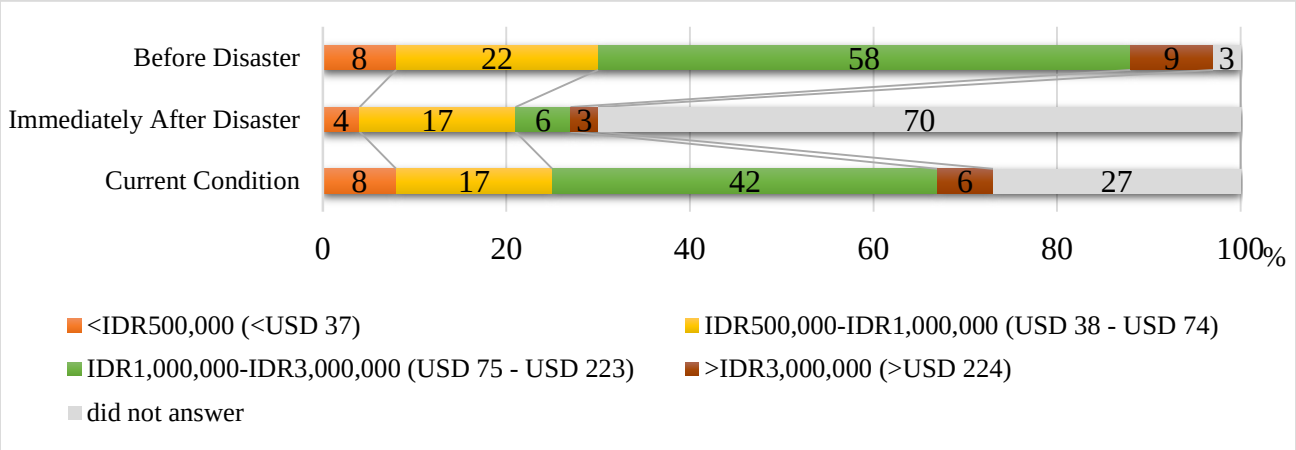


Figure 4.12 Changes of household total monthly income (N=77)

There are 101 poor households, of which 29 extremely poor households (*fakir*) earning IDR 450,000 (USD 33) monthly, and 73 are poor households (*miskin*) earning between IDR 450,000 to IDR 900,000 (USD 67) monthly. Households of poor category and below receives a support payment of IDR 450,000 (USD 34) for one child's school expenses once in every two years. Almost half of the surveyed households stated that there was no change in their financial situation after the disaster. Households reported that their expenditure also went up with additional family members and with increased prices of commodities. Expenditures for children's education, food, and bills were regarded as the highest priority.

From the interviews, there were financial services in the village as of 2015 such as the Independent Savings and Loan Group (PNPM), Fisherman Credit Cooperation, and a Women Household Head's Productive Economy Group (PEKKA) as well as *arisan* (informal rotating savings and credit group without interest) group in Gampong Pande which converge during festivities such as Eid Adha, where people pool their money to buy a goat or a cow for the event. However, follow-up interviews in March 2017 revealed that PNPM and PEKKA were not doing well. PNPM was halted as the repayments were late and payments were not always made in full. PEKKA faced challenges in the development of product marketing. [R12] also mentioned that there was no more microcredit support for the fishermen and that the Fisherman Credit Group has been closed down due to the small number of fishermen in Gampong Pande. Additionally, during the observation,

there were also credit scheme pamphlets all over the village's pole and walls (see Figure 4.13) inviting people to take a loan for a motorcycle.

Figure 4.13 Loan advertisement on the entrance wall to the ancient tombs

4.3.3. Physical Capital

Before disaster

The survey found out that 81% of the households owned a house before the disaster. Their previous house had a cement floor, and the house size was about 150 to 199 m². Most houses used a pump or well to access water and toilets were equipped with a septic tank. Majority of the households had electricity connection, and only a few households depended on oil lamp during this period. Households used gas (60%), firewood (12%) and oil stove (22%) for cooking before the disaster. Despite having piped water, households were still using well water for their daily lives, especially for cleaning and washing purposes. The drainage function was poor before the tsunami which causes flooding during heavy rain. Also, households depended on the minibus (*labi-labi*) as the main public transportation to go anywhere as many households did not have their own means of transportation. There was an elementary school in the vicinity of Gampong Pande. Children could go to school on their own. If accompanied by the parents, the time spent to send their children to school was not much.

During Reconstruction Period

The tsunami disaster destroyed not just facilities and infrastructures, but also the villagers' houses. 76% of the households reported total house loss due to the tsunami disaster. Households regarded

the house as the most valuable asset that they had lost. Households stated that they stayed at their relative's house for a few weeks and spent the next 2 years at the temporary barracks. From the interviews, it was found that the village head at that time was sending proposals to donors for housing reconstruction support.

Asian Development Bank (ADB) financed the reconstruction of 153 houses in Gampong Pande through the Earthquake and Tsunami Emergency Support Project (ETESP). The ADB-built house (see Figure 4.14) followed BRR's anti-seismic construction standards with a size of 36 m² (see Figure 4.15) equipped with 1 living room, 1 bedroom, and 1 bathroom. The house had a concrete floor, zinc roof, and brick walls (see Figure 4.16) and was presented to the households complete with electricity and water connection but without a kitchen. A house ownership certificate was handed over to the house owners (see Figure 4.17).

The elementary school located in Gampong Pande's vicinity were among the facilities destroyed by the disaster. Children returned to school within two months after the disaster where classes took place in tents. Some children attended schools in a different area. Additionally, the number of minibuses severely dropped after the tsunami disaster as the owners suffered losses due to the fuel price hike.

Figure 4.14 ADB built house

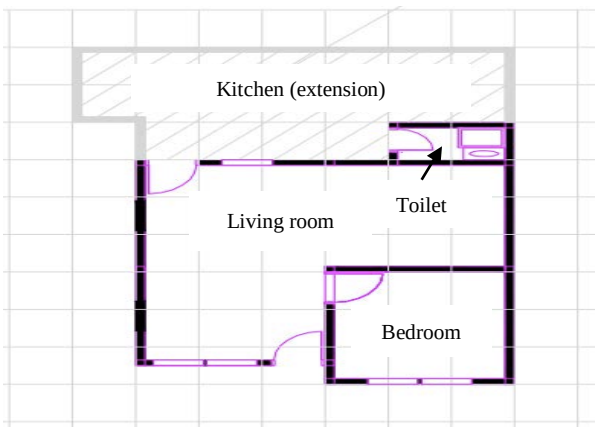


Figure 4.15 ADB house plan

Figure 4.16 Bricks are used for house wall
(Source: Respondent of Gampong Pande)

Figure 4.17 House ownership certificate
(Source: Resident of Gampong Pande)

Current Condition

From the survey results, as many as 44% of the disaster-affected households in Gampong Pande received ADB-built houses. Another 45% reported to received aid in the form of cash or house construction materials. 22% of households stated that they became house-owners after the disaster. One of the reasons may be due to their appointment as the caretaker of the house whose rightful owner was either still under-aged or was still studying.

A total of 63% households spent more than IDR 10,000,001 (USD 754) for the renovations, which indicates better livelihood performance as well as incorporating livelihood activities in their home. The survey found out that 88% of the households extended their house by building a kitchen (see Figure 4.18), adding another bedroom, toilet, bathroom, garage (see Figure 4.19), and additional spaces for their home-based business (see Figure 4.20). Sewing, weaving, making snacks, drying fish, or opening a sundry shop right in front of their house are some of the home-based businesses. A specific area or room within the house compound had been allocated for conducting livelihood activities such as making *kue* (traditional snacks/cakes), rearing livestock, or storing some business-related equipment.

The survey found that there were a few ADB houses that were demolished by the owners to rebuild a new house. The houses received had cracked walls as there were no monitoring done from either side during the reconstruction period. The majority of the owners reported that they were satisfied with the ready-built house. During the last field trip in March 2017, some of the ADB houses and some empty lands (see Figure 4.21), were put up for sale by the owner. According to the head

village, houses for sale belong to already grown-up heir who does not plan to stay in Gampong Pande as well as the non-resident (blood-related heir) who received the aid house.

Figure 4.18 Kitchen (extension)

Figure 4.19 Storage area (extension)

Figure 4.20 Shop (extension)

Figure 4.21 Land for sale

Currently, 100% of the household is using electricity for lighting (see Figure 4.22). Households have changed into using gas (90%) as the gas cylinder tank was subsidised by the government leaving behind firewood (5%) and oil stove (5%) (see Figure 4.23). The usage of well decreased from 13% to 4% where more household has better pipe connection in the village (see Figure 4.24). The study found that a proper drainage system was designed after the disaster. Disaster evacuation route and signs were also made as per agreed in the land consolidation works. Currently, households received information mostly from television (95%) and handphone (73%) (see Figure 4.25).

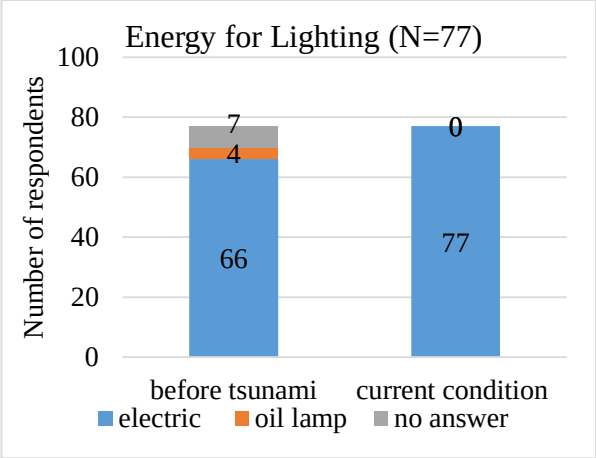


Figure 4.22 Energy for lighting

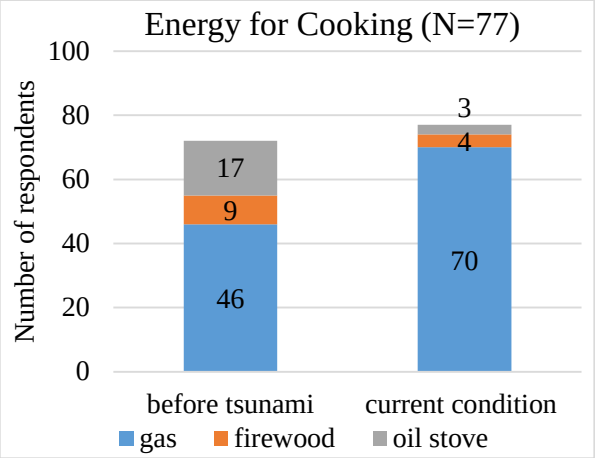


Figure 4.23 Energy for cooking

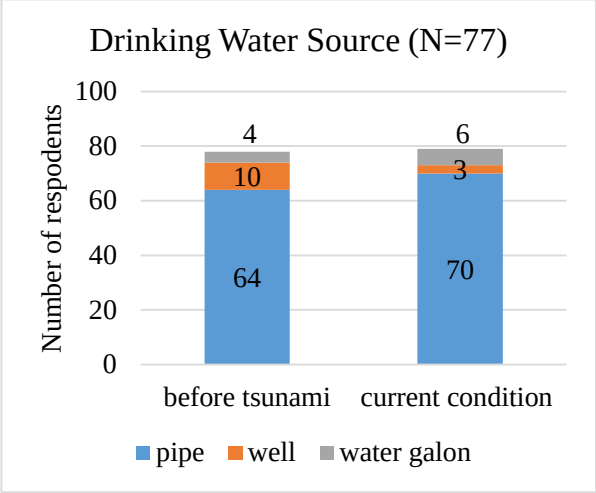


Figure 4.24 Drinking water source

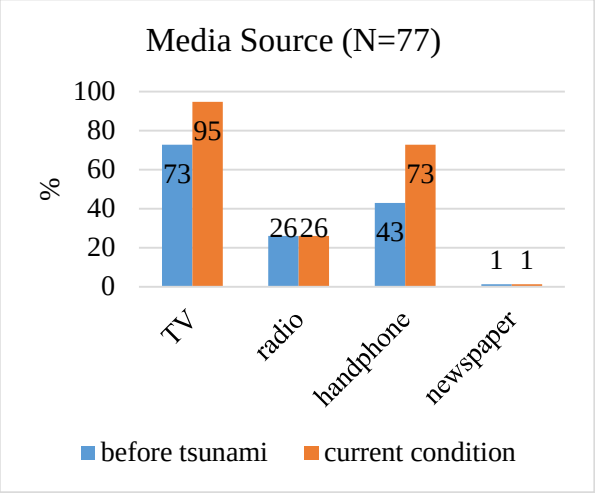


Figure 4.25 Media source

Due to the reduced number of labi-labi transportation, the access to the city was difficult. This forced the residents to have their own private transportation, particularly motorcycle. Out of the 77 households surveyed, there was an increase in the ownership of transport vehicles (see Figure 4.26), especially motorcycle (71% to 75%) and *becak* (11% to 14%). Motorcycles and *becak* (see Figure 4.27) were found to be the common vehicles possessed by the majority of the residents as access to public transportation were not available in the village. *Becak* is a motorised pulled rickshaw that transport people. Most of the households started with having a motorcycle in the initial stage as having own transportation is having convenience at their disposal. The cart was bought later on to gain extra income by offering transportation services. Additionally, with the *becak* services, going to work, school and market improved tremendously, and this increases the

opportunities for livelihood outside of the village. The road to the village is also good with wide tar lane that can fit two cars.

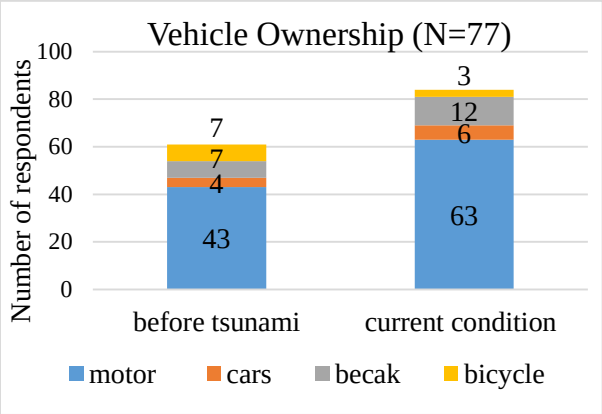


Figure 4.26 Vehicle ownership

Figure 4.27. *Becak* (motorised rickshaw)

The study found that 64% of the households were satisfied with the length of their commuting time and 74% were satisfied with the distance from their house to school (see Figure 4.28). After the disaster, the children of Gampong Pande attended school located in the next village. 56% of the households were satisfied with the available infrastructures (e.g. water, electricity, roads, and garbage collection). Based on the observation, the public facilities and infrastructure constructed by ADB in the village such as tar roads, drainage system, and slaughterhouse were in good condition. The survey also captures other infrastructure which is in good condition (see Figure 4.29 - Figure 4.34).

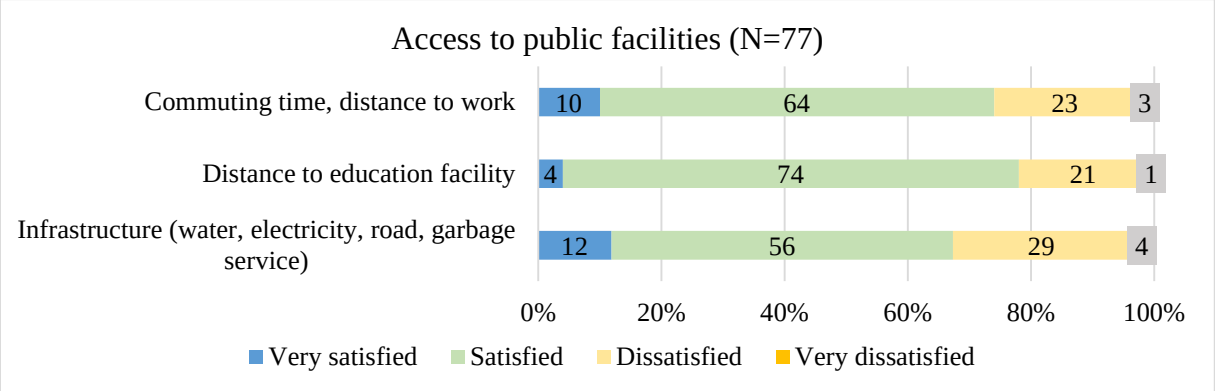


Figure 4.28 Access to public facilities

Figure 4.29 Meuligoe (multi-purpose hall)

Figure 4.30 PUSKESMAS (Health centre)

Figure 4.31 Meunasah (Religious study place)

Figure 4.32 Mosque

Figure 4.33 Family Welfare Unit

Figure 4.34 Shops area

4.3.4. Natural Capital

Before disaster

Among the 9 villages in Kuta Raja District, Gampong Pande holds the highest aquaculture pond area. The aquaculture pond total size for Gampong Pande was 167 ha. Aquaculture pond and mangrove can be seen surrounding the village (see Figure 4.35). This explains the reason for aquaculture being the primary livelihood in Gampong Pande.

On the other hand, the pre-tsunami mangrove size of Pande was recorded at 23 ha (Saputra et al., 2016). From the interviews, the mangrove was found to have considerable influence on the households life. The mangroves served as free food resources (e.g. shellfish, shrimp, and crab) which were caught for personal-consumption or to sell to the immediate neighbours, the fruit was collected for beverage purposes (personal consumption), provided wood for pond enclosures, and bark for fishing net colouring and protected the village from strong wind. Households also obtained free raw materials from the *Nipah* palm leaves for the traditional *Nipah* cigarette called '*Bakong Aceh'*. According to interviews, Gampong Pande had a small factory to make the traditional *Nipah* cigarette in the 1960s where young *Nipah* shoots from the Nypa Pruticans mangrove were brought there to be processed, soaked, dried and rolled.

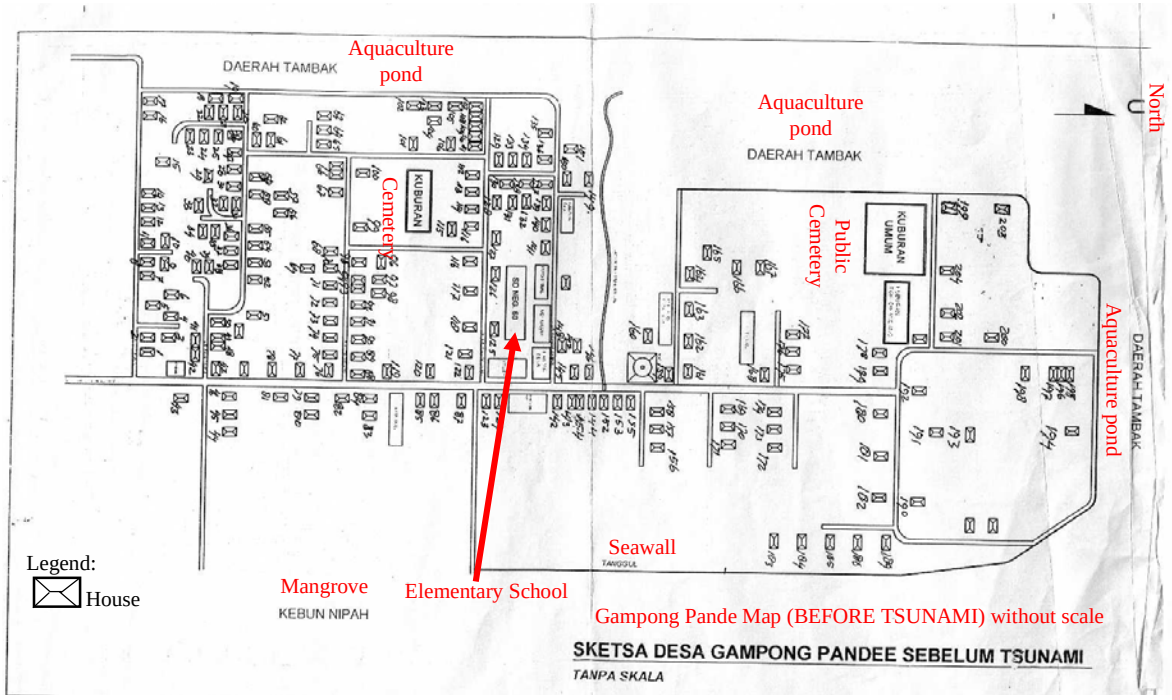


Figure 4.35 Map of Gampong Pande before the tsunami disaster

(Source: Gampong Pande Village Office)

During Reconstruction Period

The disaster had altered the land features, inundated some of Gampong Pande's land up to 0.5 m and eroded the beach barrier systems at the village (Griffin et al., 2013) which has led to land loss and is yet to recover. The inundation of the aquaculture ponds (see Figure 4.36) affected the population who depended heavily on the natural resources. The size of the aquaculture ponds in

the village was reduced by 91% from 167 ha to only 14 ha after the disaster (Griffin et al., 2013). FAO (2005) reported about 241 to 725 people who depended on the aquaculture ponds suffered severely.

Figure 4.36 Inundated ponds in 2007
(Source: Gampong Pande's Resident)

Figure 4.37 Non-rehabilitated pond in 2007
(Source: Gampong Pande's Resident)

Figure 4.38 Poorly built seawall as of 2016

The Indonesian government assisted Gampong Pande in cleaning and restoring some of the destroyed farmers' ponds. However, since there were too many destroyed ponds, not all the ponds were restored (see Figure 4.37). The number of restored ponds increased to about 23 ha by 2007 following pond restoration by the local government, financed by ADB. From the interviews and discussions, the aquaculture farmer households mentioned that the pond rehabilitation should have started with the repair works of the seawalls first. The seawall serves as a barrier for the ponds to ensure minimal mixing of seawater and freshwater for the aquaculture's living environment. Reconstruction of the seawall took place, but the quality was poor and was stopped halfway. The study also found out that in 2009, two of the BRR contractors were involved in a corruption case

in the rehabilitation of the seawalls of Gampong Pande (SerambiNews, 2009). The poorly incomplete seawall construction at Gampong Pande resulted in the permanent loss of some aquaculture ponds. According to [R9, R12 and R13], the poorly built seawall (see Figure 4.38) also caused massive leaking of seawater into the pond, creating an acidic environment which harmed the shrimp, leading to loss of breeding efficiency. The pond repair cost was too high and unbearable for the farmers [R10, R12 and R13]. According to the interviews made to the former owners of aquaculture ponds who lost their pond completely, they revealed that it took them about one to two years to look for another type of income-generating activity to survive.

On the other hand, the mangrove was also severely affected as the mangrove area was reduced to 15 ha after the tsunami disaster in Pande (Saputra et al., 2016). ADB also conducted mangrove replantation efforts among other livelihood aids.

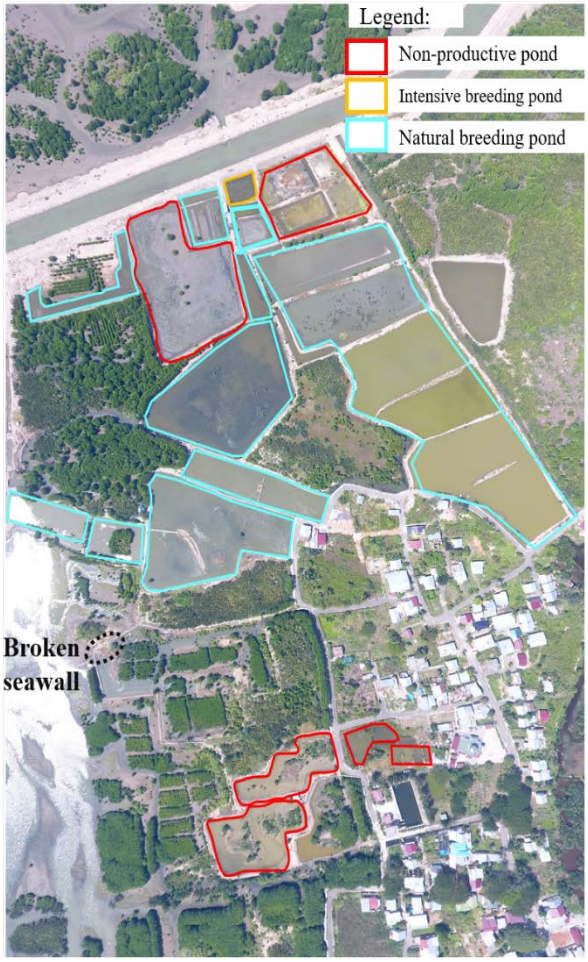


Figure 4.39 Aquaculture Ponds in Gampong Pande as of 2017

Figure 4.40 Non-rehabilitated pond as of 2017

Figure 4.41 Ancient tombs found in the pond as of 2017

Current Condition

Currently, Gampong Pande has only 18 ha of the aquaculture ponds are productive (see Figure 4.39). Of the 18 ha restored aquaculture ponds in Gampong Pande, only 15 ha were functional. From the in-depth interview, [R9] mentioned that the BRR had restored about 15 ha of ponds after the tsunami. However, 5 ha was damaged again as excessive saltwater was found in the ponds. Out of the many damaged ponds, only ponds with potential productivity were rehabilitated due to the high cost to restore a pond [R12 and R13]. The aquaculture pond rehabilitation works did not cover all the ponds in Gampong Pande (see Figure 4.40). This is because some of the aquaculture sites in the village are off-limits due to the buried cultural artefacts and tombs beneath the ponds (see Figure 4.41). According to [R19 and R20], archaeologists who worked in Gampong Pande, the tomb areas were once on flat land. Due to geographical changes such as sediment piles and erosion as well as the tsunami, ponds have been formed on top of what used to be cemeteries. The boom in the aquaculture business in the 1960s to 1970s also contributed to the structural alteration of the area. [R12, R13, R19 and R20] also mentioned that the location of the ocean used to be miles away from the current location.

Over the years, the mangrove replantation effort in the village has been carried out by both the local and international NGOs as well as schools and individuals (Saputra et al., 2016). In 2012, the Forestry and Plantation Office of Aceh had allocated about 450,000 mangrove seedlings to be planted throughout the coastal villages located in Banda Aceh, including areas in Gampong Pande. However, only 95, 857 mangrove seedlings were planted throughout Banda Aceh, of which 29, 800 mangrove seedlings were in Pande (Supreme Court of the Republic of Indonesia, 2013).

The mangrove replantation works resulted in 48 ha of mangrove area in Gampong Pande as of 2013. The study observed that the present mangroves are still young (see Figure 4.42) and cannot offer protection and resources like before. Households reported that to spend more on purchasing additional materials to replace the mangrove functions. Since the disaster, the mangroves are unable to produce large quantities of leaves as they are still small and young. Hence, the traditional *Nipah* cigarette business has abruptly lost. It takes years for a mangrove to grow and to restore the suitable environment for the aquatic creatures to develop a secure food resource again for the villagers. Additionally, farmers have to spend more on expensive chemicals to keep the remaining aquaculture ponds from the parasite, and there were no longer wood sources.

Figure 4.42 Mangrove trees (young) as of 2017

4.3.5. Social Capital

Before disaster

From the interviews and discussions, households mentioned that the relationship among the villagers was close before the tsunami disaster. Gampong Pande communities had been practising praying together at the mosque for the daily prayers as well as the Friday prayer [R10 and R14]. The *gotong-royong* (mutual help) concept was stronger as the households were living in a community made up of their family members and relatives. Below is an excerpt from the interview:

> There was no one in the village that we did not recognise. We knew everyone. Some of our neighbours were actually our relatives. Everyone in the village had their extended families or relatives living nearby [R10, R11, R14 and R17].

During Reconstruction Period

The villagers evacuated at various places, some went to stay with their relatives outside Banda Aceh, and some took refuge at Mata Ie, which is the main evacuation centre on top of the hill. According to the ex-village head, the remaining survivors were busy looking for their family members during this period and were occupied with CFW or involved in training programs or mental health care. Only the elderly (remaining Tuha Peut) and the newly elected village head (at that time) gathered themselves to come up with a proposal to redevelop the village.

Towards the end of the completion of the ADB house reconstruction period in 2007, [R1] took the initiative by himself to look for livelihood programs for the village as he was against the idea of CFW. As the village head at that time, [R1] proposed many efforts for livelihood activities for Gampong Pande. effort (1) was a plan to construct a *pasar wisata*/*pasar rakyat* (local market)

selling home-made products from Gampong Pande such as crab noodles from the side-product of the aquaculture ponds, mango-based products as mangoes trees were planted around the village vicinity. Effort (2) was granted for fish processing to make *dendeng ikan* (a thinly sliced dried fish meat). Effort (3) was training and skill development. However, most of the livelihood programs that [R1] proposed was either rejected by the donors or were unable to sustain by the beneficiaries. For instance, Effort (1) was dismissed as it was deemed unnecessary because there was more critical infrastructure that needed to be built. Effort (2) was stopped due to the seasonality factor (e.g. low catch of fish during certain months of the year). Furthermore, the inadequate facilities to freeze the fish as well as fierce competition with bigger-scale enterprise exacerbate the difficulties of the households which resulted in aborting the activity. Effort (3) was a livelihood program on capacity building and development skill in agricultural training for livestock [R1 and R9], carpentry [R1, R12 and R13], sewing and weaving [R3, R5 and R6].

Current Condition

The survey found that 45% of the households have been living in the village for more than 20 years and they participated in local community activities such as community meetings, gotong-royong, mosque activities, and local festivals. There were social groups in Gampong Pande such as religious group comprises of *Kelompok Marhaban*, *Kelompok Wirid* and *Majelis Taklim*. The village also has *Kepemudaan* (male youth group), *Pendidikan, Kesejahteraan Keluarga* (PKK) (for women to be involved in the development of Indonesia), and *Pendidikan Anak Usia Dini* (PAUD) (kindergarten).

From the observations in 2016, villagers usually gathered at the mosque to perform prayers together (see Figure 4.43) and attend religion class (e.g. Quran recital) (see Figure 4.44). From the discussion, the study found that the renters participated lesser in local events. This somewhat affected the gotong-royong spirit in the village where relationships are built among the people as they make acquaintances while carrying out an activity together. During the observation, villagers who sit outside and hang around the shops (see Figure 4.45) are usually the non-renters. Renters do not mingle with Gampong Pande residents as they have the ‘outsider’ feeling. Additionally, the location of the rented houses itself was ‘strategically’ situated in the northern part of the village, creating a ‘renters zone’. According to [R9], renters will usually participate in the local events or respond to invitations only when they are personally invited. Some veteran renters had already

integrated themselves into the community after staying there from around 2010 or 2011 [R1 and R9]. They even bought the rented house from the local owner. Additionally, they also purchased another house for income-generation by renting it to others.

Figure 4.43 Men praying together in the evening

Figure 4.44 Religious class taking place in the prayers

Figure 4.45 Women spending time together

The survey found out that 69% of the households reported that they were satisfied with their relationship with the community. Additionally, 58% of the households stated that they were also satisfied with their relationship with the local government and 56% were satisfied with their relationship with the village leader. The current village head is seen as an influential individual. He was the village leader from 2008 until 2014 and was re-elected for another term which started in 2015. This shows that the people in Gampong Pande acknowledge, trust, and believe in his leadership.

> The current leader is good. We elected him again after his term ended. We trust him to take care of and develop our village [R3, R10, R14, and R17].

83% of the households fairly trusted their neighbours, with only 1% reporting that they do not trust the neighbours at all (see Figure 4.46). Households put trust in their neighbours on matters such as letting their children to be watched over and taken care of by the neighbours during emergencies. Additionally, households mentioned that they would help their neighbours when a disaster happens. However, when it comes to financial matters, 44% of the households do 'not at all' borrow from their neighbours, and only 1% would 'very much' lend money to their neighbours. Households also mentioned that they do 'not at all' know about personal matters of their neighbours such as financial situation (57%) or family affairs (49%).

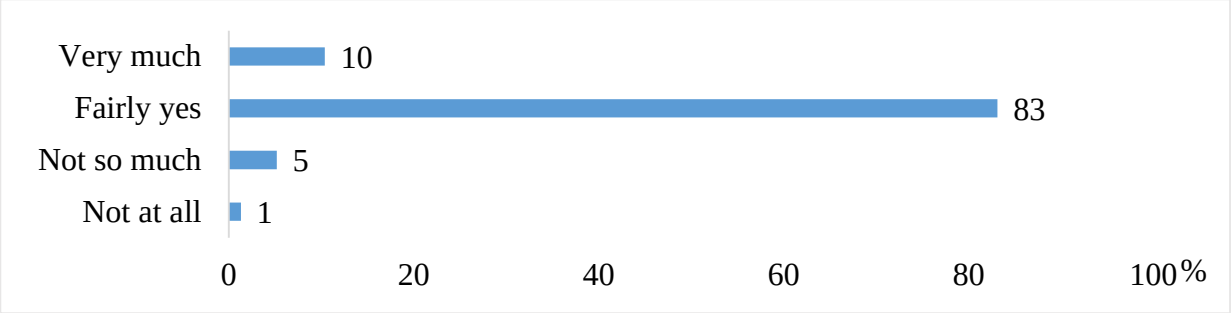


Figure 4.46 Households trust in neighbours (N=77)

4.4. Livelihood Interventions

From housing assistance to livelihood aid, Gampong Pande received support from the government and the NGOs throughout the disaster relief and reconstruction period. ADB was the principal donor for Gampong Pande where the organisation provided 153 houses, constructing public facilities (e.g. roads and drains, village office, and community centre), as well as restoration works on the seawalls and the aquaculture ponds. Women were given training on sewing, snack making and home-grown vegetables to substitute for the traditional cigarette making work. Some NGOs also generated jobs via CFW, small-scale fisheries activities, rehabilitation of aquaculture ponds and livelihood schemes for women and youth such as snack making and handicrafts. Table 4.3 displays the records of organisations and the types of assistance they provided to Pande after the disaster.

Table 4.3 Aid received by residents of Pande

	Types of Aid	Donor
1	Village mapping	Center for Local Government Innovation
2	Village planning	USAID/PT Wastuwidyawan (local partner)
3	Spatial planning	GTZ-SLGSR
4	Housing (153 units)	ADB ETESP Housing
5	Supervision of reconstruction works	Transparency International Indonesia
6	Construction of health centre	Merlin (UK-based NGO)
7	Clean water supply and groceries	World Vision
8	Aquaculture -pond rehabilitation -agro-input (milkfish)	ADB ETESP1 Fisheries
9	Business start-up support -young livestock; goat	Department of Agriculture
10	Women's group/female-headed household economic empowerment	Betaco Family Group
11	Scholarship for children education	Purchasing Managers Index Irlandia

Source: BRR and GTZ (2007)

4.4.1. Policy

Land Rights

The Reconstruction of Aceh's Land Administration System (RALAS) was created from the Multi-Donor Fund in August 2005, to help disaster-affected victims by reconstructing land rights through community-driven jurisdiction and issuance of land titles (World Bank, 2006). This project helps to diminish the ambiguity of land acquisition, land ownership, and resettlements process. Villagers in Gampong Pande came together with their Tuha Peut to decide on the land rights with the help of GTZ, USAID/Wastuwidyawan and CSO Funding. The land was given to the rightful owner through discussion and confirmation with the existing villagers. The rightful owner who is still underage is taken over by their older relatives.

Housing Policy

Following the tsunami, Gampong Pande households were evacuated temporarily to the evacuation centre, while waiting for the reconstruction of their new house (see Figure 4.47). The Government of Indonesia issued Disaster Mitigation in Coastal Areas and Small Islands (Government Regulation No. 64/2010), and Housing and Residential Areas Law (No.1/2011) through the National Development Planning Agency and Ministry of Public Works, granted all entitled

disaster-affected households to receive either reconstruction or rehabilitation assistance. The BRR housing policy has different treatment towards pre-tsunami land, house owners, pre-tsunami renters and squatters. Pre-tsunami house owner is eligible for a free permanent 36 m² house on a new land while pre-tsunami renter and squatters are offered cash as compensation, USD 2,800 and USD 1,150 respectively (World Bank, 2006). On the other hand, households with heavy or middle or little damaged were provided funds worth IDR 15,000,000 (USD 1,728), IDR 10,000,000 (USD 1,152) and IDR 5,000,000 (USD 576) respectively to repair their houses.

The housing reconstruction program was simultaneously linked with employment, human resource as well as economic and business development (Steinberg & Smidt, 2010). Other policies that also supported better housing reconstruction and a safer anti-seismic construction standard houses were established through national level policy, UU No. 24 Th. 2007 on Disaster Handling and PP No. 21 Th. 2008 on Implementation of Disaster Handling.

Nature and Environment

- Environment

In the Banda Aceh Green Development Plan for RTRW Kota Banda Aceh 2009-2029 by the city government, Gampong Pande is included in the recreational infrastructure coastal area development to transform Gampong Pande into green open space for natural heritage tourism and waterfront city that serves the economic, socio-cultural and natural/environmental sustainability. Apart from being a natural conservation area that acts as a buffer zone, Gampong Pande area is also being developed into an eco-tourism site, coastal tourism, water tourism, fishing, camping and seafood culinary spots.

- Mangrove

In Kuta Raja district, Gampong Pande is one of the three villages that is located near to the sea and having natural mangrove before the tsunami. After the tsunami, one of the rehabilitation effort done by ADB for Gampong Pande was mangrove replantation. ADB also conducted conservation and protection efforts of the coastal zones through land utilisation in the coastal area, embankment construction, replanting mangroves for buffering and protection against tidal fluctuation. Furthermore, as Gampong Pande is located in the coastal area, reconstruction of the building are prohibited and limited since the area is designated as buffer zones. Hence, an alternative to

developing the village into a waterfront city area through water-related tourism such as fishing, camping, seafood culinary and research spot considering to the waterfront city concept (RTRW Kota Banda Aceh 2009-2029).

- Aquaculture

In the GPMDP, Gampong Pande included resolutions for both rehabilitated and yet-to-be-rehabilitated ponds. Funds from the National Annual Budget and the Village Fund Allocation will cover the four-year rehabilitation projects (GPMDP, 2016). As many aquaculture farmer communities are living in the coastal areas in Banda Aceh, the pond status influences the ability of the community to recover from the disaster (Griffin et al., 2013). Ponds provide job opportunities and affect the economic resiliency of the villagers.

Historical Treasures Protection

The artefacts and ancient tombstones found in the rehabilitated ponds were declared off-limits which decreases the number of functional ponds for aquaculture farming. However, the Department of Culture and Tourism Banda Aceh has assigned Gampong Pande's residents to maintain and clean the ancient tombstones as well as safeguarding the location of the artefacts. The maintenance of the ancient tombstones works provides income to the local people. As one of the historical places in Banda Aceh, efforts were also made by local NGOs to preserve and care for the ancient tombstones for historical conservation purposes which also attracts tourists to Gampong Pande (see Figure 4.51).

4.4.2. Program

Microcredit Scheme

Microcredit programs grew immensely immediately after the 2004 IOT disaster in Banda Aceh. Some international NGOs introduced such programs to aid small and medium-sized enterprises (SMEs) to get back on their feet quickly and to get the economy running. The microcredit served as the capital for businesses to replace their machines, tools, and raw materials. The Women's Group/Female-headed Household Economic Empowerment project in Gampong Pande organised by Famili Betaco Group promoted the development of women's business skills and supported and encouraged them to be involved in small businesses such as selling snacks or tailoring.

Training and skills development

International Labour Organisation together with the Ministry of National Manpower collaborated with many agencies, and local governments established the Employment Service Centre to maximise jobs and livelihood opportunities for the Acehnese during the recovery period. The centre provided a wide range of training covering from entrepreneurship skills, business management, motorcycle repair, furniture production, snack production (see Figure 4.47) and traditional cake making (see Figure 4.48). In December 2006, Forsikal, a local Civil Society Organization, implemented a women's support program in Gampong Pande involving 80 women, teaching them sewing skills (see Figure 4.49). Other courses were also offered by agencies (e.g. UNDP, Muslim Aid etc) such as English language skills, computer skills, tailoring (e.g. weaving and embroidery), handicrafts (see Figure 4.50), business set-up, fish processing and construction work as well as job placement services. Training and programs were usually conducted in a group of 5 to 8 people.

Figure 4.47 Snack-making training session
(Source: Respondent from Gampong Pande)

Figure 4.48 Traditional cake training session
(Source: Respondent from Gampong Pande)

Figure 4.49 Sewing training session
(Source: Respondent from Gampong Pande)

Figure 4.50 Handicraft training session
(Source: Respondent from Gampong Pande)

Aquaculture

ADB engaged fish farmers to build and operate Aquaculture Livelihood Service Centre (ALSC) as well as setting up the Aceh Aquaculture Communication Centre (AACC). Specialised AACC services such as information dissemination, technical information and advice, disease diagnosis and training were offered through the government's Brackish Water Aquaculture Centre (BBAP) (Coutts, De Silva & Mohan, 2010). Additionally, training was also provided on crab fattening, grouper nursing, giant freshwater prawn and tilapia farming.

Livestock program

The UN Recovery Coordinator for Aceh and Nias (2006) reported that households were given pregnant cows and buffaloes as a financial start-up for them. The local government also delivered training on better management practice and business set-up for the households.

Local resource enhancement

Efforts such as traditional crab-picking activity for tourists (see Figure 4.51), *Nipah* fruit juice and *Nipah*-mixed drink launching (see Figure 4.52), mangrove education, historical and cultural activities were made possible through the collaboration between Syiah Kuala University in Banda Aceh and the local government. These activities are to attract more tourists both local and international to Gampong Pande to promote and boost the village's livelihood and its economy.

Figure 4.51 Crab-picking activity
(Source: SerambiTV)

Figure 4.52 *Nipah* beverage
(Source: ICAIOS)

4.5. Livelihood strategies taken up by Gampong Pande

4.5.1. Agricultural Intensification

The livelihood strategies undertaken by household in Gampong Pande for agricultural intensification depended on the utilisation of natural resources. Some households reared livestock while others change the pond management style or the breeding organisms in order to improve

their livelihood. Households also conducted non-agricultural activities (e.g. causal labour work) in agricultural setting. Below are the agricultural intensification strategies taken up by households in Gampong Pande.

Fisheries institutions

In August 2012, Klinik IPTEK Mina Bisnis (KIMBis) was established in Pande to help the fishermen, aquaculture farmers, fish-processing group and fish-related product traders in Kuta Raja District. KIMBis is the official institution member comprising of the coastal communities, the Centre for Social-Economics Research of Marine and Fishery, and the Fisheries, Marine and Agriculture Department of Kota Banda Aceh. KIMBis functions as community empowerment, to establish the application of marine and fishery technology, familiarising the technology to the communities while improving the economic capacity of the communities and support strategic development related to the marine and fisheries. The existence of the institution facilitates bottom-up approach in designing the livelihood program for the coastal communities as well as providing communication channels to mediate conflicts among the communities. This effort increases the role and the involvement of the community in ensuring their livelihood sustainability.

Farming style and pond management

Owners who had received pond restoration carried out their activities through either intensive or natural breeding depending on the functionality of the restored ponds. Intensive breeding incurs a higher cost and requires more capital as full-time labour is needed to ensure the living environment is machinery at suitable ecosystem with the use of electrical machinery and equipment. There were also cases of functional ponds being leased for a term of 5 years at IDR 16,000,000 (USD 1,198) in the case of [R10]. Another type of lease is renting out a 2 ha pond for IDR 3,500,000 (USD 262) per year. Pond owners have considered risk as one of the factors for leasing their ponds. By leasing, they are playing it safe as a trade-off for lower total income which draws in smaller likelihood of income failure (Ellis, 2000).

Non-productive ponds were previously restored ponds but are having a foreign object that does not support the effective growth of the aquatic creatures such as mangroves within the ponds or artefacts objects that are found after the restoration works. Hence, the ponds turn into natural breeding ponds whereby seedling are placed in the ponds to be breed naturally; with very less supervision and no feed nor machinery to support the living environment. In another case, it took

about a year for [R9], a pond owner who loses his pond partially, to fully regain his livelihood activities. He mentioned that the aquaculture farming was no longer able to provide him with sufficient amount of income and hence, he became a crab seller where he gets crab from his own harvest or buys them from other people and selling them at the local markets in the morning. In the evening, he tends to his other farm income source which is rearing goats.

As for the non-pond owner, their livelihood strategies depended on the owner's pond loss. Labourers usually intensify their livelihood by working at another pond when the owner suffers a total loss of pond or diversify their livelihood by opting for a new job. The reduced household size decreases the number of the available labour of which shrank the number of livelihood activities the household can engage. Thus, some household resort in taking up another non-farm job as well as having a small business or the wife is having a side income such as sewing, making *kue* (traditional snacks/cakes) or online business are among the most common livelihood strategies (livelihood diversification) taken up by the non-pond owners. Figure 4.53 illustrates the livelihood changes of households working in the aquaculture pond. Below is an example of the livelihood change experienced by one of the households:

> [R13] was full-time aquaculture farmer for shrimp and milkfish before the tsunami disaster earning about IDR 1,000,000 (USD 90) per month. However, the pond that he used to work at does not exist anymore. After the tsunami, he worked full time on a 4ha pond which belongs to someone for about two years before changing to another pond owner. In that two years, his earning were solely from the aquaculture farming activity. He has a basic salary which is paid monthly and additional pay if the pond makes a profit. However, the earnings from the pond are not as steady as it depends on the many risk factors to ensure good produce at the end of harvest season, he earns less than IDR 500,000 (USD 40) in a month. Hence, he decided to diversify his livelihood by carrying out a few job but on a part-time basis. He still works at the aquaculture pond, goes out to the sea to fish, rear ten goats and ten chickens, became the hamlet leader and maintained and cleans the ancient tombs. His monthly income is now about IDR 3,000,000 (USD 239) which is triple than his pre-tsunami income. The structure of his income payment varies as he receives fixed income from the basic salary of aquaculture pond and the position of lane leader. Tombstone maintenance work is paid every two months, earnings from the pond are only after three months, fishing and livestock are seasonality; income from fishing is unstable, and livestock are only sold during festivities (IDR 1,500,000 (USD 120) for a goat) or sometimes use for own consumption. In addition, his wife also takes up a part-time onion peeling job which earns about IDR 30,000 (USD 2.40) for every 30 kg.

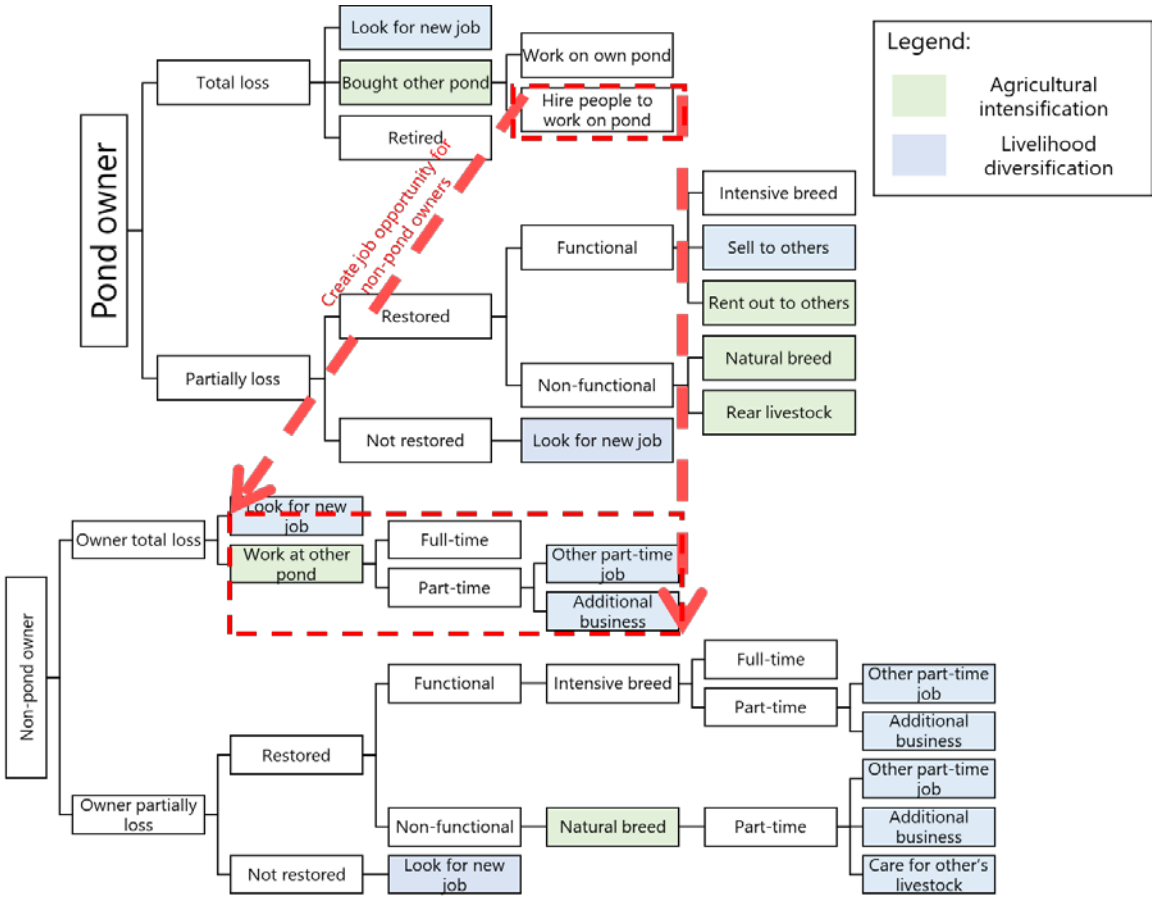


Figure 4.53 Changes in the livelihood of an aquaculture farmer in Gampong Pande

Mangrove and aquaculture integration approach

Due to non-repairable aquaculture ponds, farmers took the initiative by applying Silvofishery technique where aquaculture farming is integrated with the mangrove area. This method created a green belt zone which benefits the coastal communities by providing natural protection against future tsunami disaster (Saputra et al., 2016). The aquaculture farmers in Gampong Pande also practised polyculture farming which involves breeding of crab and shrimp mixture in the same pond, or another type of mixture of crab but with milkfish. These generate multiple types of harvest although the amount of crab harvest is usually much lesser than the other organism. Before the tsunami disaster, the price of a kilogramme of crab ranges from IDR 100,000 (USD 9) to IDR 200,000 (USD 18). The current price for crabs weighing lesser than a kilogramme is about IDR 120,000 (USD 10.80) sold in a bundle while crabs above one kilogramme are priced at IDR 200,000 (USD 18) per kilogramme. [R9, R12 and R13] stated that the crab's price is usually higher from December to June and hence, they have to plan for the breeding schedule to match the market

demand. The Village Budget Allocation (ADD) allocated about IDR 50,000,000 (USD 3,768) for Gampong Pande's mangrove management training which also incorporated pond-handling techniques to improve and increased harvest.

Poultry and livestock rearing

Since the quantity of harvest is low for the non-productive naturally breed ponds, farmers step-up their plan by engaging in poultry and livestock rearing, mainly ducks and goats respectively (see Figure 4.54). Goats have higher market value especially during Muslim events like *Eidul-Adha* and *Eidul-Fitri*. Depending on the breed, an adult goat is worth IDR 1,700,000 (USD 128) in the market during regular days and gets pricey; as high as IDR 5,000,000 (USD 377) during the festivities. The livestock livelihood program in Gampong Pande started with the distribution of young goats and ducks worth IDR 300,000,000 (USD 22,611) for a three-year period (from 2016 to 2019) to 50 households from the ADD. As for poultry, duck rearing is preferred over chicken owing to the Acehnese delicacy of salted duck egg. Another livelihood aid worth IDR 25,000,000 (USD 1,884) for 30 households also from the ADD will be released in 2017 to provide extensive training on goat rearing and duck farming.

Figure 4.54 Poultry and Livestock rearing

Home-grown food supply

A Japanese international NGO, Organization for Industrial, Spiritual and Cultural Advancement-International (OISCA) and ADB introduced Tanaman Obat Keluarga (TOGA), an agricultural livelihood program for households in Gampong Pande (see Figure 4.55). The program serves to meet household's daily food demand as well as act as a food reserve (see Figure 4.56) while making use of the outside house space such as the garden/yard (see Figure 4.57) and at the same time making its surrounding green, beautiful and comfortable. The basic Acehnese ingredients are recommended to be planted in the yard: chillies, tomatoes, eggplant, and onion. Additionally, there

are also herb plants that are traditionally used for medicinal purposes and can also be a food source for the people. Herb plants such as ginger, celery, mini star fruit, lemongrass, kale, aloe vera, galangal, green chiretta, *temulawak*, cumin, and turmeric are planted within the house compound or in pots placed on the porch. Currently, few households are planting TOGA herbs due to the limited availability of seedlings as well as the low awareness of TOGA herbs' benefits. The local government then continues the effort for TOGA by having competitions of TOGA products as well as the beautification of the house surroundings with those plants. In 2016, the APBN/ADD allocated about IDR 50,000,000 (USD 3,768) for Gampong Pande. The budget covered TOGA awareness campaign, acquiring healthy ginger seedling, and cultivation training. TOGA aims at benefitting the women in Gampong Pande to replace the traditional *Nipah* cigarette production.

Figure 4.55 TOGA Project in

Figure 4.56 Dried fruit for own consumption

Figure 4.57 TOGA plants within the house compound

4.5.2. Livelihood Diversification

Some households in Gampong Pande ceased their aquaculture and fishing activities and diversified their livelihood by doing various types of activities. These activities were conducted full-time, part-time, or seasonally depending on the needs of the household. Gampong Pande households who used to own aquaculture ponds and work as aquaculture farmers or work at other's ponds have diversified their livelihood out of necessity due to desperation and involuntary as the tsunami disaster had wiped out their ponds completely.

Government service

The number of households in Gampong Pande who worked in the government sector increased twice in 12 years due to the prospect of income stability. Civil servant, police officers, army, and soldier were among the government profession.

Casual labourer

Many aquaculture households were conducting multiple livelihood activities that could secure them a monthly income. Some of the aquaculture farmers decided to work on their aquaculture pond on a part-time basis and took up another job such as becoming a *becak* driver, crab seller, working at a construction site, taking care of other people's livestock or a casual labourer for other's aquaculture pond (see Figure 4.58).

Figure 4.58 Casual labourer at work

Figure 4.59 *Becak* services

Transportation businesses

Some aquaculture households sold their pond to other farmers and used the money to venture into transportation businesses; purchasing motorcycle (*ojek* services) or rickshaw (*becak* services) (see Figure 4.59) to ferry villagers to places outside of the village.

Small-scale business

As for the women in Gampong Pande, their livelihood diversification is more towards a choice of their own where they volunteered and became proactive to seek additional income for their household. Ellis (2008) mentioned that livelihood diversification through choice is usually socially bounded to survive above the living standard.

The extensions made to the house incorporated spaces for the business area as well as for storage area for livelihood equipment and materials. Women were found to mend shops where they sell grocery/snack/cakes in front of their house (see Figure 4.60). Households were able to focus more on their livelihood activities as the basic need of having a house was already fulfilled. The renovations and extensions to the house were an indirect pull factor for the house owner to improve their livelihood and, simultaneously diversifying their livelihood options. This shows that households were trying to improve not just their home but also their living condition.

Additionally, households also were also found to be involved in online business through WhatsApp group (e.g. selling baby clothes, shawl, dresses, and *mukenah* (female praying garment), sewing or making *kue* (traditional snacks/cakes) (see Figure 4.61). The training households received during the relief/reconstruction period had helped some of the households to open tailoring services in Gampong Pande (see Figure 4.62). Curtains, traditional wear, bags were among the goods produced. Additionally, the given provisions of tools and equipment for sewing and snack making enabled the women to earn some income for their household. From the discussion and observation, some households involved in brick manufacturing (see Figure 4.63), supplying and delivering drinking water.

Figure 4.60 Snack shop

Figure 4.61 Home-made cakes sold at the café

Figure 4.62 Sewing services with delivery

Figure 4.63 Brick making shop

Home-made products

As of 2016, Gampong Pande has seven home-made products which were recorded in the 'One Village, One Product Program' (OVOP) catalogue. The program is a collaboration between the Government of Aceh and Syiah Kuala University to develop creative economy among the villagers. Products are sold in the local and regional market as well as marketed at showcase and exhibitions introducing those products. The OVOP supported the participants by offering cash support as people were reluctant to take a loan from the conventional banks as they consider it as usury (extortion). Products of Gampong Pande are such as cakes (see Figure 4.64) and snacks, accessories (see Figure 4.65), handicrafts (see Figure 4.66, Figure 4.67), houseware (see Figure 4.68), herbal health drink (see Figure 4.69), and detergent (see Figure 4.70). Households who participated in this program mentioned that their time is filled with some income generating activities [R3 and R7]. The activities helped to alleviate the financial burden of the households as they now have additional and stable income from the activities.

Figure 4.64 Traditional Cake (Source: Product Catalogue of Banda Aceh)

Figure 4.65 Hair accessories (Source: Product Catalogue of Banda Aceh)

Figure 4.66 Acrylic tissue box

Figure 4.67 Knitted purse

Figure 4.68 Houseware (Source: Product Catalogue of Banda Aceh)

Figure 4.69 Ginger herb drink (Source: Product Catalogue of Banda Aceh)

Figure 4.70 Dishwasher liquid (Source: Product Catalogue of Banda Aceh)

4.5.3. Migration

Block and Webb (2001) stated that apart migration is a part of coping mechanism towards income and livelihood shocks applied by households particularly those in the rural areas. Frankenberger and McCaston (1998) identified that households usually undergoes three steps consecutively when they are faced with livelihood shocks: first, consumption reduction; second, use or sell assets; and third, is to migrate when the first two fails. However, in the case of Gampong Pande, villagers do not opt to migrate due to the strategic location of being near the city centre and having better public facilities and infrastructures. The RPJM Gampong Pande showed that the average migration number is about 10 people per year.

The majority of Pande residents prefer to stay in their locality as they are already familiar and comfortable living in their village. Despite the experience they had from the tsunami disaster, the residents mentioned that they grew up in that village and are closely attached to the land where their ancestors have lived. For instance, [R13] finished high school and started to get involved in aquaculture pond which he learnt from his father. He does not own any ponds but has been working on other's aquaculture pond as well as using abandoned pond with mangroves in it for an extra food source. He manages a 2 ha pond owned by a Gampong Pande resident who already moved to Jakarta even before the tsunami disaster. The owner pays him good as he receives a basic salary as well as payment from the aquaculture revenue. He said that all his life he only knew about aquaculture work and he is passionate about his job despite not earning big figures. In another case, [R12] had been employed at [R10]'s family ponds since his elementary school years. Both [R12 and R13] mentioned that they have no other skill and hence, it is better for them to remain in the village doing work that is familiar to them.

> I grew up here. I saw how the village grew and changed. I am also lucky to be able to see the rebuilt village now after the disaster. I stayed here because I only know how to *tambak* (aquaculture ponds) and I do not know anything else. *Tambak* is my life.

In another case, [R10]'s grandfather and father owned some aquaculture ponds in Gampong Pande and the family worked on the *Nipah* traditional cigarette back then. After the disaster, most of [R10]'s owned ponds were washed away. Only one-quarter of the total pond which is about 1.5 ha were left. She chose to stay in the village even after the tsunami because she has no other place to go. Her family land and her livelihood are in the village. She also mentioned that the current living environment in the village is much better than from the pre-tsunami condition, being much greener now.

> [R10] My grandparents also left us a few hectares of tambak which most of them were restored. My *periuk nasi* (literal translation: rice cooker; refers to main income) is here in this village. Also, how the village looks before and now is very different. There were no trees back then. It was always hot, but after the tsunami, trees are everywhere here. It is shady in most of the places, and it is nice to look at the greens.

The in-migration activity in Gampong Pande is mostly from other villages within Banda Aceh (e.g. Peulanggahan, Ateuk Pahlawan, Kuta Alam, Meuraxa, Baiturrahman) or outside of Banda Aceh (e.g. Pidie, Aceh Utara, Aceh Tamiang, Sumatera Utara, Aceh Jaya, Bireuen, Aceh Besar and

Lhokseumawe). Discussion with the ex-village leader and current village leader, the migration activity in Pande was not due to reconstruction program. The average number of migrants into Pande is about three to four persons monthly. Most in-migrants came to reside into the village around the year 2010 onwards which was after the reconstruction period due to marriage, completion of a new house in Pande as well as moving to rent in Gampong Pande.

The survey found that renters mentioned that Gampong Pande offers better access to the city and public facilities compared to their previous dwelling. The houses for rent or sale in Gampong Pande are usually occupied immediately as the rent is cheap and with satisfactory living atmosphere [R1, R9, R14, R15, R16, R17, and R18]. Additionally, being situated strategically near the city centre where businesses are flourishing added to the village's appeal. Houses up for rent or sale are typically from owners staying outside of Gampong Pande who were not in the village during the tsunami but received a house due to the land rights of the deceased. [R1 and R9] mentioned that people who own those houses are already in 'good' category of income and they rent out or sell those houses to earn or generate extra income from the 'extra' resource that they have. [R9] reported that the majority of the renters in Gampong Pande are involved in businesses as well as poultry distribution activities, helping in the economic activity in Gampong Pande. From the observation and survey in 2016, renters are mostly involved in car rental business, entrepreneurship and handyman. The summary of the livelihood changes in Gampong Pande can be found in Figure 4.71 while Figure 4.72 shows the timeline of Gampong Pande's livelihood chronology.

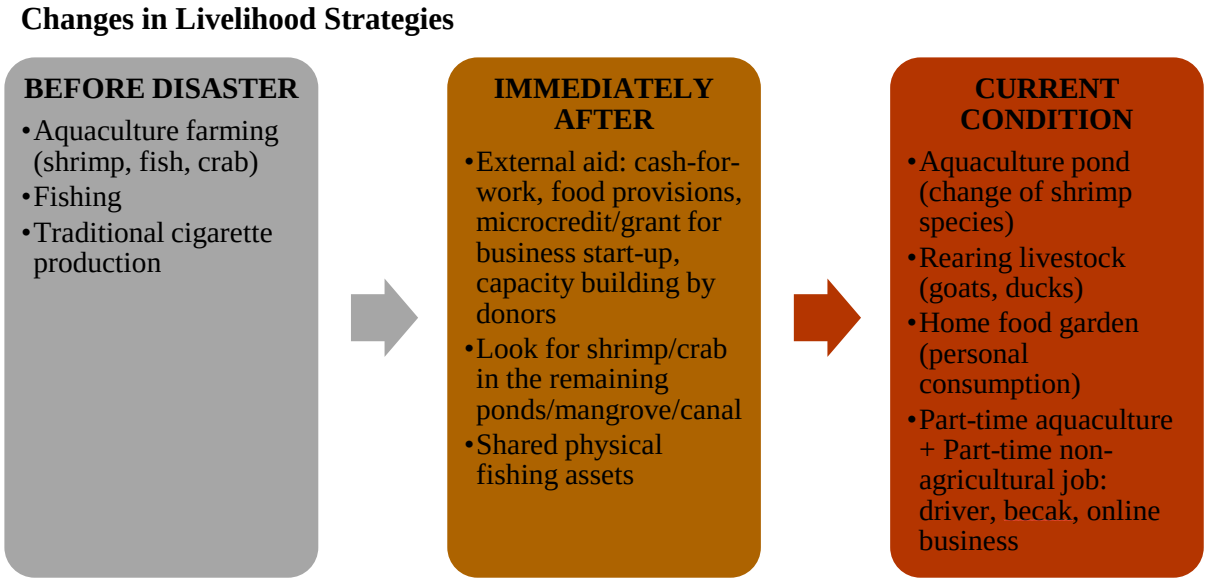


Figure 4.71 Summary of the livelihood changes occurrence in Gampong Pande

4.6. Rationales for Choosing Different Livelihood in Gampong Pande

First, permanent changes on the land. The massive impact from the 2004 IOT disaster devastated the livelihood of Gampong Pande's residents by inundating of the whole village area which destroyed some of the ponds permanently. This forces many of its residents to seek other means of livelihood to make a living especially those who were relying on the natural resources such as the aquaculture farmer, fisherman and the traditional Nipah producer. Second, limitation of funds in restoring damaged ponds. The government and NGOs had to be selective in rehabilitating the aquaculture ponds as the rehabilitation cost requires a tremendous amount of funds and time. Some ponds were permanently inundated while some others were not functioning well even after the rehabilitation process.

Third, low quality of seedling. Although the ponds were functioning well, there were also times when the output from the aquaculture farming was low or lost entirely due to disease brought from the low-quality seedling. Fourth, other struggles were such as the unstable breeding environment for the aquaculture organism as well as due to old-age of the farmer also contributed to the livelihood change among the Gampong Pande residents. Fifth, high cost for fisherman to continue fishing. The remaining fishermen mentioned that the expense to go fishing is too costly. The price of fuel also has an impact on the fishing activity. Higher fuel charges mean shorter travel distance

from the shore, which result in limited types of catch and smaller catch quantity. Besides that, the price of the catch sold to the *Toke Ikan* (middleman) might not be significantly higher than the initial expense, resulting in no profit. Sixth, loss of knowledge, health deteriorating and the lack of interest from the younger generation. As for the traditional Nipah cigarette, no women are working on the Nipah cigarette production currently. Due to the young mangrove condition, leaves cannot be harvested yet to produce a significant amount of young leaf sprout for the traditional cigarette. Additionally, the younger generation of Gampong Pande residents is also not interested in continuing the production of traditional cigarette due to the tedious work involved, from collecting the Nipah leaves to the drying process.

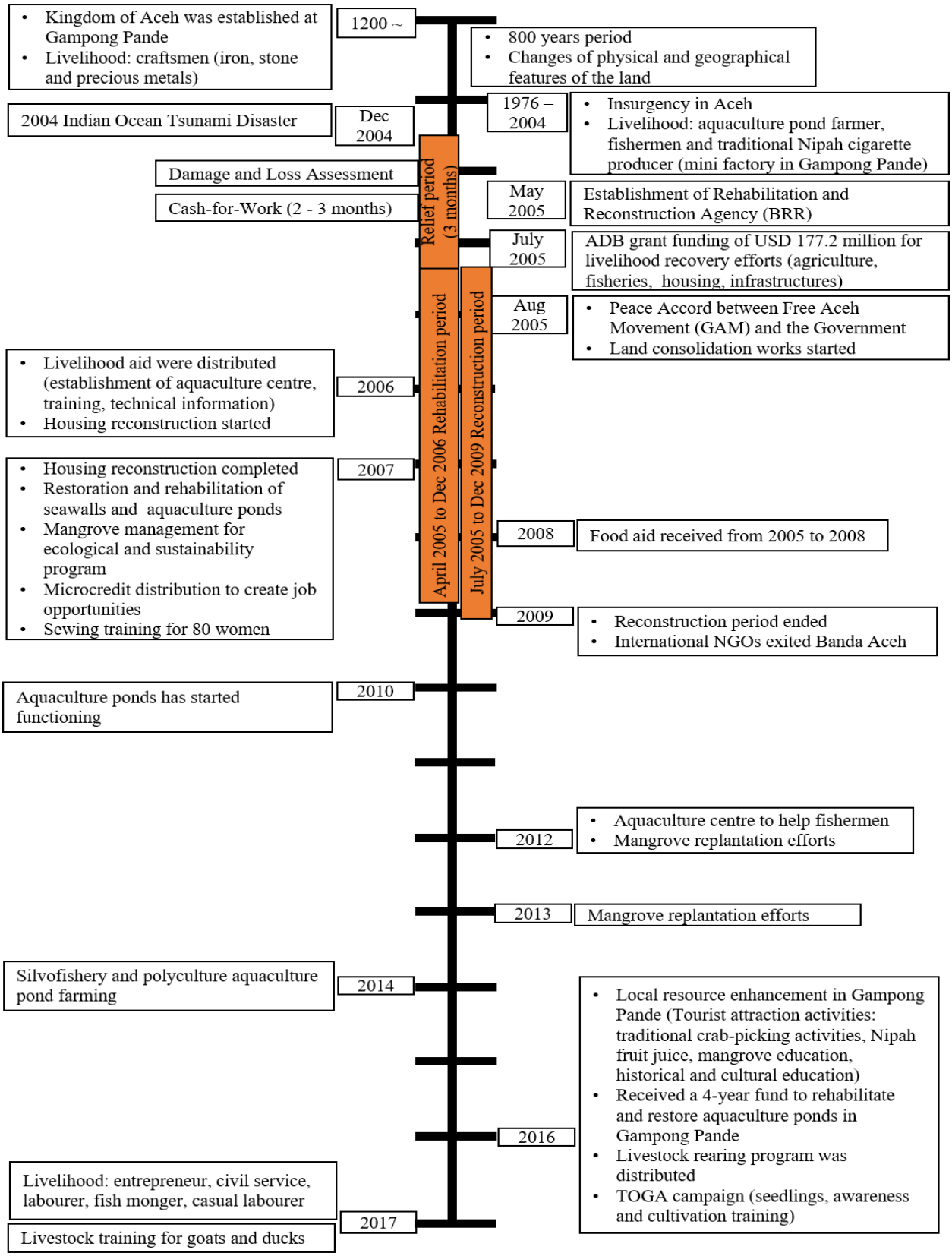


Figure 4.72 Gampong Pande livelihood chronology

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CHAPTER 5: LIVELIHOOD CHANGES IN GAMPONG LAMBUNG

5.1. Background of Gampong Lambung

Gampong Lambung was founded in 1945, located in Meuraxa District in Banda Aceh City. 'Lambung' translated into the English Language means 'hull' which can be interpreted as a ship that has a hull at the bottom that is always submerged underneath the water surface. This describes the geographical position of the village that lies on a flat deltaic plain in the coastal area which increases its exposure to be flooded during the raining season. Additionally, the village is also prone to other hazards such as strong winds, tsunami and earthquake. Gampong Lambung is located about less than 1 km from the shorelines and about 5 km from the city, and it is only 500 meters from the local market in Ulee Lheue. Gampong Lambung is located in between of eight other villages in Meuraxa District (see Figure 5.1).

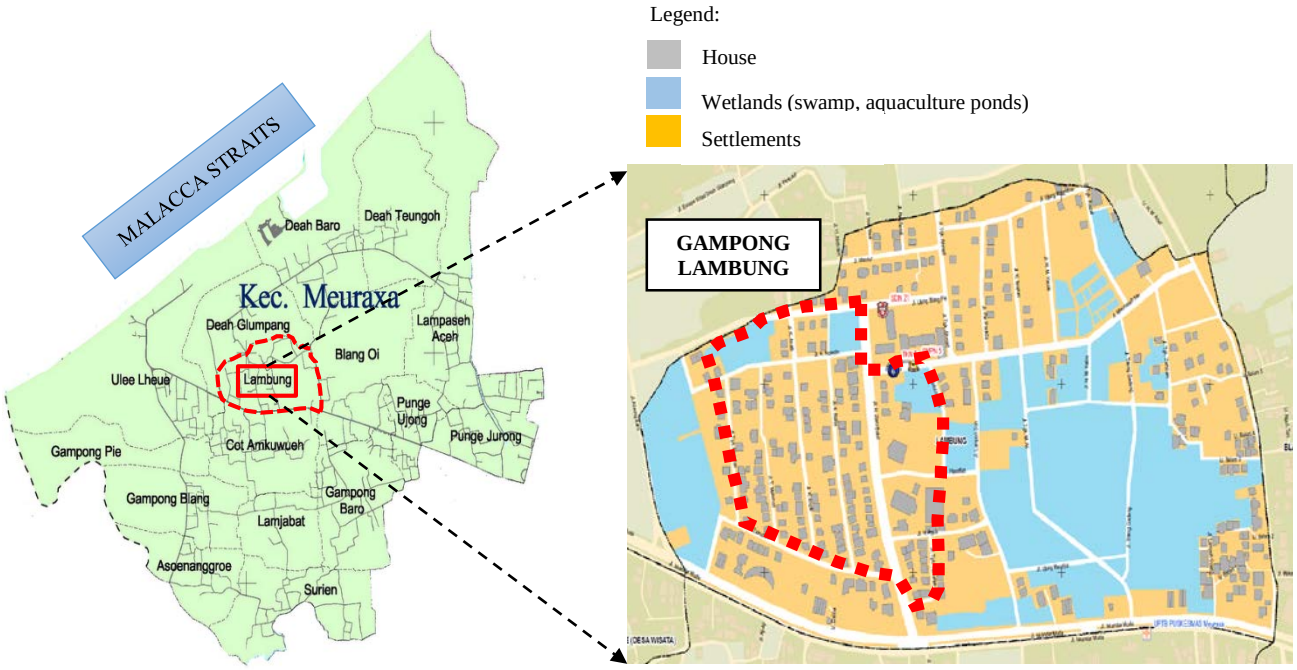

Figure 5.1 Gampong Lambung's location (Source: Kecamatan Office, 2013)

The tsunami wiped out the entire lands which were drastically reduced the village land to a 22.12 hectare (ha) from the total size of 76 ha. Currently, the total size is 52 ha with 29 ha for settlements and public infrastructures, 15 ha of swamp and mangroves and 8 ha of agricultural lands (e.g. fish and shrimp pond) (RPJP Gampong Lambung, 2016). There are 4 Dusun (hamlet) in the village: Mawar, Melati, Dahlia and Seulanga (see Figure 5.2). The Tuha Peut society that governs

Gampong Lambung is consists of seven members. This society works with the Geuchik (Village Head), Sekretaris (secretary), three other heads of departments (e.g. development, governance and welfare) and four Kepala Dusun (Village Hamlet's Chief) (see Figure 5.3).

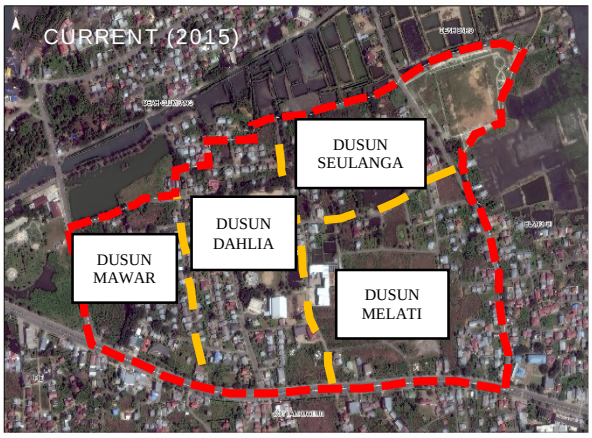

Figure 5.2 Hamlets in Gampong Lambung (Source: Kecamatan Office (2017), modified by author)

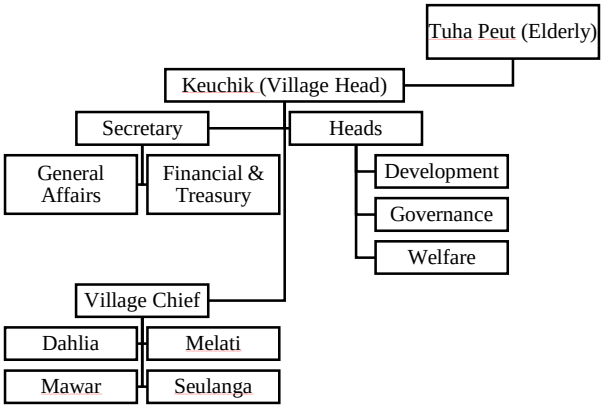

Figure 5.3 Gampong Lambung's village administration structure

As of 2017, the population is 594 people (306 male and 288 female) with 247 households (see Table 5.1). 35% are permanent residents, and 65% are renters. The average density of the village is about 19 people per hectare. The village is in the poor category, where 'poor' is defined as household's average monthly income is less than the poverty line, IDR 427,970 (USD 40) (Meuraxa District Office, 2016).

Table 5.1 The total population and households of Gampong Lambung

Details	Before tsunami (~2004)	Immediately after tsunami (2004~)	Current (2016)
Total population	±1780	440	584
Total household	311	248	247
Family size	5.7	1.7	2.4

Source: PPJP Lambung (2005), Kecamatan Meuraxa Dalam Angka 2017

The primary livelihood of Gampong Lambung before the tsunami was entrepreneurs, fisherman, aquaculture farmers of fish and shrimp and traditional Acehnese cake-maker (e.g. *Bhoy* (dry cake) (see Figure 5.4), *Dodol* and *Meuseukat Aceh* (see Figure 5.5), and *Keukarah* (see Figure 5.6).

These cakes made by the male group are the most common dessert during events and cultural festivities. It was found that each household was producing at least one type of cake.

Figure 5.4 *Bhoy*

Figure 5.5 Meusekat Aceh

Figure 5.6 *Keukarah*

The Agency for the Rehabilitation and Reconstruction of Aceh and Nias (BRR NAS-Nias) in 2009 recognised Gampong Lambung as the model village for its community-participation in planning the new village layout, wider roads (see Figure 5.7), orderly arrangement of houses and infrastructures, and adequate open green spaces. Houses were organised in a complex (see Figure 5.8) with proper irrigation and passable road for two cars. However, to accomplish that, the people need to agree to give up some of their lands and also to move their ancestors' cemetery to a different location to give way for the roads. They understood the importance of having a wider road for evacuation purposes from their experience with the 2004 IOT disaster. The process was successfully achieved through the *Musyawarah* (consensus decision-making) concept. Villagers who owned more lands contributed up to 20% of their total land for the village's public infrastructures such as road, school, health centre, space for sports activities and cemetery area.

Figure 5.7 Wider roads for evacuation

Figure 5.8 Neatly arranged houses

5.2. Impacts of disaster on Gampong Lambung

The 2004 IOT disaster swept away 75% of Gampong Lambung's population and destroyed all of the lands, infrastructures and houses (see Figure 5.9). Gampong Lambung had many public facilities (e.g. stage area for weddings or festivals; schools: kindergarten, elementary, junior high and high school, and polytechnic; health clinic, sports arena (indoor and outdoor) and public toilets before the tsunami. Figure 5.10 to Figure 5.12 display the village condition before the tsunami, immediately after tsunami and 11 years after the tsunami.

Figure 5.9 The only house remaining after the tsunami (Source: Gampong Lambung Office)

Figure 5.10 Gampong Lambung before the tsunami (2004)
(Source: Banda Aceh District Office)

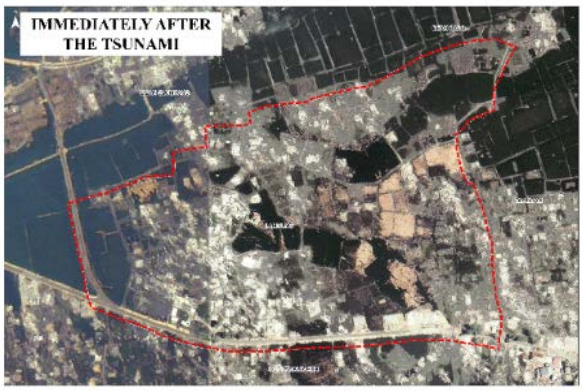

Figure 5.11 Gampong Lambung immediately after tsunami (Dec 2004)
(Source: Banda Aceh District Office)

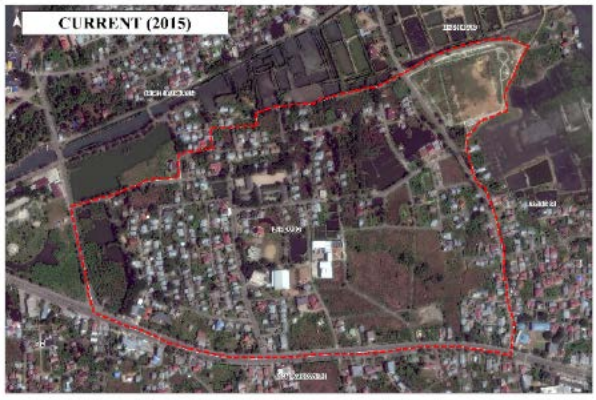

Figure 5.12 Gampong Lambung now (2015)
(Source: Banda Aceh District Office)

5.3. Conditions of Livelihood Assets Before Tsunami Disaster, Reconstruction Period, and Current Condition

The five livelihood assets (human, financial, physical, natural, and social) went through significant changes after the tsunami. The change in the household livelihood influences the accumulated assets. The followings are the five assets (human, financial, physical, natural and social) changes in Gampong Lambung.

5.3.1. Human Capital

Before disaster

The population of adults was 987 of the total population of 1780 people. The average family members were 5.7 people in a household. Apart from the aquaculture ponds, entrepreneurs and traditional Acehnese cake-making, households in Gampong Lambung were also working at a private company (e.g. oil and gas factory). One of the residents owned the factory, and hence, about 40% of the residents were employed at the factory [R1 and R10]. Residents were working as office staff, operator, driver, security guard, and cleaner. Additionally, there were also households who were working at the government office and fishermen. Most of the households finished their high school education. Education was easy to access because schools were in the vicinity of the village. However, since most of the households were aquaculture pond farmers and entrepreneurs, higher education was not necessary because the parents were expecting their children to inherit their jobs.

From the Meuraxa District Office Statistics in 2005, the illness found in Gampong Lambung was diarrhoea and communicable diseases such as coughing, pharyngitis, tonsillitis, bronchitis, and pneumonia.

During Reconstruction Period

The number of population was reduced drastically to only 440 people (248 households) after the tsunami. The numbers of adults left were 273. The average number of family members per household dropped to 1.7 people. On that eventful day, most of the people were at home resting or getting ready to spend the day outside but were swept away by the strong waves [R10]. The remaining survivors narrated that they were safe because they were out in the sea to fish while some others were out of the village to work or study or conducted activities in Jakarta or Medan.

The PPJM indicated that the remaining survivors were 23 people with elementary school education, 16 people with junior high school education, 12 people with junior high or high school education and about 23 of them had their diplomas, Bachelor or Master's degree. Among the survivors was the village head who has a degree in social and political science who brought new developments for Gampong Lambung.

The livelihood of Gampong Lambung was devastated by the loss of many lives and the destruction of the buildings. Survivors could not return to work because everything was destroyed. Households resorted taking up CFW, offer casual labour or venture into small business. Apart from these works, some households also searched for recyclable materials among the debris to be sold while some continued fishing activities. CFW was conducted in the village to facilitate the village clean-up activities. The study found that 59% of the remaining survivors were already working within a year after the tsunami disaster with the provisions of capital, work tools and apprenticeship from the international NGOs and the government [R10].

Current Condition

The number of residents has been gradually increasing ever since the tsunami disaster. Five years after the tsunami, the number of population increased to 420 residents (222 male, 198 female). As of 2017, the total population is 584 residents (302 male, 282 female) with 291 households. The number of the population has increased because of the increased number of returnees, marriages, births and renters moving into the village. The returnees were back home due to the strong connection between the communities and land usage. The current average number of family members per household is at 2.4. Records on education from Gampong Lambung Office (2017) showed that most of the households have at least finished their high school education.

The most prominent population in Gampong Lambung is made up of students (37%) and housewife (25%), followed by another type of job (e.g. casual labourer, employee at private company, driver, petrol station attendant) (24%) and entrepreneurs (14%). As of 2016, there are only two remaining women who are making the traditional cakes (see Figure 5.13). These women learnt from their grandmother and mother when they were small, and were motivated after attending the livelihood training given during the relief period. Additionally, the oil and gas factory

(see Figure 5.14) was rebuilt again and currently, employing some of the Gampong Lambung residents.

Majority of the current population of Gampong Lambung is in the age range of 26 to 40 years old. The health records also showed that the type of illness remained the same before the tsunami period. However, the number of physically disabled person increased from zero to three people who were severely injured and had permanent disability from the disaster.

Figure 5.13 Traditional cake-maker

Figure 5.14 Oil and gas factory that employs Gampong Lambung residents

5.3.2. Financial Capital

Before disaster

There was an informal credit system called *arisan* (participated by ≥20 members) and *julo-julo* (participated by ≤10 members) practised by the women in the village during this time. The *arisan* is a rotating payment receives from each of the members as an alternative solution to the complex formal loan from the banks or other types of credit. The group meets at a fixed time (e.g. weekly or monthly) at each member's house to socialise. Savings were found to be in the form of physical assets (e.g. house, land, aquaculture ponds, livestock, and transportation).

During Reconstruction Period

The average income was at IDR 542,819 (USD 49) (Maryam et al., 2008). There was no informal credit system during this period as residents depended on the aid that they received. Additionally, their earnings were insufficient to enable them to restart the *arisan* or *julo-julo.*

Provisions of food, health, education, housing reconstruction, clothes and jobs were provided by international donors and NGOs which lasted until 2009. Some of the livelihood aid given was attractive enough to encourage livelihood change which reduced the unemployment, and many small businesses were starting up. Some livelihood training (e.g. handicrafts, sewing, cake-making and fish pond) were continued by the government after the reconstruction period ended.

Current Condition

From the survey results, the average monthly income of the households was IDR 2,322,727 (USD 171). The minimum income was IDR 400,000 (USD 29), and the maximum was at IDR 10,000,000 (USD 738). 52% households reported that their current financial status is weaker than before the tsunami disaster as the price of goods has increased as well as the children's expenses (see Figure 5.15).

A saving and loan cooperative in Gampong Lambung is found available and operating, but required an improvement on the management part (e.g. the current team has little knowledge on how to manage the cooperative [R10 and R12]. Most of the clients were entrepreneurs and women who plan to open up new businesses (e.g. cakes, snacks, and clothes). The loan's interest is low to lighten the repayment burden. For instance, for IDR 1,000,000 (USD 90) borrowed, the interest is only IDR 5,000 (USD 0.45) per month. [R13] mentioned that the credit she took for her cake business had enabled her to save about 30% for her children's education.

Only the informal microcredit of *julo-julo* is still existing and are now developed available in two kinds. The first type requires each of the ten households to pay IDR 20,000 (USD 1.80) which collects IDR 200,000 (USD 18) for every 10-day cycle. This money is usually for the children's pocket money. The second type is IDR 5,000 for a 10-day cycle which is used for the kitchen's expenses and also savingings purposes. The researcher also noticed that there are also external credit services (see Figure 5.16) offering people loans for electronic gadgets, laptops and headphoneshones).

Households in the village were found to be involved in the livestock and poultry livelihoods as of 2015. The records from Meuraxa District Statistics showed that households in Gampong Lambung have 10 cows, 51 goats, 128 chickens and 174 ducks.

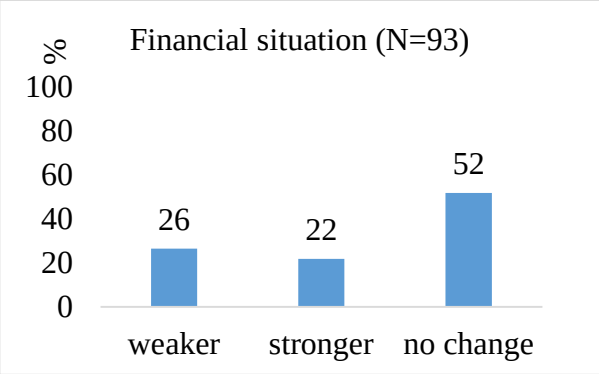

Figure 5.15 Current financial situation

Figure 5.16 External credit services

5.3.3. Physical Capital

Before disaster

Before the tsunami hit the village in 2004, Gampong Lambung was an unplanned settlement of 40 ha on a flat coastal area of Banda Aceh; the village's layout was crowded, messy and dirty with narrow alleys and irregular street patterns [R1, R10, R13, and R15]. Some houses did not even have access to the road. There were other problems such as no place to dispose the garbage and poor drainage system; every time it rains, the village would be flooded. Initially, several families owned an area who then subdivided them into smaller plots. Houses were fully owned by the residents, and there were very few renters in the village. Everyone in the community was somewhat related to each other as they are either family members or relatives.

The village land was mostly made up of settlements area, aquaculture ponds (fish and shrimp) and empty lands. The public infrastructure available in Gampong Lambung consists of *Meunasah* (religious study place), garbage disposal site, health centre, education facilities: TK (kindergarten), SD (elementary), SMP (junior high) and SMA (high school), and religious facilities: *Surau* (praying area that caters for less than 50 people).

During Reconstruction Period

The disaster flattened all of the houses and all other infrastructures in the village, leaving only one house standing. Most of the remaining Gampong Lambung households stayed at the evacuation centre at Mata Ie or their relative's houses and returned to their village two months after the tsunami. The village head and some male survivors came back a month earlier to the village to build the village's POSKO (a mediator centre between the villagers and the donors/organisations) (see Figure 5.17 and Figure 5.18) and temporary shelter by using reusable materials from the debris.

During this time the remaining survivors cleaned their village through the *gotong-royong* concept, voluntarily along with the rest of the villagers. The POSKO collected data of the survivors and sent proposals and reports to the donor for aid support and assistance. A self-built temporary shelter was built within the village compound first before receiving proper temporary housing assistance from the donors and international NGOs. Households reported having stayed at the temporary shelter for about two years before moving into their new house.

Figure 5.17 POSKO constructed immediately after the disaster
(Source: Gampong Lambung Office)

Figure 5.18 POSKO after few months since the disaster
(Source: Gampong Lambung Office)

Figure 5.19 House constructed by World Vision

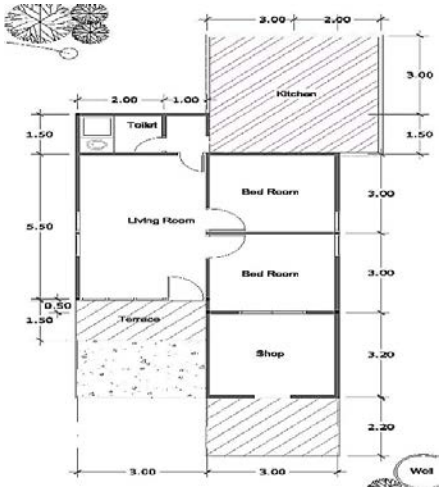

Figure 5.20 World Vision House plan

Figure 5.21 Land boundaries and ownership markings
(Source: Gampong Lambung Office)

Figure 5.22 Housing reconstruction
(Source: Gampong Lambung Office)

World Vision provided the 309 houses (see Figure 5.19 and Figure 5.20) for the survivors and their inheritors as well as a community centre for home industry activities in Gampong Lambung. In October 2006, the land consolidation process started where village mapping underwent a few stages such as preparing the pre-tsunami areas, identification of landowners and land boundaries (see Figure 5.21), measuring the lands, hamlets mapping, land-use planning, and removing debris. As of January 2007, 242 houses were in the midst of reconstruction (see Figure 5.22). Infrastructures such as the roads, drainage, mosque, schools, escape building etc were built only after the completion of the whole units. In this period, the water supply was already accessible from PDAM which is a local government-owned water utility company. There were about 149 households using kerosene for cooking (Kecamatan Meuraxa Dalam Angka Tahun 2005, 2006).

Current Condition

Houses were arranged into blocks and with three different land sizes: 150 m², 200 m² and 300 m²-type. A household with a 1000m² land size before the tsunami was entitled to have three land parcels and three houses of 300m² respectively after the tsunami disaster. A 10% portion of the land was donated for the public infrastructures in the village which the communities had agreed on earlier. Each household received a 6 m x 6 m house. 47% reported that they were a house owner before the tsunami disaster and 53% became house owner after the disaster.

67% of the households stated that they extended/renovated their house to build a kitchen, toilet, and floor and 68% spend more than IDR 10,000,000 (USD 900) to make extensions or renovate their house (see Figure 5.23). Additionally, the extensions were also made for storage purposes

(see Figure 5.24). From the observations, there were houses with shop extension (in front of their house or within the house compound).

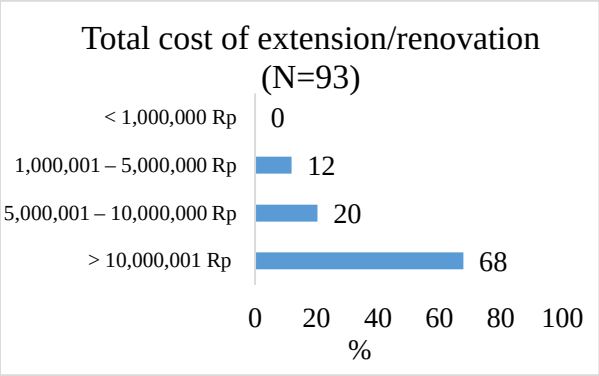

Figure 5.23 Total cost of the house extension/ renovation works on the house

Figure 5.24 Roof extension was made for livelihood equipment storage

Figure 5.25 The comparison of the road after the tsunami disaster (2006) and now (2017) (Source: Gampong Lambung Office)

More than half of the households (55%) were satisfied with the infrastructure (e.g. water, electricity, road and garbage services). From the observation, the asphalt roads into Gampong Lambung is in good condition (see Figure 5.25). The study also found that 79% of the household were satisfied with the commuting time they take to work, and 76% were satisfied with the distance to the education facilities (see Figure 5.26).

Most of the households are using gas for cooking, and pipe water connection is available throughout the village. However, there was a problem with the clean water supply at all of the four hamlets in 2013. They resorted to using water from the well, but it had ‘rusty’ smell and was yellow. The water flows slowly and only available at around 2 a.m. Households ended up buying

water at the cost of IDR 3,000 to IDR 4,000 for a 20L container which is a financial burden to households as they can spend up to IDR 1 million for just water in a month.

The survey also observed that the other infrastructure in the village which is in good condition (see Figure 5.27 - Figure 5.30). The village also now has a Masjid, a bigger space area to pray which can hold more than 100 people at a time. The escape building (capacity of 800 to 1000 people) equipped with 6 toilets has multiple functions of which are Meunasah (community hall and religious study area), the PKK (women's development activity) as well as practical for wedding events, workshops or seminar area, balloting centre, drill exercise or music-band practice area. However, the condition of the building is deteriorating with scrapped paints, cracks on the floor and wall (see Figure 5.31), exposed beams, non-functional toilets with broken doors, rusty lamps and vandalism on the walls (see figure 5.32).

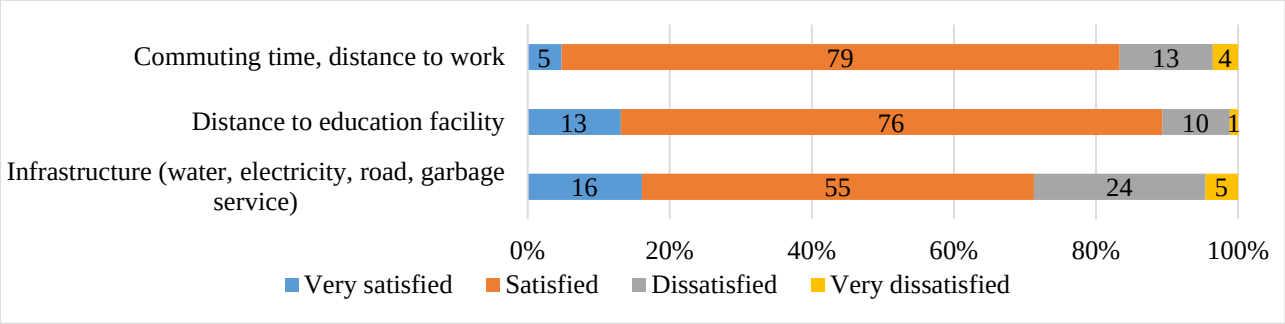

Figure 5.26 Access to public facilities (N=93)

Figure 5.27 Elementary school

Figure 5.28 Evacuation building

Figure 5.29 Sports Centre

Figure 5.30 Village office

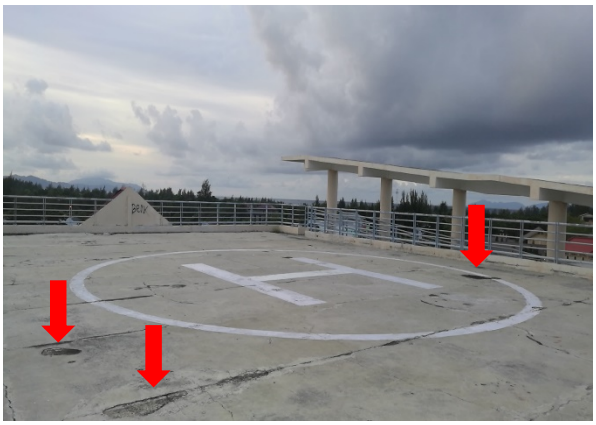

Figure 5.31 Cracks on evacuation building's helipad

Figure 5.32 Vandalism on the escape building

5.3.4. Natural Capital

Before disaster

In the 1970s, Gampong Lambung had paddy field, and many of the previous households were paddy farmers [R4 and R20]. From the PPJP Lambung (2005), the initial size of the aquaculture pond was at 16 ha. Most of the pond was breeding fish and shrimp, and harvest was sold to the local market nearby in Ulee Lhee. The productivity of the aquaculture was not that high which the farmers resorted to taking up another livelihood to support themselves.

During Reconstruction Period

The ponds were destroyed and were reduced to 8 ha. The village was submerged as the tsunami had destroyed the embankments that surrounded the village. Efforts for the landfilling was made up to 1.5 m on the whole village area, including on the permanently damaged aquaculture ponds.

Hence, reducing further the number of aquaculture ponds. The study found that there was no proper rehabilitation carried out on the aquaculture ponds. Damaged ponds were repaired manually by the households through *gotong-royong* and restored naturally through rainfall. However, due to the low quality of restoration, the production of the ponds was insignificant. According to [6], the restoration works for the aquaculture ponds were not pursued by the donors initially because of the small size of the remaining ponds and the lack of funds to assist the restoration of the pond. The aquaculture ponds were no longer the dominant income source. The permanently damaged ponds had changed the ecological conditions in the area which affected the local livelihood. Hence, the aquaculture ponds were transformed by the donors and NGOs to improve the livelihood and food security by making *kolam ikan* (fishpond) (see Figure 5.33) in Gampong Lambung in 2011. Figure 5.34 and Figure 5.35 displays the finished fishpond and the harvest works that took place after.

Figure 5.33 The process of making *kolam ikan* (fishpond)
(Source: Gampong Lambung Office)

Figure 5.34 Operational fishpond
(Source: Gampong Lambung Office)

Figure 5.35 Harvesting at the fishpond
(Source: Gampong Lambung Office)

Current Condition

The remaining agricultural land in Gampong Lambung is 3 ha (RPJM Gampong Lambung, 2017). Due to the slow restoration works and recovery rate for the damaged ponds, the pond farmers changed to other jobs (e.g. fishpond farmer, fishermen, entrepreneurs) while some taken up another extra job to support their families. The aquaculture ponds were sold or rent for the fishpond activity. As of 2017, there are ten households involved in the fishpond activity. Other households were involved in the entrepreneurial business are such as gemstone works, food and beverage (e.g. food and drink cart, stall, restaurant and having a shop space for business).

5.3.5. Social Capital

Before disaster

The relationship was strong, and there was no conflict among the people. They had the *arisan* and *julo-julo* system which can be formed only after gaining trust and having a close relationship with the community. Below is an excerpt from the interview that shows their closeness.

> I think we were already very close-knit even before the tsunami [R20].

During Reconstruction Period

Evacuee mostly stayed at the evacuation centre as relief goods and aid were easily accessible. However, in the case of Gampong Lambung, the whole survivors of Gampong Lambung decided to stick together and returned to the village, built their POSKO and temporary shelter through *gotong-royong* than being separated. Both women and men were involved in the *gotong-royong* (see Figure 5.36). Furthermore, the POSKO served to connect the villagers with donors and government. Unlike other villages, Gampong Lambung's one and only POSKO helped to centralise the information as well as aid and assistance from outside.

> It was good to be able to stay together with the people you have known at the POSKO area. We are thankful to Geuchik and Pak Sekdes (Secretary) who made effort to gather everyone [R13, R1 and R20].

Since their previous jobs were aquaculture farmers and fishermen, the kinship among the community was closer. Additionally, during land consolidation process, the villagers again showed their unity through their participation in the meetings and discussions (see Figure 5.37) throughout the whole process. Below is an excerpt to show the community's unitedness:

We were working till late night to map the houses. It was hard because there were so little of us. But we did our best. [R10, R1 and R20].

The close relationship and solidarity among the village residents made it easier for readjusting the village's land and attaining cooperation and consent for the redevelopment of the village. As for the relationship with the village leader, households mentioned that due to the intelligence and leadership, the village was rebuilt safer, orderly and better. However, many villagers were in disagreement with the new village plan as it requires to move and gather their ancestors' cemetery in one place. The cemetery was all over the place or sometimes behind the house. His effort was paid off when everyone agreed after many rounds of discussions. He also helped those whose land was less than the standard agreed amount by marking it up to 150 m².

Figure 5.36 Food preparation in 2009
(Source: Gampong Lambung Office)

Figure 5.37 Meeting for land consolidation
(Source: Gampong Lambung Office)

Current Condition

The study found that 48% of the households have been staying in the village for about 1 to 10 years duration followed by 32% of the households reported that they have been living for more than 20 years in Gampong Lambung (see Figure 5.38).

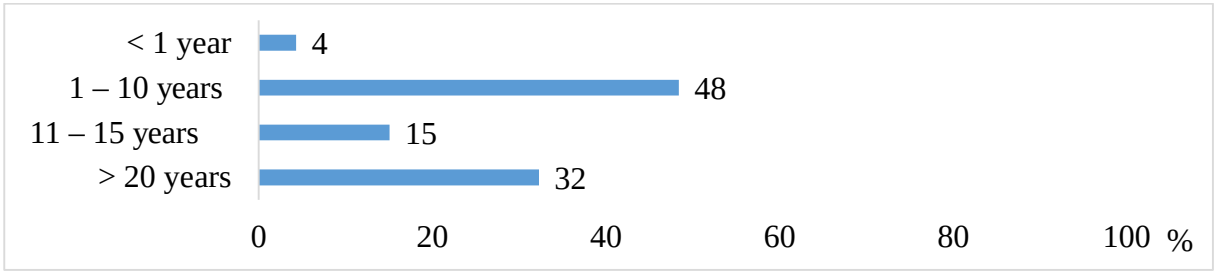

Figure 5.38 Number of years living in Gampong Lambung (N=93)

Most households took part in *gotong-royong* (see Figure 5.39), attended the community meetings, participating in the local festivals and mosque/religious activities (see Figure 5.40). There are only three social groups in the village: PKK, Agriculture Group (farmer and aquaculture farmer) and Women's Group. [R10] and [R16] mentioned that as one of the event-organising committee team member, the relationship between the permanent resident (original dwellers) and non-permanent resident (newcomers/renters) are good as during the village festivities or event, all of them gather and participate in the activities.

The survey found out 61% of the households stated that their relationship with the community has become stronger after the tsunami and more than half (54%) of the households reported that they were satisfied with their relationship with their neighbours in the community. From the observation, the women in Gampong Lambung usually spend their evening outside of their house chatting with their neighbours. They come out only after they finished cooking for dinner. They usually hang out in front of their house, or they walk to their opposite neighbour or anywhere where there is a crowd (see Figure 5.41).

54% of the household stated that they were satisfied with the relationship with the local government. This can be explained by the agreements (e.g. land transfer rights, calculation of land value etc) the villagers had with the government during the land readjustment process. The villager's creativity and active participation, as well as the close social relationship among themselves, acknowledged by the Mayor as there have been many government events, were held in the village. Such event was Aceh Province *Gotong-Royong* Month Opening Ceremony in 2014, Family Welfare Day in 2014 and Basic Disaster Management Training and Drill for the local government employees in 2016. 66% mentioned that they were satisfied with their relationship with the village leader (see Figure 5.42). The village leader is well-known for his leadership and dedication to redevelop the village with an orderly arrangement of the houses and having wider roads. The trust and respect he gained from his people show from his period of holding the village head position. The village head was in the office from 2005 until present.

Figure 5.39 *Gotong-royong* to set up tent for an event

Figure 5.40 Religious class after praying (Source: Gampong Lambung Office)

Figure 5.41 Neighbours spending together in the evening

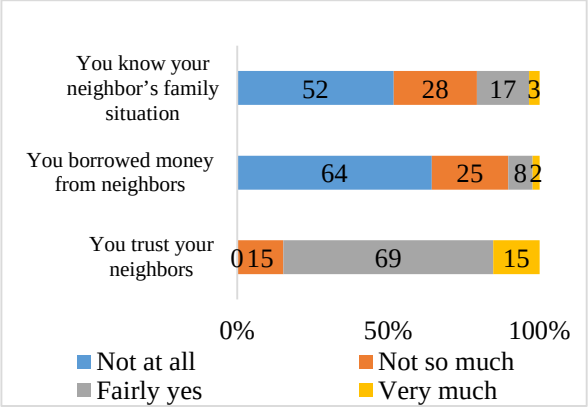

Figure 5.42 Social relationship among households (N=93)

The survey also found that 52% of the households reported that they do not at all know about their neighbour's family situation. This is because they said their neighbours are no longer their blood-related relatives or family members who used to live next to them. On the other hand, only 3% stated that they know about their neighbour's family situation. 64% of the households interviewed mentioned that they do 'not at all' borrowed money from their neighbours. They reasoned that the *arisan* and *julo-julo* helped them enough and therefore, there is no need to be borrowing from their neighbours. Regarding trusting matters, 69% of the households responded that they fairly trusted their neighbours.

5.4. Livelihood Interventions

World Vision reconstructed 309 units of houses and assisted in the water and sanitation works in this village. Table 5.2 displays the records of the donors and the support they provided to Gampong Lambung after the disaster.

Table 5.2 Aid Received by residents of Gampong Lambung

	Type of Aid	Donor
1	Temporary Shelter	Australia-Indonesia Partnership for Reconstruction and Development (AIPRD)
2	Temporary building (e.g. school, clinic, education facility, storehouse)	AIPRD
3	Water and Sanitation facilities	USAID, World Vision
4	Waste Management	Multi-Donor Fund (MDF)
5	Housing (309 unit)	World Vision through REKOMPAK-MDF
6	Escape building + helicopter pad, youth hall	Japan International Cooperation Agency (JICA)
7	School Complex	Rajawali Citra Televisi Indonesia, an Indonesian private television
8	Infrastructure (Road and Drainage, Village Office, Mosque)	BRR
9	Volleyball court	Lambung's resident own fund
10	Temporary Shelters, Warehouses, Knockdown Buildings And Artesian Wells, Health Services, Economic Skills And Training (e.g. Acehnese Cakes, Embroidering, Village Fish Pond, Bookkeeping, Fishpond Cooperatives)	World Vision+AIPRD
11	Health centre	Saudi Arabian Red Cross

Source: BRR (2009), USAID (2006), Ichsan (2011)

Since the location of this village is nearer to the ocean, an escape building was built by JICA, a Japanese governmental agency. This agency also opened up livelihood opportunities for the residents through collaborations and experience sharing between Higashimatsushima, a city which was affected by the 2011 tsunami and Banda Aceh city, where Gampong Lambung was one of the participating villages.

5.4.1. Policy

Land Rights

The Government of Indonesia has identified land rights as one of the vital elements of the rehabilitation process. Hence, the RALAS (Reconstruction of Aceh Land Administration System)

was set-up as to certify the land rights and title systematically through the community-participation decision. Land inspections were conducted through two steps: (1) assessment of the safety of the physical land condition and (2) land conditions (e.g. submersion level and contamination degree). Second, the documentation of land ownership, replacement of land records, and issuance of new certificates. The land consolidation process in Gampong Lambung was done to re-plot the community's land and rebuild the village. The community of Gampong Lambung worked together with the government and assistance from NGOs to lay the map out the village (assistance from YIPD), made the community action planning with the help from MDF/REKOMPAK (Community-based Settlement Rehabilitation and Reconstruction) and the village spatial planning with the UN-Habitat.

Human rights

The displaced survivors were given guidance on internal displacement and training on land rights, Islamic law, criminal and private law as well as agrarian law. The training was to educate the survivors and the community leaders with the basic knowledge of practical law-related issues that occurs in the community and the available channels to help them. This also applies to overcoming the problem of inheritance, marriage status and the land ownership as they had lost their legal papers in the tsunami disaster. For instance, by acquiring land and asset rights, widows can re-establish their access and participate in the mapping exercise. These rights create opportunities for them to physically and socially reorganise themselves and get back into the society.

Housing

In the case of people who had permanent loss their land due to the tsunami or renters, they were qualified to submit for collective relocation. The Government of Indonesia provided some land through leasing or ownership transfer while the international NGOs assisted in building the houses. Those who moved into the relocation sites were given ownership of the land and the house at no charge. However, the community in Gampong Lambung did not opt for this and instead willingly gave up 15% to 20% of their land for the redevelopment of the village. Households with less than the standard 150m² land before the tsunami were given some lands to have the standard 150m² land volume. The MDF funded the reconstruction of the houses in Gampong Lambung with the

allocation of IDR 58,000,000 (USD 6,349) for one house. MDF built about 309 houses with a total cost of IDR 18 billion (USD 1.9 million).

Environment

The Law No.26 (2007) on Spatial Planning and the Regulation from the Minister of Public Works No. 05/PRT/M/2008 provided guidelines on the Provision and Utilization of Green Open Space in Urban Areas. The law mandates a 30% of the city tangible area for Green Open Space (RTH) (see Figure 5.43) which consists of 20% of public open space and 10% private space. The RTH is an urban environment that serves to restore the ecosystem, adds aesthetic value, eliminating air pollution as well as to protect the city from natural hazards. The RTH in Meuraxa District can be found in is located in Gampong Lambung. The 2 ha land has about 1000 trees and is equipped with a sports ground and a recreational area.

Figure 5.43 Open Green Space (Source: Meuraxa District Office, 2012)

5.4.2. Program

The construction of the escape building in Gampong Lambung by JICA was strengthened with the establishment of the Higashimatsushima Organization for Progress and Economy, Education, Energy (HOPE) - Community Based Mutual Reconstruction Acceleration Program (CoMU) by utilising the local resources in Banda Aceh and Higashimatsushima. The project was established in October 2013 with the objective to have 'mutual reconstruction' for both cities after the disaster

occurrence and to empower household's economy. The project officially started in 2016 with the transfer of skills and training program, sharing of knowledge and experiences as well as technologies from the two cities which is scheduled to wrap up in 2019. The JICA collaboration projects had helped and improved the livelihood of the households in Gampong Lambung.

Training and skills development

The OJT (On-Job-Training) from CoMU Program focuses on four themes which are sustainable urban development, regional disaster management, and community business plan by utilising local resources, as well as capacity building for the local government. The themes are to help and improve the livelihood of households in Gampong Lambung through economically-oriented activities such as cross stitch, oyster farming and organic vegetable plantation.

- Cross stitch

The majority of the members were a household with small children. Since it was difficult for mothers to be away from their small children, the cross-stitching enables them to work from home. These housewives formed their group called 'Stitch Girls Banda Aceh' which adapted from the original group in Japan, 'Higashimatsushima Stitch Girls'. CoMU Program brought cross stitch experts (see Figure 5.44) to Gampong Lambung to teach and guide the housewives on stitching techniques, quality controlling and marketing approach. Both communities employ the colour red and white which represents both countries to show unity in their products (see Figure 5.45).

Figure 5.44 Lessons with Japanese instructor
(Source: Gampong Lambung household)

Figure 5.45 Cross stitch works
(Source: Gampong Lambung household)

- Cultivation of Oyster

The oyster cultivation farming was among the newly introduced livelihood activity in Gampong Lambung. The Japanese fishermen from CoMU Program shared their experiences and tools (see Figure 5.46), cultivation techniques, food alternative (see Figure 5.47), preservation), and management procedures. Some of the training included oyster cooking and handling of the oyster shells.

Figure 5.46 Tools for oyster cultivation

Figure 5.47 Alternatives for oyster usage

- Organic vegetable

Additionally, the Japanese fishermen also gave explanations and guidance on growing organic vegetables by hydroponic technique (see Figure 5.48) and organic plantation (individual and group scale) (see Figure 5.49 and Figure 5.50) through a program called City Garden. The organic vegetable program hopes to improve the economy of the households as well as the surrounding community. About 20 housewives in Gampong Lambung participated in this activity. The program also teaches the housewives packaging method for marketing the organic vegetables (see Figure 5.51).

Figure 5.48 Hydroponic plants

Figure 5.49 Organic plantation (small scale)

Figure 5.50 Garden in Gampong Lambung

Figure 5.51 Packaging suggestion

- Fishpond

After the housing reconstruction ended in 2009, World Vision provided livelihood assistance to improve food security for the village through the *kolam ikan* (fishpond) area development. Assistance was also offered for fish hatcheries assistance, facilitating and monitoring of catfish productivity as well as fish processing activities for Gampong Lambung. The Banda Aceh Fisheries Department in 2012 made follow-up support by training the fish farmers on how to manage and market their produce locally or regionally. The fishpond is located in the centre part and northeast of the village where there is fresh water available. The fishpond is a smaller pond that does not require a mixed environment of freshwater and seawater, unlike the aquaculture pond. The fishpond in Gampong Lambung breeds catfish, crab and oyster.

- Aceh Gemstone

In 2014, the popularity and demand for gemstone went up with following the current customer's trend. A gemstone can be sold at IDR 200,000 (USD 180) for a small low-rank gemstone and can fetch up to IDR 20,000,000 (USD 1800) for a precious stone such as Idocrase. The Department of Cooperative, Small and Medium Enterprise and Trade provided a gemstone machine and tools

worth IDR 20,000,000 (USD 1,800) to Usaha Batee Aceh, a group of men in Gampong Lambung to venture into gemstone and ring-making a business. However, in 2015 the demand went downward as the gemstone has no appreciation value, unlike gold. The group was found to be still operating but as part-time.

- Sewing

Among the life skill, training provided for women was sewing and embroidery techniques. The training from the government targeted women with sewing experience which aimed to reduce poverty and unemployment in the district. Sewing materials and tools such as sewing machines, threads and clothes were provided to those who passed the competency tailor exam (see Figure 5.52). From the discussion and interviews, most of the training was only for the permanent resident in Gampong Lambung. The training covered from making bed sheets, curtain, pillowcase and clothes for women.

Figure 5.52 Sewing class for housewives (Source: Gampong Lambung Office)

Local Resource Enhancement

- Women's Group

The group consisted of 30 women of various backgrounds (e.g. housewife, teachers, and government staff). The group makes handicrafts and produce food products such as oyster sauce, Pepes Tiram (oyster wrapped in banana leaf cuisine), seaweed products, beef jerky, *Keumamah Khas Aceh* (fish cuisine) and various other Acehnese traditional cakes. These home-produced products were collected and gathered to be sold at the nearby local market owned by the Department of Fisheries and Marine. Although the oyster cultivation farm is relatively new, the first rounds of produce have shown good sign as oyster and its by-products have started to enter the market. However, from the observation and interviews during the 2017 visit, the market was

non-functional, and the only time it was used was back in 2016 for selling home-industry products which were open from 2 pm to 5 pm daily. The activity did not last long as no customers were coming and there were no efforts made to help the women to publicise their products. The attempt was a failure which left the market area abandoned until now. The women now sell their products at the district-level event which occurs once or twice a month. They mentioned that they needed more training on packaging and marketing strategies to be able to sell their things.

- Waste recycle

The program called TPS 3R (Tempat Pembuangan Sampah Reduce – Reuse – Recycle) was an initiative by a household of Gampong Lambung which was then supported by the CoMU Program. The TPS 3R emphasised on waste education program and waste processing that separates garbage into organic and non-organic at a centre located in front of the escape building. Organic materials are processed into compost while non-organic materials are turned into handicrafts. These product outcomes are being used for personal for personal use as well as sold at the local market.

- Fisherman Group

A fishing boat equipped with fibre barrels and other fishing facilities worth IDR 300,000,000 (USD 27,110) were provided to the remaining fishermen in Gampong Lambung in 2015. This boat was given to facilitate fishermen to go for tuna-fishing in the Andaman Sea. A workshop on fish preserving and canning by the Marine and Fisheries Department were also held for the fishermen.

5.5. Livelihood Strategies taken up by Gampong Lambung

5.5.1. Agricultural intensification

Due to the reduced number of wetlands and functional aquaculture ponds, farmers in this village had opted for agricultural intensification such as fishponds, oyster cultivation, poultry and livestock rearing, and organic vegetable cultivation.

Kolam Ikan (Fishpond)

Most of the aquaculture household who suffered from the permanent loss of pond changed their livelihood to mostly to fishpond and oyster cultivation farming rather than taking up new livelihood activity. This is because the fishpond or oyster cultivation farm activity uses similar techniques to aquaculture farming which eases the knowledge transfer for the aquaculture farmers.

Household started working at the fishpond with 25,000 catfish 'fry' (baby fish) in 2011 and harvested their first-round catch worth more than 1 tonnes after a few months. After the harvest, another 5,000 fry were put into the fishpond for the next round. However, the production of catfish was not steady as the catch was gradually declining. In 2012, the harvest was around 400 kilograms only. The price of 1 kilogram (about six catfish) is sold at IDR 14,000 (USD 1.30)/kg for the villagers while price sold to the middleman is at IDR 17,000 (USD 1.50) or IDR 18,000 (USD 1.60)/kg. The market price for the catfish is at IDR 24,000 (USD 2.20)/kg.

Oyster cultivation

In the case of Gampong Lambung, the permanent damage to the aquaculture ponds forced some of the farmers to intensify the livelihood by taking up training provided by CoMu Project on oyster cultivation as one of their intensification strategies. The cultivation activity freed some hours from the 12-hour oyster diving routine which collects only about two baskets (about 4L of capacity). The releases of some hours enable farmers to occupy themselves with other income-generating activity.

Poultry and livestock rearing

Households also took up livestock and poultry rearing as an additional livelihood activity to support their family (see Figure 5.53). Despite the huge initial capital needed for livestock rearing, the business is good as the demand for cows and goats are high, especially during the Muslim's festivals and for *a kenduri* (feast) purposes (e.g. celebration of a newborn or death, weddings etc.). Additionally, eggs are among the most sought dish in Acehnese cooking. The demand for chicken eggs was at 1 million per day in 2015 for Aceh Province, but only 30% of the demand was being fulfilled by the poultry industry in Aceh while the rest were imported from Medan (Serambi Indonesia, 2015). According to [R11, R12, and R19], some pests are harming not just their livestock but also the vegetable plantations. The pests are from the growing bushes around the vacant house area as well as the village surroundings.

Figure 5.53 Livestock and Poultry rearing

Organic Vegetable Cultivation

The organic vegetable farming (see Figure 5.54) in Gampong Lambung is to supply food demand for the household consumption and to increase the economic status of the households through the sale of the organic vegetables. Example of vegetables is spinach, kale, lettuce, mustard, tomato and eggplant. Additionally, this household also produces plant seedlings, fertilisers and organic pesticides as well as decorative plants (see Figure 5.55). Some households also preserve their produce for own consumption (see Figure 5.56).

Figure 5.54 Organic vegetable

Figure 5.55 Decorative plantations

Figure 5.56 Preservation of food stock

5.5.2. Livelihood Diversification

In livelihood diversification, households may be involved in various economic activities to improve their income sources. Among the few actions taken for livelihood diversification can be seen from the time allocated for conducting the economic activity and the pattern changes in household consumption (Allison & Ellis, 2001). Livelihood diversification also helps to solve challenges caused by seasonality as well as generating income sources when the household is low

on cash. Ellis (1998) stated that the diversification process taken by households is a creation of diverse livelihood activities and social support with the purpose to improve their living standards.

Small-scale business

Many households in Gampong Lambung started a small snack shop business by setting up a table in front of their house (see Figure 5.57). Other households made extensions in front of their house to make space for the shop or built a separate area in front of their house for the grocery shop (see Figure 5.58).

Figure 5.57 Small snack shop

Figure 5.58 Grocery shop

Handicrafts

Households that produce cross-stitch goods sell their products both locally and internationally. The CoMU Program brings the goods (e.g. phone case, pencil case, purse, T-shirts logo and frames (see Figure 5.59) to be sold in Japan every two months. Households also produce acrylic products such as tissue box (see Figure 5.60) and baskets for wedding gifts for the local market.

Figure 5.59 Cross-stitch products


Figure 5.60 Acrylic tissue box

Recycle goods

Another alternative for household's livelihood diversification is by processing of organic waste into compost and fish feed/oyster feed (see Figure 5.61) which is sold at the local market. Plastics and papers are also recycled into creative products (e.g. bags) (see Figure 5.62) which are sold internationally.


Figure 5.61 Processed waste into fish feed


Figure 5.62 Recycle product

Home-made product

Gampong Lambung produces four of their home-industry product brand which has marketed all over Aceh and in Medan. The products are onion snack, traditional Acehnese cake, dry cake and acrylic handicraft.

Others

The household in Gampong Lambung has no longer specific livelihoods as households taken up a wide range of livelihood activities after the tsunami disaster. Most of the households were observed to have multiple income sources. Having a variety of income sources is a form of assurance which does not just portray the need for survival but can also be related to improving the household's economic condition to achieve livelihood security (Ellis, 1998).

Among the livelihood activities performed by Gampong Lambung's households are selling or renting out extra houses and lands. The survey found that some of the lands in Gampong Lambung were being put up for sale, while some houses were rented out or sold off because the owner is living elsewhere or having multiple houses as they owned more lands before the tsunami disaster which entitles them to have more than one land parcels. Additionally, there were also Banda Aceh folks who were looking to expand their asset by purchasing land and building a house. The price of land for housing in the area is increasing annually, with the price (as of 2017) around IDR 400,000 (USD 36) to IDR 600,000 (USD 54) per m² depending on the location and condition of the land. Land that was used to be cemetery zone were valued at IDR 100,000 (USD 9) per m². According to the discussions with the households, up until now, there is no interest shown in purchasing the cemetery area. On the other hand, land for a commercial building such as for shops or restaurants, especially near to the main road can fetch up to IDR 1,500,000 (USD 135) per m².

In the organic vegetable cultivation, herb plants (e.g. lemongrass and ginger) are processed into aromatherapy oil (see Figure 5.63), tea, and soap (see Figure 5.64). Households who previously were entrepreneurs now opted for a different kind of business after the tsunami.

Other secondary livelihood activities which can be found in Gampong Lambung are martial art (taekwondo) class for children, group fishing (3 to 5 people) by renting out a boat to fish (deep sea fishing), casual labour for fishpond, wood (see Figure 5.65) and metal accessories, sewing services for some housewife and transportation business (*becak*) (see Figure 5.66).

Figure 5.63 Aromatherapy

Figure 5.64 Herbal soap

Figure 5.65 Wood accessories

Figure 5.66 *Becak* services

5.5.3. Migration

Households in Gampong Lambung showed a high number of migration records with an average of 36 people per year. Figure 5.67 shows the fluctuation of people moving into Gampong Lambung from 2011 to 2016. However, in 2015, the number of people moving out rocketed to 74 people from 11 people the previous year.

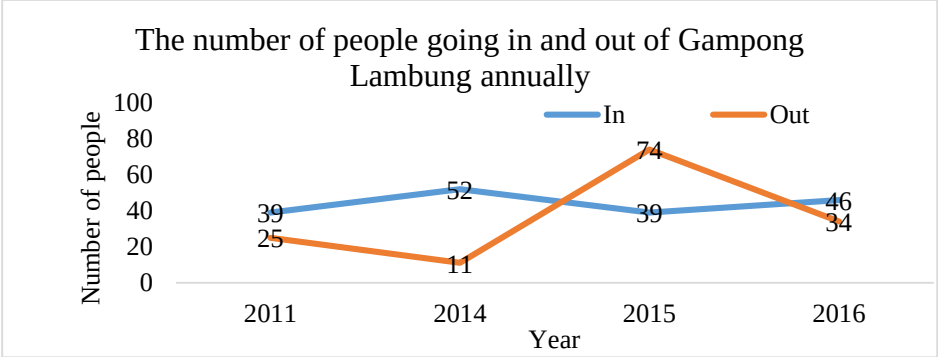

Figure 5.67 Data of people moving in and out of Gampong Lambung (Source: Kecamatan Meuraxa Dalam Angka (2012, 2015, 2016))

Many Gampong Lambung residents went out due to limited work opportunities in the village as the number of aquaculture ponds were either reduced or totally lost. Some moved out because of marriages, work relocation and also to have easier and more convenient access to go to work. Additionally, the number of people going into Gampong Lambung increased gradually after the disaster reconstruction in 2009. The neat, orderly and beautiful village environment and the friendliness of the people were some of the appeals that drew the renters to stay in Gampong Lambung. They also like the spacious environment and the available facilities for their children to play. For instance, during the survey, the interview was interrupted a few times by people on cars

or motorcycle asking for lands or house for sale. The interviewee would then replied and brought them to see the land/house or the owner who is selling them. Afterwards, the interviewee came back to the house to continue with the interview.

From the interviews with the households and also discussion with the village office administrators, the movement of in and out was usually due to marriage and work. Those who came into the village were made-up of relatives of the existing households, employees who have been transferred to Banda Aceh, job seeker who came to look for jobs in the city, entrepreneurs seeking better businesses prospect as well as students who attended schools and university. The majority of the outsiders came from other parts of Aceh: Aceh Besar, Bireun, Pidie, Langsa, Sigli and as far as from Medan, Bandung, and Jawa. The renters are usually involved in the food industry where they sell grilled corn, 'Bakso' (meat skewer) etc. the rent starts from IDR 4,000,000 (USD 360) to IDR 5,000,000 (USD 451) for a 12-month contract. The summary of the livelihood changes for Gampong Lambung is displayed in Figure 5.68 while Figure 5.69 shows the village history chronology.

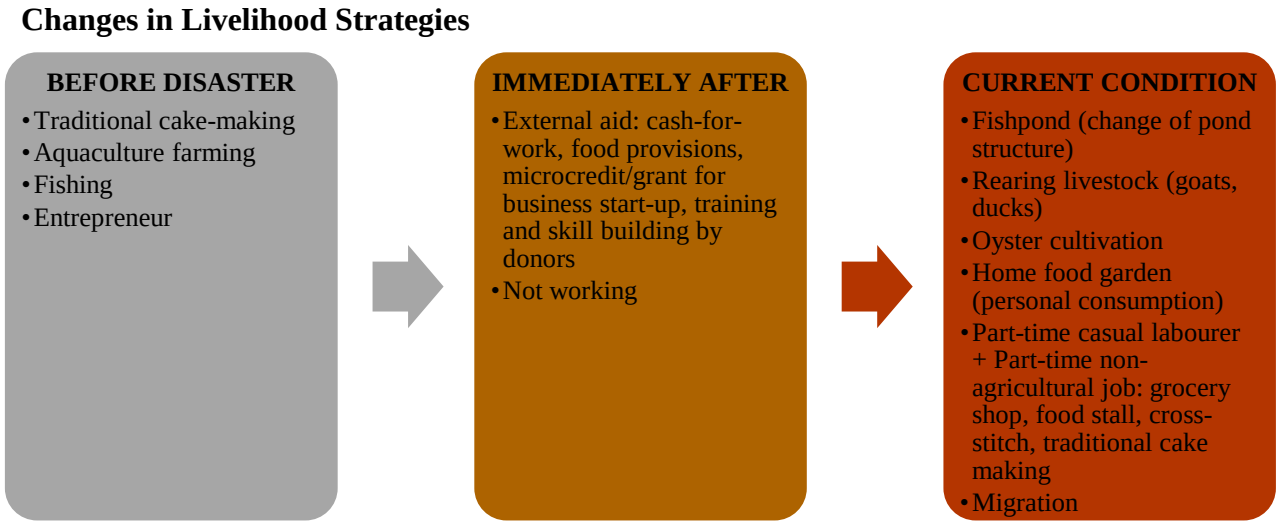

Figure 5.68 Summary of livelihood changes in Gampong Lambung

5.6. Rationales for Choosing Different Livelihood in Gampong Lambung

First, the permanent changes caused by the 2004 IOT disaster to the availability of natural resources in Gampong Lambung. The number of the utilisable agricultural land were reduced which affected the livelihood of the households in Gampong Lambung. Households were relying on the natural resources (e.g. paddy field and the aquaculture pond), but due to the tsunami impacts,

there were no longer paddy fields or functional aquaculture ponds. Those households had to acquire new livelihood or engage in another new livelihood to cater for their family needs.

Second, the majority of the household stated that their current main income was insufficient and hence, there was a need to earn higher income or to take up another job. From the interviews and discussion, the high expenditure of purchasing water for their daily necessities due to the poor water supply connection in the village also contributed to the income insufficiency. Third, households revealed that education was one of the reasons for them to take up new livelihood activity. They mentioned that education could improve the living conditions. Fourth, there were no inheritors to succeed the traditional Acehnese cake production. However, the intervention (e.g. skill and training, provisions of tool and equipment) from the government and the NGOs, sparked interest among some of the housewives in Gampong Lambung to start up their own production business. They take up the job not just to earn the extra income but to also preserve the tradition [R13].

Fifth, household mentioned that they take up or change their livelihood due to having small children [R11, R13, and R16] and their marital status as a widow. From the interviews, the widows had to rely on themselves as they have no one else to turn to and they have to bear more responsibility as both the mother and father. Sixth, competitions of the existing business. [R11] had a small business selling petrol (for motorcycle and *becak*) and a coffee shop before the tsunami disaster but changed his business to grocery business. He mentioned that there were too many competitions for the petrol business and saw there was a demand for grocery shop in the village area. Seventh, there were also some households who joined the fishermen's group or the fishpond group despite not knowing the technique as to avoid being unemployed.

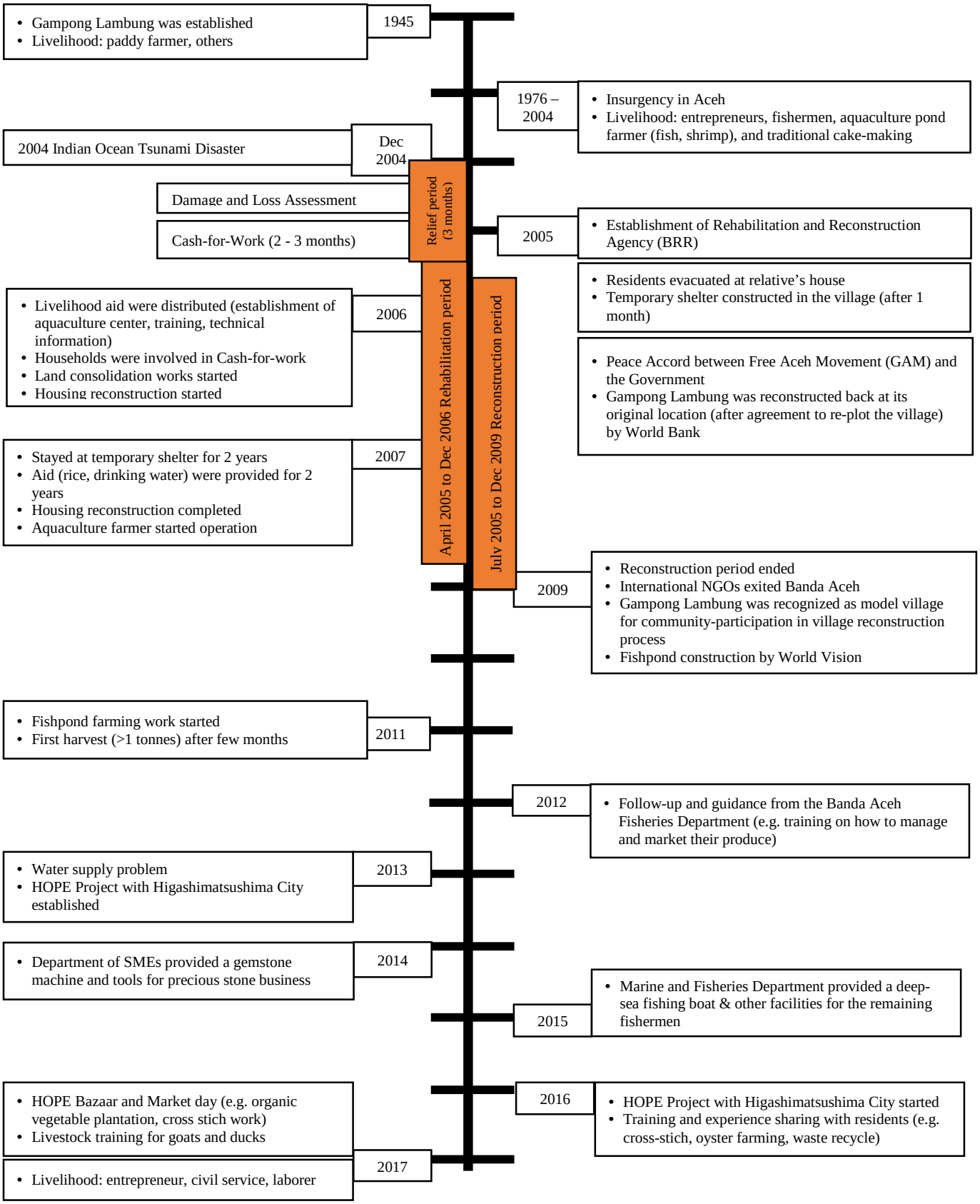

Figure 5.69 Gampong Lambung livelihood chronology

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CHAPTER 6: GAMPONG PANDE AND GAMPONG LAMBUNG: A COMPARISON

6.1. Introduction

After the 2004 IOT disaster, both of the villages underwent a tremendous change which affected their livelihoods. The change in their livelihood assets has been driven by various reasons which resulted in them taking up additional or new livelihood while some continued with the previous livelihood activity.

6.2. Livelihood assets

6.2.1. Human

The number of population for both villages were reduced drastically after the tsunami. About three-quarter of the total population were lost during the tsunami for Gampong Pande (from 1199 people to 254 people) and Gampong Lambung (1780 people to 440 people) (refer to Table 6.1).

Table 6.1 The total population and households of Gampong Pande

Details	Before tsunami (~2004)		Immediately after tsunami (2004~)		Current (2016)	
	Pande	Lambung	Pande	Lambung	Pande	Lambung
Total population	1199	±1780	254	440	860	584
Total household	204	311	153	248	251	247
Family size	5.8	5.7	1.6	1.7	3.4	2.4

Source: Development Plan Gampong Pande (2005), Kuta Raja District (2005) and (2017)

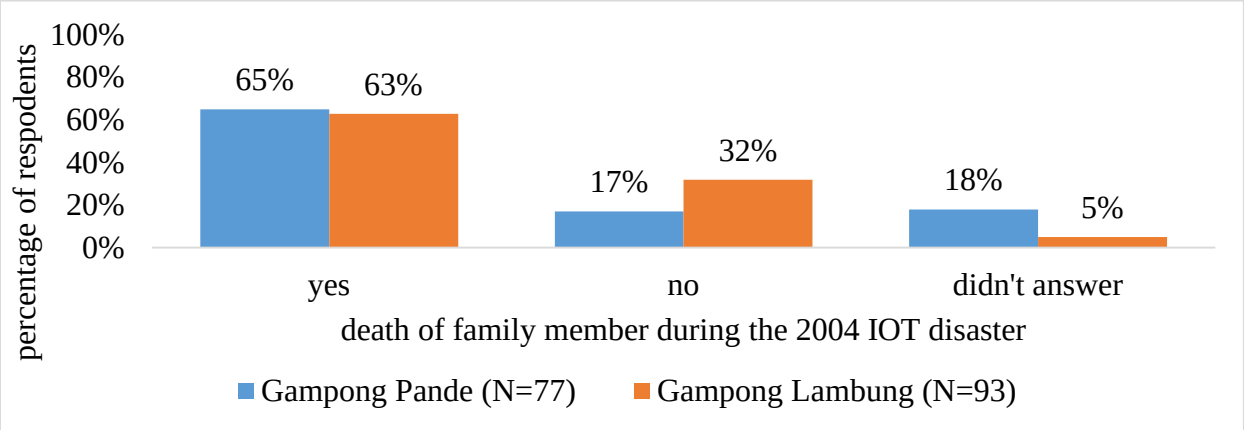

Figure 6.1 Number of households that experienced deaths from the 2004 IOT Disaster

As expected, more than half of the households in both villages reported loss of a family member or relative after the 2004 IOT disaster which reduced the number of their household size (see Figure 6.1). Due to many women were killed by the tsunami disaster, new families are formed through new marriages which increases the population of the village. Additionally, both villages experienced the influx of outsiders who came into the village to rent a house there. Renters are job seekers looking for opportunities in the city as well as those who were transferred to office branches located in the city.

Throughout the relief and reconstruction period, households in both villages relied heavily on the aid assistance especially the CFW and food aid. During the relief and reconstruction period, households in both villages were found to have changed their livelihoods. Most households are currently conducting various types of livelihood activities after the disaster to support themselves. The primary livelihoods activities found in both villages, particularly those households who relied on aquaculture ponds as well as the fishermen, are found to have reduced or cease to exist. Additionally, the number of population for both villages are gradually increasing with many new residents coming in through marriages, house renters and returnees (heir to the reconstructed house).

6.2.2. Financial

31% of households in Gampong Pande stated that their financial situation is stronger now (see Figure 6.2) compared to Gampong Lambung (20%). Households in Gampong Pande reduced their dependency on natural resources by taking up various livelihood strategies to secure higher and more stable income. The aquaculture pond and fishing activity are based on ‘high return, high risk’ concept where the yield/catch are not always fixed. There are too many factors that can influence the productivity. Some of the examples are the quality of the fish/shrimp seedlings, the ratio of saltwater and freshwater which need constant watch using human labour as well as environment’s influences such as weather. Therefore, households decided to improve their livelihood by either intensified their agricultural activity (e.g. changing pond organism) or diversified their livelihood into having their own business (e.g. grocery shop) which have improved their lives by providing them with income security. On the other hand, since there are not much of dependency on the local resources for Gampong Lambung’s households, migration was carried out to look for livelihood opportunities outside the village. Children’s education, food and other bills were regarded the

highest priority in spending for both villages. Additionally, households also make use of the social media platform such as WhatsApp, Facebook and Instagram to run their business (e.g. selling baby clothes, dresses, praying garment for women and shawls).

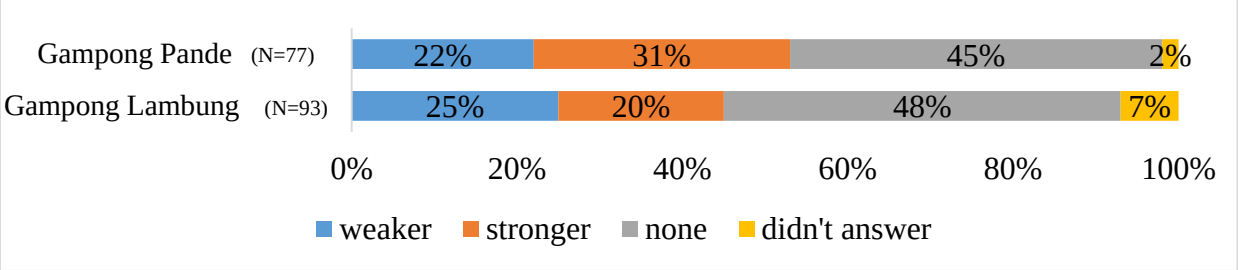

Figure 6.2 Current financial situation for both villages

Households in both villages were also found to rear livestock for additional income. The government provided households with pregnant cattle or goats as a business start-up initiative for the households. Livestock is raised in the vicinity of the village where the animal-shed can be found behind or next to the house.

The informal type of credit system is the popular alternative to savings for Gampong Pande and Gampong Lambung. The system was found to be present throughout the three periods of the disaster. The informal credit in these villages gathers a group of women, mainly housewives who agree to join for a period to carry out saving and borrowing activities among themselves. Apart from the simplicity of the system, the formation of the group requires trust and commitment from its members. This indicates that the social relationship between the households is good.

6.2.3. Physical

In the physical assets, the tsunami swept away everything and flattened both villages. International donors helped to reconstruct houses as well as some infrastructures such as health centre, education facilities, roads, and mosque. ADB reconstructed houses in Gampong Pande while World Bank rebuilt the houses in Gampong Lambung. The housing support freed some cash for the households which otherwise needed for building material and labour works. This had helped the households to conduct income-generating activities, especially for the women, where they can work from their home to seek additional income for their household to support daily expenditure and children's school expenses. House ownership adds an advantage especially for the women as owning a house lowers the possibility of falling into poverty (Rakodi, 1999).

Since the reconstructed house did not come with a kitchen, 87% households in Gampong Pande and 62% households in Gampong Lambung renovated or made extensions to their house to accommodate their needs (see Figure 6.3). Extensions were made to add a kitchen as well as some space for business activities. Selling snack or grocery shop is the most common type of business conducted in front of their house.

Despite having only 12% of households reported no renovations/extensions work done on the house in Gampong Pande, Gampong Lambung had a higher percentage (31%) of households conducting renovations/extension. This is because the current occupant is usually not the house owner. In Gampong Lambung case's, house owner could be a child who is still too young to stay by him/herself and hence, the house is taken care by some relatives instead. Additionally, the high percentage is also caused by a high number of renters in Gampong Lambung. Renovated houses are usually pricier and are less sought by renters. This results in having no returns and abandonment of the house. Also, renters would have to construct renovations by themselves which is not practical for them in the long run as they are only staying for the short term.

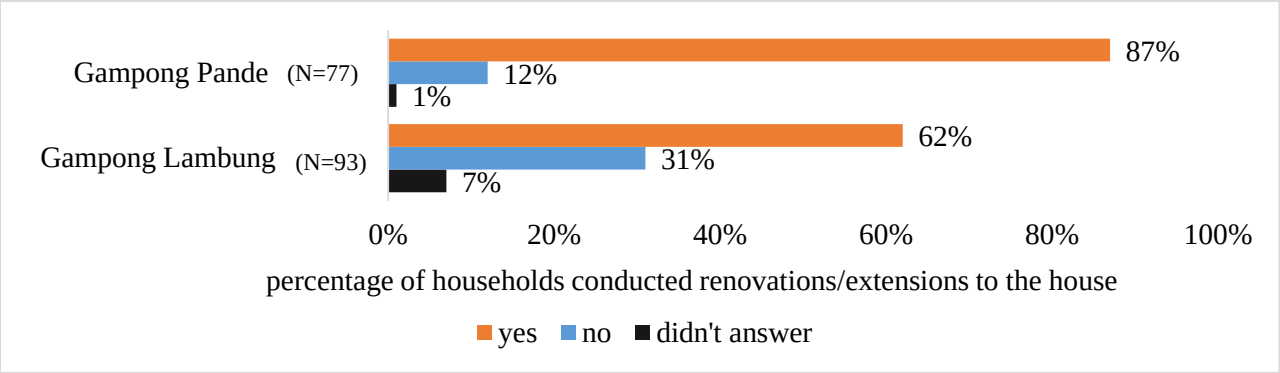

Figure 6.3 Renovations/Extensions carried out by households in both villages

49% of households in Gampong Pande and 43% of households in Gampong Lambung spent more than USD 739 to make the renovation or extension works (see Figure 6.4). The renovation or extensions carried out shows that households are attempting to live a better, more comfortable life. Various livelihood strategies were taken up by households to pay for the high cost of renovation/extension as well as to achieve their ultimate livelihood goals (e.g. more income, food security, and reduced vulnerability).

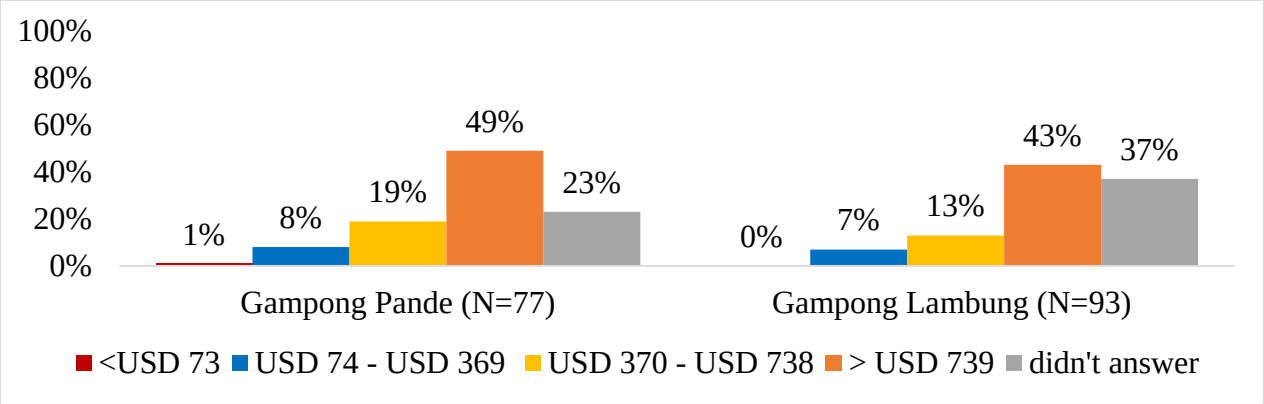

Figure 6.4 Cost of house renovation/extension in both villages

Despite bearing some similarities in most of the infrastructures, the differences between Gampong Pande and Gampong Lambung is obvious with the evacuation building in the latter village. As the location of Gampong Lambung is much closer to the ocean, JICA built an 18 meters high evacuation building as part of the disaster mitigation measures.

6.2.4. Natural

Before the 2004 IOT, households in Gampong Pande and Gampong Lambung were relying on the aquaculture ponds which was the natural resource available within the villages. Gampong Pande had 167 ha while Gampong Lambung had 16 ha of aquaculture ponds (refer to Table 6.2). However, immediately after the disaster, the total size of the aquaculture pond size reduced drastically for both villages (Gampong Pande 14 ha and Gampong Lambung 8 ha) which affected the aquaculture farmers. Despite undergoing rehabilitation works, some of the ponds failed to restore to its normal condition causing farmers to suffer loss in productivity. Some ponds were permanently damaged which caused the farmers to intensify or diversify his livelihood activity. For Gampong lambung, as the size of ponds were too small, rehabilitation efforts were not conducted. Farmers just left those damaged ponds to naturally be restored but it was unsuccessful. Ponds were then transformed into fishpond activities instead by the JICA.

Table 6.2 Natural assets changes in both villages

Natural assets	Before 2004		Immediately after disaster		2015	
	Pande	Lambung	Pande	Lambung	Pande	Lambung
Aquaculture pond land	167 ha	16 ha	14 ha	8 ha	18 ha	3 ha
Mangrove	23 ha	-	15 ha	-	48 ha	-

Gampong Pande has mangrove plantations which provided resources such as food and materials (e.g. barks, leaves) for free to the households. Many households were relying on the mangrove for free food and materials which helped with their household's expenditure. For instance, the mangrove's leaf, especially the young buds are cut, processed and rolled to become traditional cigarette which is very popular among the Acehnese people. However, the current mangrove in the village is still young and hence, could not offer the same resources. This forces some of the households to look for other livelihood alternatives. In the case of Gampong Lambung, there is no mangroves plantations. The remaining small ponds were not enough to cater for the village. This limitation of natural resources, forced households in this village to migrate out to seek more livelihood opportunities.

6.2.5. Social

Households were found to participate actively in their respective village activities especially in the community meeting, local festival, cleaning up activity, and mosque activity (see Figure 6.5). Women's group are also operating as they are conducting the informal credit system. This shows that the relationship among the households in their community is good as they meet regularly during the community meeting, local festival, cleaning up (*gotong-royong*), mosque activities for religious studies as well as the informal credit group (*arisan*). On a similar note, 6% of households in Gampong Pande and 4% of households from Gampong Lambung reported to not participate in any of the activity in the community. These households were found to be renters who mentioned that they are staying on a short-term basis as well as elderly households who do not participate due to health reasons.

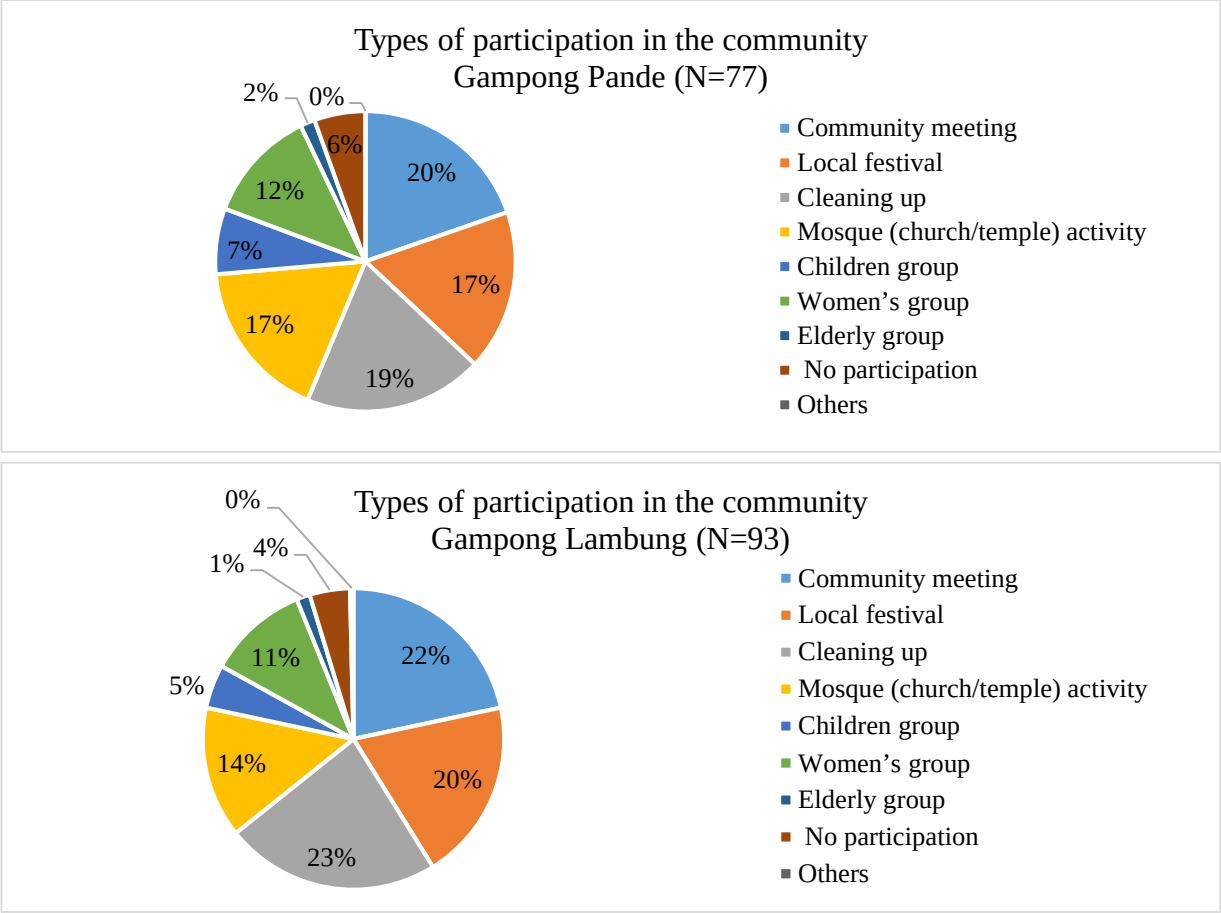

Figure 6.5 Participation of households in the village activities (multiple answers)

Households in both Gampong Pande and Gampong Lambung are satisfied with their relationship with all of the three entities (local government, village leader and community) (see Figure 6.6). However, in contrast, 56% of the households in Gampong Lambung reported that they were dissatisfied with the relationship with the local government. This might due to the absence of restoration works on the damaged aquaculture ponds after the tsunami disaster. Also, households have stronger connection with the external organisation, JICA, who visits more frequently than the local government.

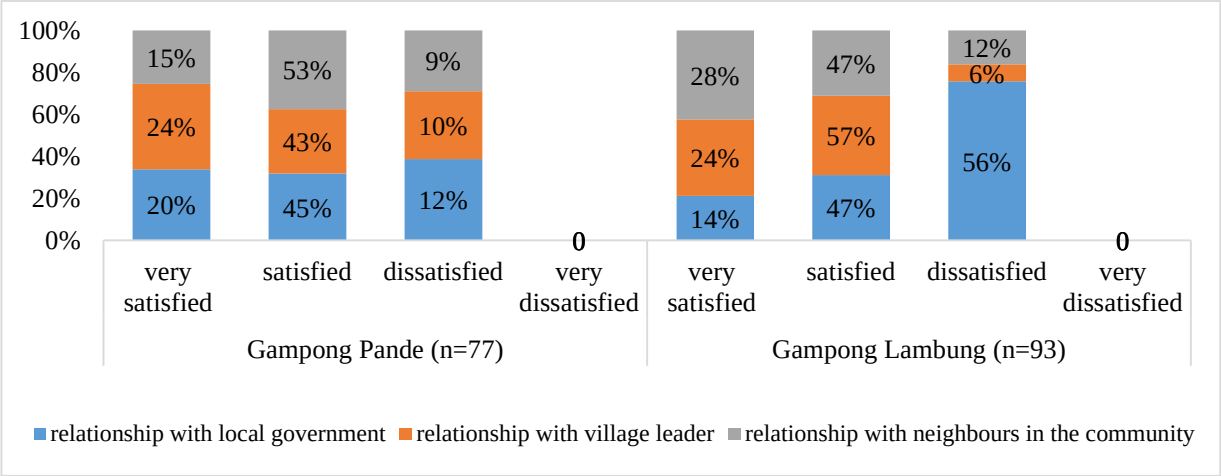

Figure 6.6 Relationship satisfaction with local government, the village leader and community

83% of Gampong Pande's households and 63% of households in Gampong Lambung reported they fairly trust their neighbours (see Figure 6.7). Households mentioned that they would put their children to stay with the neighbours when necessary or during emergencies. This helps the households to have a peace of mind when conducting their livelihood-related activities, knowing that they could rely on the neighbours. On the contrary, 14% of households in Gampong Lambung reported that they do not trust their neighbours so much. This is probably due to the loss of kinship in the family-relative community which existed in the village previously before the tsunami. Neighbours are now made-up of newcomers from outside of the village which some are not blood-related. Table 6.3 summarizes the livelihood assets changes for both Gampong Pande and Gampong Lambung.

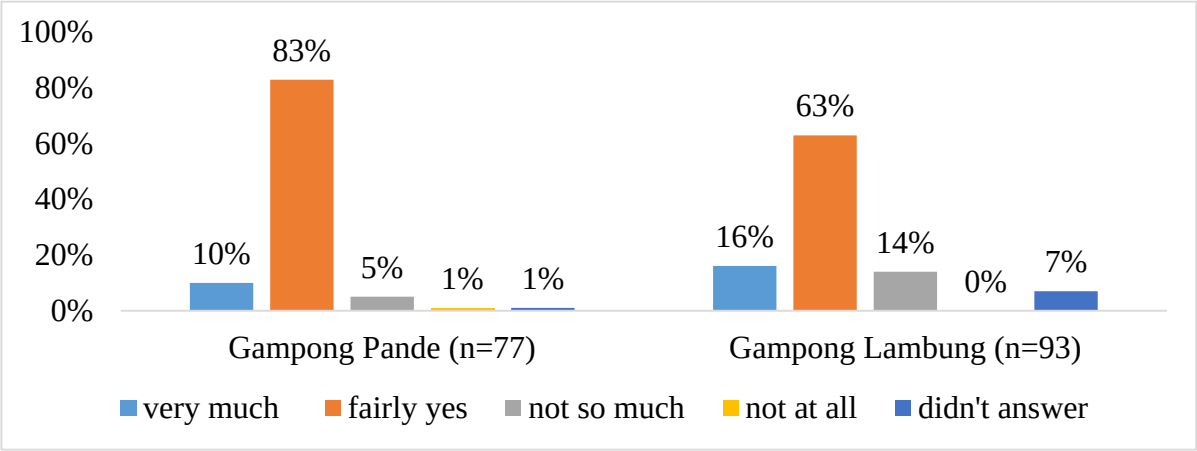

Figure 6.7 Trust among neighbours in both villages

Table 6.3 Summary of the assets comparison between the two villages

	GAMPONG PANDE			GAMPONG LAMBUNG		
	Historical village, Located near to the ocean (<1km)			Famous for traditional Acehnese cakes, Located near to the ocean (~800 m)		
Asset	**Before tsunami condition**	**Reconstruction period**	**Current condition**	**Before tsunami condition**	**Reconstruction period**	**Current condition**
Human	• Total population: 1,199 • Household member: 5.8 people • Primary livelihood: aquaculture pond farmer, fisherman and traditional *Nipah* cigarette producer	• Total population: 254 • Household member: 1.6 people • Relied on external aid (CFW, food aid), borrowed boat to go fishing, shared fishing equipment, look for fish at canals/mangrove area, not working • Participated in training and skills program organised by NGOs and government	• Total population: 860 • Household member: 3.4 people • ½ of the total population are outsiders (renters, non-native residents, marriages) • 37% finished high school • Primary livelihood is entrepreneur, civil service, labourer	• Total population: 1,780 • Household member: 5.7 people • Most households finished high school education level • Primary livelihood was entrepreneurs, fisherman, aquaculture pond farmer, traditional cake maker, private company employee	• Total population: 440 • Household member: 1.7 people • Relied on external aid (CFW, food aid), casual labour, fishing, small business • Provisions of capitals work tools and apprenticeship from NGOs	• Total population: 584 • Household member: 2.4 people • ¾ of the populations are outsiders (renters, marriages, returnees) • 75% finished high school • Primary livelihood is various (labourer, private company employee, driver, petrol station attendant, oil and gas factory: rebuilt)
Financial	• Monthly income range: USD 75 – USD 223 • Credit from established local pond proprietor and existence of the informal credit system: *arisan*	• Monthly income range: USD 38 – USD 74 • No more credit availability from local source • Microcredit by NGOs (business start-up)	• Monthly income range: USD 75 – USD 223 (average: USD 111) • Informal credit system (*arisan*) • External credit service • Received aquaculture rehabilitation; sewing and acrylic training (for women), livestock/poultry assistance	• Existence of the informal credit system: *arisan* and *julo-julo* • Savings (house, land, ponds, livestock, vehicle)	• Average monthly income: USD 49Aquaculture ponds/mangrove were lost or damaged • Absent of source for informal credit	• Average monthly income: USD 171 • Informal credit system (*julo-julo*) • Saving and loan cooperative • External credit service • Received fishpond and oyster assistance; sewing, embroidery and acrylic training (for women); livestock/poultry assistance
Physical	• 81% were house owner (House size: 150m²-190m²) • Houses somewhat in proper order • Relied on water from well, oil lamp, firewood and oil stove	• All infrastructures and building were destroyed • Stayed in tent and evacuation centre/barracks	• 17% were house owner • 67% did house renovation/extension (for kitchen, bedroom storage area, business space)	• 47% were house owner • Unplanned settlements (messy house arrangement and narrow alleys, irregular street patterns)	• All infrastructures and building were destroyed • Stayed at evacuation centre and built POSKO in the village	• 53% were house owner • 58% did house renovation/extension (for kitchen, storage area) • Infrastructure: *meunasah* (religious

	• Poor drainage system; flooding • Public facilities: school and small mosque • Relied on public transportation (mini bus) to go outside of the village	• House was rebuilt back same plot on own land • ADB built 153 houses • School is in the next village • *Becak* services replaces minibus	• Bought own motorcycle and turned into transport service	• Poor drainage system and poor disposal site; flooding • Infrastructure: *meunasah* (religious study place), garbage disposal site, health centre, education facilities: TK (kindergarten), SD (elementary), SMP (junior high) and SMA (high school), and religious facilities: s*urau* (praying area that caters for <50 people)	• Moved into temporary shelter in the village area • Land consolidation process took place→new village planning • World Bank built 309 houses • Houses were arranged into complex and blocks • Donated 15% to 20% of own land for village's redevelopment	study place), garbage disposal site, health centre, education facilities: TK (kindergarten), SD (elementary), SMP (junior high) and SMA (high school), and religious facilities: Mosque (praying area that caters for >50 people)
Natural	• 167 ha aquaculture pond • 23 ha mangrove • Mangrove provided free resources (e.g. seafood, fruit, shoots, bark)	• 14 ha aquaculture ponds • 15 ha mangrove	• 18 ha of restored aquaculture ponds, only 15 ha is usable • 48 ha of mangrove (replantation) • Young mangrove→cannot offer food resources	• 16 ha aquaculture pond	• 8 ha aquaculture ponds	• 3 ha fish pond (transformed from aquaculture pond)
Social	• Close relationship between residents • *Gotong-royong* and religious activities were actively participated by all residents. • Number of outsiders were small (< ¼ of the total population)	• Survivors did not get back together immediately; stayed with families outside the affected area • Village elderly and village head gathered themselves to redevelop/re-plan the village	• Not so close relationship between the renters and residents • Only long-term residents and native residents participated in *gotong-royong* and attended local events • The ex-village head is now is village advisor	• Close relationship between residents and renters. • *Gotong-royong* and religious activities were actively participated by all residents. • Number of outsiders were small (< ¼ of the total population)	• Remaining survivors gathered themselves and moved back into their village together • Built POSKO and temporary shelter together • Village head and survivors redevelop/re-plan the village	• Close relationship between renters and residents. • All residents participated in *gotong-royong* and attended local events. • Village head has strong leadership until now (long term tenure)

6.3. Interventions

6.3.1. Livelihood Provisioning

During the emergency period, the type of livelihood provisioning actions is in general made up of delivering essential items such as food and non-items (e.g. health assistance) which is much needed for survival. According to both villages, food items and health assistance were among the first aid provided by the international NGOs.

6.3.2. Livelihood Protection

In this phase, the goal is to safeguard, restore and rebuild the assets pertained to productive livelihood activities which then is employed to start an existing or taking up a new livelihood.

- Cash-for-work

Immediately after the 2004 IOT disaster, despite the devastation, the economy needed to be stimulated to assist people to restore their daily lives. The Indonesian Government, donors and NGOs came up with CFW as a way to generate income during the initial recovery period. The CFW played an essential role in providing safety nets and reviving Aceh's economy. CFW was found to be carried out in both villages for 2 to 3 months. The CFW activity was negatively perceived by households in both villages as it undermined the social capital existence among the residents and insulted the local culture of *gotong-royong* (mutual help).

Assistance also came in the form of capital and productive assets which was distributed in groups. However, assistance that were distributed in groups in both villages also faced some challenges such as dispute among the members. The distribution of livelihood aid was also another important matter with regards to the accessibility of livelihood support to the households. Factors such as nepotism and bias could shut the possibilities of resuming previous livelihood activities or obstruct available livelihood options for households.

- Rehabilitation of productive assets (fishing/aquaculture ponds, agriculture)

Among the recovery process taken by the Government of Indonesia and the donors was to re-establish and assist those coastal communities who depended on natural resources through grants, microfinance and technical assistance, provisions for fishing equipment, training as well as rehabilitation of infrastructure. In the case of Gampong Pande, the high reparation cost of the aquaculture pond restricted the restoration works. Furthermore, as the area size of the damaged pond is extensive in Gampong Pande, the government and NGOs had to be selective in restoring those ponds. Despite the rehabilitation and restoration efforts, the productivity was reduced due to the soil quality and poor seawall constructions where too much seawater was found in the ponds. On the other hand, Gampong

Lambung's pond area size was insignificant for a mechanical restoration to take place. Hence, restoration efforts were mainly carried out by the farmers themselves. This did not yield profitable production and was later transformed into fishpond. Households started to move away from relying on the natural resources to more stable livelihood activities.

6.3.3. Livelihood Promotion

Livelihood promotion is an intervention that seeks to stimulate and boost the household's livelihoods to be more economical, sustainable and environmental-friendly as well as to become more resistant to face future disasters. Development activities are introduced to improve household's resiliency with the intention to meet and sustain their basic daily needs. Some of the approaches of livelihood promotions are livelihood diversification, alternative income-generation activities, and financial services via insurance or loans as well as market establishments. Gampong Pande and Gampong Lambung received various interventions that had helped them to either continue or start a new livelihood.

- Long-term economic activities

Since Aceh is located near the shores, this province has great fisheries potential. The BRR Series-Economy (2009), reported that the most prominent fishing port in Lampulo was rehabilitated to accommodate both local and international vessels as one of the deep-water fishing port for huge fishing vessels weighing more than 50 gas turbine (GT). The government repaired fishing boats of various sizes and fishing equipment to encourage the fishermen to be able to sustain their livelihood. Other activities also took places such as boat construction, provisions of fishing tools, fishpond rehabilitation, hatchery assistance, the establishment of ice factory, cold storage and fish processing centre etc. Additionally, due to the high demand for meat, livestock programs (e.g. cattle breeding: cow and goat) were carried out in few locations in Aceh Province. A complete breeding centre with a barn, animal health centre, waste processing, green fields for feed, worker hostel, regional office and other supporting facilities were built.

Gampong Pande and Gampong Lambung were provided with fishing equipment (deep-sea boat) as well as training and knowledge to improve their productivity. In this case, tuna catching skills and training were provided to enable the fishermen to sell or export their catch to a bigger market. Aquaculture farmers were also given training on crab fattening and giant freshwater prawn. Additionally, households were also provided with livestock (e.g. cattle, buffalo, and goat) as a financial start-up to improve their livelihood.

Furthermore, the government also set-up job hubs to enable the job seeker to access information on job openings as well as building training centres for automotive, embroidery and sewing, and computer training for employees. The skills and training provided by the donors during the relief/reconstruction period have benefited the households in the long run. During the reconstruction period, the most common skills and training received by households in Gampong Pande and Gampong Lambung were business start-up, snack-making, sewing and fisheries-related training. For instance, household who participated in the sewing training were found to have started their own tailoring business from their home in both Gampong Pande and Gampong Lambung. The training given included dressmaking work, quality control as well as marketing the finished product in the local market. Housewives especially took up this activity to help out with their household expenses as well as for education spending. The total income for the household increased with the additional labour availability and the variety of livelihood activities in a household.

Nonetheless, Gampong Lambung has more livelihood development and improvements with the presence of the evacuation building built by the Japanese government and JICA. JICA has also introduced an economic stimulus package to help the households improve their livelihoods tapping into the existing local resources such as waste recycling, organic plantation and fisheries-related activities (e.g. oyster cultivation and fishponds). For more detailed information on the assets of both villages, please refer to Table 6.1 which summarises the livelihood assets for both villages.

6.4. Strategies

6.4.1. Agricultural intensification

Households in both villages were found to have conducted agricultural intensification and livelihood diversification. In agricultural intensification, household secures livelihood from an agriculturally related activity. In this case, both villages were conducting fisheries-related activities. This is because Gampong Pande and Gampong Lambung's livelihood depended on natural resource, particularly sea and aquaculture pond, before the tsunami. Households found that it is easier to understand and conduct livelihood activities which are related to what they have done previously. In Gampong Pande, aquaculture pond farmers have intensified their ponds by leasing it out to another aquaculture farmer. Meanwhile, in Gampong Lambung, the aquaculture ponds were transformed into fishponds instead. Both households were still earning from an agricultural-related livelihood activity.

Poultry and livestock rearing especially goats and cows were the common livestock in both of the villages. Since livestock rearing does not require constant attention, households can occupy themselves with other types of livelihoods. This helps in the flexibility and the income security of the households.

The vegetable cultivation activity is conducted differently in both of the villages. In Gampong Pande, the vegetables are grown mainly for the household's consumption whereas, in Gampong Lambung, the vegetable is grown organically for sale purposes. Despite this, both activities are contributing towards the household's income.

6.4.2. Livelihood diversification

Currently, most households in both Gampong Pande and Gampong Lambung have a broad portfolio of non-agricultural income-generating activities. This includes common livelihood activities such as home-made product business (handicrafts, snack making) and having a small scale business (snack selling, traditional cake maker, grocery selling, and online business).

On the other hand, households in both villages also conducted various other livelihood activities. For instance, in Gampong Lambung, JICA had supported the households by tapping into the local available resources by recycling waste into sellable products. However, in Gampong Pande, as there is no external support, households offered casual labour at construction sites or working with the government.

6.4.3. Migration

Only households in Gampong Lambung migrated outside of the village. Unlike Gampong Pande, Gampong Lambung has limited local resources that households could utilise. This forces households to look outside of the village for more livelihood opportunities. On the other hand, the remaining aquaculture ponds in Gampong Pande are still able to cater for some of the households and the additional resources of mangroves also deepened the attachment feelings of households towards remaining in Gampong Pande.

The number of renters in both villages also differs as Gampong Lambung has a higher number of renters compared to Gampong Pande. There are more empty houses in Gampong Lambung due to the migration factor. However, renters in both villages mentioned that they came into the village due to some factors such as cheap house rent, located very near to the city and pleasant environment.

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CHAPTER 7: CONCLUSION

This paper investigates livelihood changes, strategies taken and support and aid received by the affected households in Banda Aceh following 2004 Indian Ocean Tsunami disaster. The followings are the summarization of each chapter in the dissertation.

Chapter 1

A disaster is an event that brings damage and harm that interrupts the functionality of a community or a society when the impacts disrupt the living beings in that area. Loss and damages can amount to billions of dollars as well as bringing about causalities. Apart from the economy and social factor, cultural, institutional, political and psychological factors are also impacted by the disaster occurrence. In recent years, the disaster trend had demonstrated a growing number of natural disaster occurrence with extreme intensity and higher economic losses. Asia has the highest (40%) overall disaster losses. This is evidenced by China being the most disaster-hit countries in the world, followed by Indonesia, the Philippines and India. These countries have most of their population living in the low-lying coastal area which prone to encounter more frequent natural disaster. This setback may affect many aspects of their way of living as well as their livelihoods. The impacts of natural disasters on communities and societies' livelihood can last for years. Some disaster impacts can cause permanent change or loss especially to vulnerable economic activities. Livelihood opportunities, as well as the livelihood environment that people rely on, are disrupted, and this reduces the people's ability to cope.

Indonesia is among the most frequent disaster-hit countries with 80% of the country's coastal areas are prone to disaster. The location of the country which is along the volatile Pacific Ring of Fire is prone to earthquake and tsunami disaster as well as susceptible to other types of natural disaster such as flood, strong wind, landslide and drought. The 2004 IOT disaster triggered massive external assistance into Indonesia which also transformed the country's disaster constitution. The most affected area was in the Aceh Province, particularly Banda Aceh city as the area was the nearest to the epicentre of the earthquake. Waves were as high as 30 m and as far as 10 km inland which wiped out many infrastructures, buildings including villages and residents.

Chapter 2

The concept of disaster recovery is the restoration and improvement of the economic, physical, social, cultural and environmental condition of the community or the society which includes livelihood recovery as well. The Build-Back-Better concept was applied to many countries facing disaster not limited to just tsunami but also hurricanes and cyclones. The concept was generated to address the vulnerabilities and strengthen the impacted communities through reconstruction and restoration of

livelihoods of the affected households. However, in the case of the 2004 Indian Ocean Tsunami disaster, housing reconstruction had more attention and funds. Livelihood restoration works were left out due to lack of expertise on livelihood recovery works as well as having an insufficient budget to ensure sustainability for the long term.

The Sustainable Livelihood Framework (SLF) is an established versatile framework that has been widely used to understand the factors and the interactions when households conduct their livelihoods. The primary element in the SLF focuses on the vulnerability context, the livelihood assets, and the strategies taken up by households as well as the policies, institutions and processes that give access to households.

Chapter 3

The study applied the multiple-method approach where both qualitative and quantitative data were utilised to address matters posed by the research. The study collected data both statistical and later supplemented by qualitative data. More emphasis was put on the qualitative data in the forms of wordings, photos and narratives as numerical data were difficult to retrieve due to loss of data from the tsunami as well as obsolete physical data from the NGOs or donors who have worked during the reconstruction period.

Fieldwork was conducted at two villages in the heavily devastated area in Banda Aceh city in August 2016. A pre-test took place in the initial stage and followed by three fieldworks in 14 months. Both primary and secondary data were collected on the two villages through a questionnaire survey, semi-structured interviews with key informants, and informal group discussions with the households.

The five livelihood assets, strategies and interventions items for the questionnaire were adapted from the SLF and were carefully selected and fitted into the local context.

Chapter 4

Gampong Pande is a historic village with the highest number of aquaculture pond and mangrove which is located less than 2 km from the shore and was impacted heavily by the 2004 Indian Ocean Tsunami disaster. Before the disaster, most households were mainly aquaculture pond farmer, fishermen and traditional cigarette maker.

Almost ¾ of the total village population perished after the disaster. Remaining households survived on cash-for-work and aids from the donors during the relief and the reconstruction period. Currently, there are only few aquaculture pond farmers and fishermen left. Most households started their own business, worked in the civil service, became a labourer/driver or selling fish.

Before the disaster, loan and informal credit service were taken from established local pond owners. Microcredit options were introduced by the donors but were not effective or sustainable. Currently, the available financial services (savings and loan group/credit co-op/women's group) in the village are not going well. The informal credit is still available but only converges during the festive season. There is also credit service offered by private companies. The households reported no change in their financial condition of before and after the disaster. The report from Kutaraja District Office disclosed that Gampong Pande is in the non-poor village category where the average income of the population is higher the poverty line (USD 40).

Houses were previously large and were equipped with the basic services (e.g. clean water, electricity, toilets). Most households relied on the public transportation to conduct their daily chores. During the relief period, most households stayed with their relatives as well as stayed at the evacuation centre and temporary housing before receiving their own house. ADB helped this village by reconstructing houses and restoring aquaculture pond as well as providing skill and training after the disaster. Household possesses their own transport now to facilitate their daily chores as well as some provided transportation services to ferry the residents in-and-out of the village.

Household who depended on the aquaculture ponds and mangroves for livelihoods were impacted. The number of livelihoods relying on these natural resources was significantly reduced as the ponds were either permanently unusable or severely damaged and mangroves were destroyed. Households relied on mangroves for free food resources and also for fishing and aquaculture-related tools. As there were too many aquaculture ponds, ADB and the government only restored some of the aquaculture ponds. However, the poor restoration works caused low production and farmers were unable to repair the works themselves as it is too costly. This caused households to opt for different livelihood which is more stable and less costly. Mangrove replantation works also take place in the recent years, but due to young trees, households are unable to obtain many resources yet from the mangrove.

The relationship among the villagers was close before the disaster as most of the neighbours were their family and relatives. Due to the high number of perished lives, Gampong Pande has more non-native residents and renters. Renters were found to have less involvement in the village activities or even hanging out with the residents. More than half of the surveyed households reported that they were satisfied with the relationship they are having with the neighbours, the village leader and the local government. Households stated that they trust and will offer to help their neighbours during emergencies.

The interventions which can be found in this village are both policy and livelihood-related program. Land rights, housing, and historical treasure protection, as well as nature and environment, are the policies for Gampong Pande. The discoveries of the historical remnants in the aquaculture ponds halted the restoration of the ponds. On the other hand, programs such as microcredit scheme, training and skills development, livestock, aquaculture training and local resource enhancement were given to the households to support and improve their livelihoods.

Households in Gampong Pande opted for agriculture intensification (e.g. fisheries institutions, farming style and pond management, mangrove and aquaculture integration, poultry and livestock and home-grown food supply) and livelihood diversification (e.g. work with the government, became casual labourer, venture into transportation business and opening small-scale business and selling home-made products). Households in Gampong Pande preferred to stay in the village rather than migrating out. There was more in-migration due to the arrival of the job seeker, job transfer as well as marriages.

Chapter 5

Gampong Lambung was known for its traditional cake production, particularly for *Bhoy*, *Dodol*, *Meuseukat Aceh*, and *Keukarah* back in the 1970s. However, the glory ended after the 2004 IOT disaster took many lives of cake-makers as well as entrepreneurs, fishermen and aquaculture pond owners.

The tsunami disaster wiped out the entire village and swept away about 75% of the total village population. Remaining household took up cash-for-work and depended on the aid during the relief and reconstruction period. Currently, the number of households involved in the cake-making is about 3 and the rest takes up various livelihood activities such as casual labourer, private company employee, driver, and petrol station attendant.

An informal credit system called *arisan* and *julo-julo* were practised by the women before the disaster. The informal credit was stopped during the relief and reconstruction period as the household's earnings was insufficient to enable them to restart the *arisan* or *julo-julo.* Training and skill development (e.g. handicrafts, sewing, cake-making and fish pond) were given which encouraged some of the households to change their livelihood. Currently, only the *julo-julo* is still existing and credit service from the private companies. The report from the Meuraxa District Office disclosed that Gampong Lambung is in the poor village category where the average income of the population is lower than the poverty line (USD 40).

Before the disaster, this village had narrow alleys and irregular street patterns and was crowded, messy and dirty. Gampong Lambung was recognised as the model village for its community-participation in the planning and reconstruction of the village after the tsunami disaster. Households sacrificed some of their lands for wider roads, orderly house arrangement, infrastructure, relocation of their ancestors' cemeteries and open green spaces. World Vision was the principal donor in the housing reconstruction and built some infrastructure such as a community centre for home industry activities. In addition, JICA also built an escape building in the village as the Gampong Lambung is located less than a kilometre from the shore.

The aquaculture pond was destroyed during the tsunami and restoration efforts by the authorities did not take place as the pond size was too small. This has led to the farmers trying natural restoration, but the production was insignificant. The ponds were instead transformed into a fishpond.

The social relationship among the households was strong even before the disaster which can be seen from the existence of the informal credit where trust plays an important factor. This is further enhanced during the relief period where the remaining victims came together and chose to stick together and stayed in their village instead of the evacuation centre. Also, the recognition of Gampong Lambung as the model village also confirms their unity and cooperation. More than half of the surveyed households stated that they were satisfied with the relationship with the local government and the village leader. The households responded that they fairly trusted their neighbours.

Among the interventions in Gampong Lambung were policy (e.g. land rights, human rights, housing, and environment) and programs (e.g. training and skills development and local resource enhancement). JICA also contributed in playing an essential role in the economic improvement in this village. The agency created livelihood opportunities through collaborations and experience sharing (e.g. oyster farming, organic vegetable cultivation and enhancement of recycling projects to generate income from waste products).

The livelihood strategies taken by the residents in Gampong Lambung are agricultural intensification (e.g. fishpond, oyster cultivation, poultry and livestock rearing, and organic vegetable cultivation), livelihood diversification (e.g. small-scale business, handicrafts, recycle goods, home-made products and others: selling/renting out house/land) and migration. Many Gampong Lambung residents migrated out due to limited work opportunities and resources in the village.

Chapter 6

In this chapter, the transitions of livelihood changes and its rationales of opting for a different livelihood for both of the villages are discussed. Additionally, key lessons from the livelihood recovery efforts are also reflected in this chapter.

In Gampong Pande, households reported changes in livelihood due to loss of aquaculture pond due to the tsunami, limited fund availability to restore the ponds, low quality of aquaculture seedling, and unsuitable breeding environment for the aquaculture organism, old age of the farmer and also due to the high cost involved in fishing activities.

On the other hand, the livelihood changes in Gampong Lambung are due to permanent change of aquaculture land, need of higher income, seek better educational opportunity for their children, absence of successors to continue the cake-making legacy, marital status (e.g. widow with children), competition of existing business and conducting various types of jobs to avoid being unemployed.

The similarities of both villages can be seen from the interventions such as livelihood provisioning (e.g. essential items during relief period: food aid, health check-ups), livelihood protection (e.g. cash-for-work, rehabilitation of productive assets) and livelihood promotion (e.g. skill development and training). Respondents in both villages reported a period where they did not work and relied on the food aid to survive during the reconstruction period.

Some of the lessons learnt are being grateful to be alive, the capacity and capability of the leader play an important part during a crisis, a speedy reconstruction which led to quicker livelihood restoration, some of the skills development and training were found to be suitable with appropriate assistance and guidance by working with an effective counterpart. Nevertheless, the introduction of the CFW should have considered the local culture and sensitivity. The CFW undermined the social capital existence among the residents and insulted the *gotong-royong* concept.

7.1. Key Findings

The physical, human and natural assets were the most severely affected assets for both villages. Households lost not just family members, relatives and friends but also their basic need necessities such as a house. The tsunami disaster wiped out the entire villages where everything was flattened and continuing livelihood activity was impossible. The disaster impacts on the natural resources (e.g. aquaculture pond and mangrove) has caused the changes in the household livelihood. Furthermore, the selective pond rehabilitation conducted by the government and the NGOs resulted in households taking up new or multiple livelihood activities to support their livelihoods. Another factor that brought

about the livelihood changes is the availability of natural resources in the village and the types of intervention (e.g. skills development and training, programs) offered by the government or the NGOs.

Households in both villages were found to have taken up multiple different livelihood strategies to attain their current income. Diversification helps to minimise household's vulnerability to food insecurity as well as preventing loss of livelihood. Through diversifying, households can acquire and build other assets to ensure them from falling into poverty. The earnings from diversification provide the households with cash resources which can lead to more options for the households. This in return reduces the vulnerability of the households, especially those which depend on seasonal income. Households looked for a more secure income after the disaster as they realised the importance of having a steady monthly income.

The interventions have not only increased the household's assets and widened the livelihood options, but also has steered household into taking up different livelihood strategies to conduct their current livelihood activities. This has brought positive impact and sustained households' livelihood (e.g. aquaculture pond transformation into fishpond).

The recovery process of the households in both villages appears to be moving forward after more than a decade since the 2004 IOT disaster. Although many have lost assets (e.g. loss of expert skill in traditional products: cigarette making/cake-maker, permanently damaged to ponds, pond loss due to tsunami waves etc) or may have yet to recover their lost livelihood, households were grateful to be alive and be blessed with what they have now. Some have mentioned that the conditions and the environment of the village are much better now compared to before the tsunami event. Households also were able to recognise the Village Head's capability to handle problems as well as capacity to secure assistance/resources from the authorities.

Overall, from the economic perspective, both villages showed improved livelihood which can be ascertained from the increased current monthly wage and the house renovations that took place over the years as well as in the ownership of vehicles. After more than 14 years, communities are living in the reconstructed house surrounded by new village environment and infrastructures. Houses gradually became more comfortable as years passed, and social relationships are formed with both new and old neighbours. Most of the people continue their lives by adapting or improving their livelihoods to achieve a better outcome.

7.2. Limitation

One of the limitation during the study is the unavailability of data for the period before the 2004 IOT disaster and also for the reconstruction period at the village level. Evidence and data were non-existent,

and the research had to rely on the recollection of the survivors and on the experience of NGOs that had worked or are working in Banda Aceh. After the disaster, the local government started to keep the data from 2005 onwards, building slowly with the available records and preserved disaster-related data as much as possible. To arrive at a comprehensive conclusion, this study could have taken all related agencies such as BRR, BPBD, Agricultural Department, Fisheries and Marine Department, Tourism Department and policymakers into account.

Another drawback of this study is that the non-availability of international organisations or donors who are still working in Banda Aceh. Since the disaster happened over more than a decade ago, many international donor agencies were already closed down and no longer have documents that they could share with the researcher. Only a few numbers of officers were still around for an interview, but it was more towards a general description of the situation. Additionally, data and records of the district and village level before 2004 were non-available as mostly was swept away by the tsunami. Some data and information about the villages were insufficient as the 'village development plan document' were incomplete and not updated to the recent year.

In Gampong Lambung, some of the households declined interviews that involve personal or private matters with an outsider. Topic evolves around current monthly income and neighbour-related questions on trust. There were also households who declined interviews as they felt there were no incentives received. Additionally, households were also unable to recall other training or aid provided apart from the main sewing and snack-making activities. This is probably because the other training was unsuccessful and did not leave a profound impact on the people.

Despite the limitations encountered by the researcher, efforts were made to synchronise all data and information acquired from the field survey and literature reviews and then come up with findings and conclusions.

7.3. Recommendations

One of the means to facilitate people to return to their normalcy is through the income growth which can be found in either agricultural activities or non-agricultural activities. Depending on the availability of the resources of the village, much emphasis should be put on the use of local resources to redevelop and improve the village's economy. The great loss of local expertise on and knowledge of aquaculture farming and mangroves can be curbed by providing training and education to improve the human capital so that farmers can enhance their product quality and work activities. Additionally, encouragement can also be carried out through either moral support or offering start-up capital for households to pursue SMEs. The home-made products then can be exported to a broader market.

Additionally, the CFW activities which are viewed as undesirable by the locals can be executed through a better approach. The long-term impact of the CFW was viewed negatively by most of the households, and hence, cash can be channelled through means that do not come off as a reward or with labels. Cash assistance can be presented as a gift. Furthermore, assets such as political and cultural assets can be included in similar studies in the future to increase understanding of the different assets households rely on in the long term.

7.4. Implication for future research

As observed, households are either absent or are in small number in carrying out their previous livelihood (especially those who relied on natural resources). Household has opted for more stable, secured livelihood activities which could assist them to achieve their desired livelihood outcomes. The study presented with data related to both villages which provide and supplements the data insufficiency experienced by the villages and local government. This could be a useful source for future references.

Since the study was conducted with an exploratory nature, some opportunities for future research can be conducted later. First, the study can be extended to households that were relocated as well to investigate the livelihood aid and support to those households. Relocated households were somewhat forced as they lack of resources to rent or rebuild on their own at that time. They are placed far away from their livelihood sources (e.g. fishing community who used to live very close to the shore) as well as infrastructures (e.g. landing port, market) that could facilitate their livelihood activities.

Second, applying statistical correlations to generate hypotheses between the demographic characteristics, livelihood assets component, livelihood strategies taken by households and the outcome. This could shed some lights on the important correlations between each factor. Third, the patronage of the donor/ organisation and its impacts on household's livelihood also requires more consideration and further elaboration. This could be further developed into policies that can protect the conditions for emergence of livelihood transformation for the households. Fourth, the study can also collaborate with local government or NGOs to have longitudinal and comparative studies.

APPENDICES

APPENDIX 1: List of interviewees

Village I: Gampong Pande, Banda Aceh

Code	Name	Gender	Interview type	Occupation	Date conducted
R1	Pak Irdus	Male	Key Informant	Ex-village Head Tuha Peut	November 12th, 2015 July 20th, 2016 March 11th, 2017
R2	Rudianto	Male	Livelihood Benefactor	Banda Aceh Red Cross Director (NGO) Ex-World Vision Officer	March 11th, 2017
R3	Ibu A	Female	Livelihood Beneficiary	Housewife	March 12th, 2017
R4	Nek Ti	Female	Key Informant	Housewife	March 12th, 2017
R5	Baba	Female	Livelihood Beneficiary	Housewife	March 12th, 2017
R6	Cek Ne	Female	Livelihood Beneficiary	Housewife	March 12th, 2017
R7	Ibu Kue	Female	Key Informant	Housewife	March 10th, 2017
R8	Pak Koko	Male	Key Informant	Not working	March 12th, 2017
R9	Amiruddin	Male	Key Informant	Village Head	November 12th, 2015 July 22nd, 2016 March 11th, 2017
R10	Meni	Female	Key Informant	Clerk at Village Office	March 13th, 2017
R11	Fitri	Female	Key Informant	Clerk at Village Office	March 13th, 2017
R12	Rasyid	Male	Key Informant	Aquaculture farmer	March 13th, 2017
R13	Zulkifli	Male	Key Informant	Aquaculture farmer	March 12th, 2017
R14	Eenah	Female	Group interview	Shop owner	September 3rd, 2016
R15	Fafa	Female	Group interview	Housewife	September 3rd, 2016
R16	Jijah	Female	Group interview	Housewife	September 3rd, 2016
R17	Harun	Female	Group interview	Housewife	September 3rd, 2016
R18	Ira	Female	Group interview	Housewife	September 3rd, 2016
R19	Dedy Setiawan	Male	Interview	Archaeologist	March 13th, 2017
R20	Kak Ju	Female	Interview	Archaeologist	March 13th, 2017

Village II: Gampong Lambung, Banda Aceh

Code	Name	Gender	Interview type	Occupation	Date conducted
R1	Maskur	Male	Key Informant	Building contractor + shore fisherman	September 14th, 2017
R2	Juwami	Male	Interview	Traditional cake maker KIV	September 14th, 2017
R3	Haslian	Female	Key Informant	Traditional cake maker	
R4	Emy Irmayanie	Female	Key Informant	Tailor	September 16th, 2017
R5	Zulkadri	Male	Interview	Casual labourer	September 16th, 2017
R6	Yushar	Male	Key Informant	Village admin staff + Casual labourer	September 17th, 2017
R7	Fera	Female	Key Informant	Oyster fisherman	September 17th, 2017
R8	Fitra Zulman	Male	Interview	Fisherman	September 18th, 2017
R9	Cut Defrayani	Female	Key Informant	Village admin staff + handicrafts maker	September 19th, 2017
R10	Hardiyanshah	Male	Key Informant	Village secretary + fishpond + contract surveyor (part-time)	September 19th, 2017
R11	Hazairin	Male	Key Informant	Ex-World Vision Staff Livestock farmer + Grocery Shop	September 20th, 2017
R12	Nuratiqah	Female	Key Informant	Petrol attendant	September 17th, 2017
R13	Mak Neh	Female	Key Informant	Traditional cake maker	September 17th, 2017
R14	Nuraini	Female	Interview	Food Cart	September 17th, 2017
R15	Samsiar	Female	Key Informant	Meat seller	September 17th, 2017
R16	Irnawati	Female	Interview	Housewife + food cart	September 17th, 2017
R17	Sukatri	Female	Interview	Security guard	September 17th, 2017

APPENDIX 2: Questionnaire Form Part I

PART 2-1: Survey on Post-Disaster Housing and Community (Survey III)

Dear Resident,

It has been many years since the disaster hit your area. This survey is to understand the housing condition of those who had their houses reconstructed due to the disaster. This study hopes to improve the post-disaster reconstruction policy through the understanding of your needs and experiences. Thank you for your consideration and kind cooperation.

September, 2016

Surveyor's Name:
Village Name:
House No.: **(Original :_____)** **(Map :_____)**
Date:

【Background of Respondent】

Q1	Name	
Q2	Age	
Q3	Gender	1. Female 2. Male
Q4	How many people are living in the household?	Adult ( ) person Child ( ) person (under 15)
Q5	Do you have family members who were killed by the recent disaster?	1. No 2. Yes
Q6	How much is your TOTAL family income per month?	（ ）Rp/month
Q7	How long have you been living in this COMMUNITY?	1. < 1 year 2. 1 – 10 years 3. 11 – 15 years 4. > 20 years
Q8	What kind of activities do you participate in? (Multiple answer)	1. Community meeting 2. Local festival 3. Cleaning up 4. Mosque (church/temple) activity 5. Children group 6. Women's group 7. Elderly group 8. No participation 9. Others ( )

【Particulars of House】

Q9	Was your house damaged by the recent disaster?	1. No 2. Yes（□light □middle □heavy）
Q10	How many years have you been living in this HOUSE?	1. < 1 year 2. 1 – 5 years 3. 6 – 9 years 4. > 10 years

Q11	House ownership status	1. Owner（□Before disaster □After disaster） 2. Rent （□Before disaster □After disaster）
Q12	Which process/es did you participate during the reconstruction of your house? (Multiple answer) You can show this to the surveyee	1. Reconstruction consultation / Attended Donor explanation 2. Selection of housing reconstruction committee 3. Selection of housing group 4. Community assessment 5. Land consolidation 6. Community planning 7. House design 8. Purchasing of materials 9. Technical training 10. Construction of house 11. Quality control 12. None 13. Others ( )
Q13	How did you took part in the housing reconstruction project?	1. Constructed based on aid agency 2. Worked together with the facilitator 3. Participated in the training 4. Received a guideline booklet 5. Employed donor-designated-mason 6. Appointed mason by myself 7. Constructed the house by myself
Q14	Are you satisfied with your reconstructed house?	1. No 2. Yes (Why?)
Q15	What have you learnt from or have changed due to participating in the housing reconstruction project?	1. Technical knowledge about housing construction 2. Money management/budgeting 3. Relationship with/among neighbors 4. Ways/method of disaster preparedness 5. Importance of coordination with others 6. Being able to express my opinion 7. Communicating with the facilitators 8. Building relationship with donor 9. Others ( )
Q16	When did receive your house or house reconstruction aid?	1. House (when? MM/YY) 2. House reconstruction aid (when? MM/YY) 3. No
Q17	Who built this/your house? (Multiple answer)	1. Myself/Family 2. Carpenter/Mason 3. Building Contractor 4. Community help 5. Other ( )

Q18	Which part of the house did you repair/renovate? (Multiple answer)	1. Roof 2. Pillar 3. Inside wall 4. Outside wall 5. Floor 6. Water function like Toilet/Kitchen 7. Others ( ) 8. None
Q19	Please select the current state of your house (Multiple answer)	1. Brick fall off 2. Paint peel off 3. Exposed reinforcement bars 4. Cracks on the floor 5. Cracks on the wall 6. House/wall is tilting 7. Leaking roof 8. Others ( ) 9. None
Q20	Have you extended or renovated the house after the completion?	1. No 2. Yes

For Q20, if 「YES」, continue to next question. If 「NO」or「DON'T KNOW」, please go to Q23.

【Extension and Renovation of the House】

Q21	Who constructed the extension or renovation? (Multiple answer)	1. Myself 2. Carpenter/Mason 3. Building Contractor 4. Community help 5. Other （ ）
Q22	How much did it cost to extend or renovate the house?	1. < 1,000,000 Rp 2. 1,000,001 – 5,000,000 Rp 3. 5,000,001 – 10,000,000 Rp 4. > 10,000,001 Rp

【Awareness on Disaster】

Q23	Were you prepared for the disaster BEFORE the previously disaster?	1. No 2. Yes (select the relevant) □ Add strength by repairing pillar and wall □ Preparing emergency kit (eg. Flashlight) □ Prepare valuables/important documents □ Know where to evacuate □ Know how to protect myself from falling objects □ Others ( )
Q24	Are you prepared for disasters NOW?	1. No 2. Yes (select the relevant) □ Add strength by repairing pillar and wall □ Preparing emergency kit (eg. Flashlight) □ Prepare valuables/important documents □ Know where to evacuate □ Know how to protect myself from falling objects □ Others ( )

Q25	Do you think this house will suffer damage by the next disaster?	1. No, I don't think so 2. Yes, I think so 3. Not sure
Q26	What has changed after the disaster?	1. Family relationship ( ) weaker ( ) stronger ( ) no change 2. Community relationship ( ) weaker ( ) stronger ( ) no change 3. Disaster awareness ( ) weaker ( ) stronger ( ) no change 4. Financial situation ( ) weaker ( ) stronger ( ) no change 5. Technical knowledge of housing ( ) weaker ( ) stronger ( ) no change 6. Strength of house ( ) weaker ( ) stronger ( ) no change 7. Others ( )

【Trust/Relationship】

Q27 Below is the list of items that describe about the level of trust and the current relationship in the community. Choose an answer for each question.

		Not at all	Not so much	Fairly yes	Very much
1	You trust your neighbors	1	2	3	4
2	You will help you neighbors when disaster happens	1	2	3	4
3	You borrowed money from neighbors	1	2	3	4
4	You lend out money to your neighbors	1	2	3	4
5	You often participate in the local activities	1	2	3	4
6	You know your neighbor's financial situation	1	2	3	4
7	You know your neighbor's family situation	1	2	3	4

【Life/Living Satisfaction】

Q28 Below is the list of items that describe about your living satisfaction. Choose an answer for each question.

		Very dissatisfied	Dissatisfied	Satisfied	Very satisfied
1	Room size	1	2	3	4
2	Property size	1	2	3	4
3	Room temperature	1	2	3	4
4	House proximity	1	2	3	4
5	Exterior design	1	2	3	4

6	Kitchen	1	2	3	4
7	Toilet and bath facility	1	2	3	4
8	Commuting time, distance to work	1	2	3	4
9	Distance to education facility	1	2	3	4
10	Cleanliness (outside of house)	1	2	3	4
11	Common facility (eg.: community space)	1	2	3	4
12	Infrastructure (water, electricity, road, garbage service)	1	2	3	4
13	Relationship with neighbors in the community	1	2	3	4
14	Relationship with village leader	1	2	3	4
15	Relationship with local government	1	2	3	4
16	Relationship with private sector	1	2	3	4
17	Community activity	1	2	3	4
18	Life in general	1	2	3	4

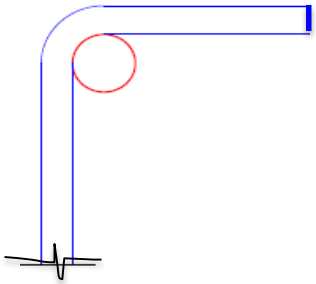
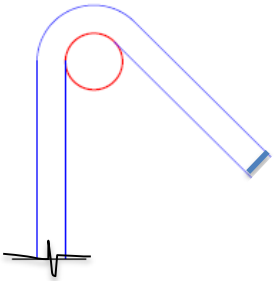
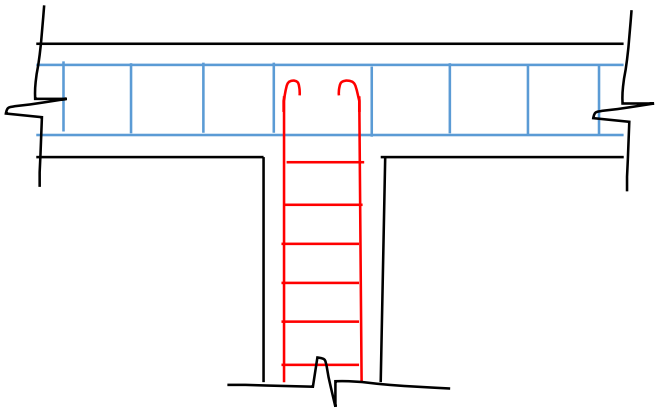
Q29	Why do you decided to live in this location? (select one)	1. Original residence was here. 2. Family house available. 3. Land and House given. 4. Moved here for work. 5. Rent was cheaper. 6. Close to the town 7. Other ( )

Q30 Where is your favorite place in your community? And Why?

Where? ( ) Why?

【Technical Knowledge】

Q31	What is a good proportion in volume of cement, sand, gravel and water for good normal concrete for making column and beams?	□ 1 : 3 : 5 : 2 □ 1 : 3 : 6 : 2 □ 1 : 2 : 3 : 1 □ 1 : 2 : 4 : 1 □ Don’t know
Q32	What is the normal size for the main steel reinforcement bar in columns and beams for standard simple house (1 story)?	□ 6 mm □ 8 mm □ 10 mm □ 12 mm □ Don’t know

Q33	Which one is correct in bending the end of stirrup steel as in the following pictures?	A)  B) 
Q34	Please make a correction on this drawing of iron bar connection.	

----------End of Questionnaire---------

Thank you

APPENDIX 3: Questionnaire Form Part II

LIVELIHOOD 【Physical Asset】

		PRE-DISASTER	Unit	POST-DISASTER	Unit
Q35	What mode of transportation do you own?	□ Motorbike □ Car □ Others (specify:)		□ Motorbike □ Car □ Others (specify:)	
Q36	What energy does your household mainly use for lighting?	□ Electricity □ Oil Lamp □ Others (specify:)		□ Electricity □ Oil Lamp □ Others (specify:)	
Q37	What energy does your household mainly use for cooking?	□ Gas □ Firewood □ Others (specify:)		□ Gas □ Firewood □ Others (specify:)	
Q38	Where does your household get drinking water from?	□ Tap water □ Well □ Others (specify:)		□ Tap water □ Well □ Others (specify:)	
Q39	What information-producing appliances are there in your house?	□ TV □ Radio □ Hand phone □ Others (specify:)		□ TV □ Radio □ Hand phone □ Others (specify:)	

【Fishing Activity】

		PRE-DISASTER		IMMEDIATELY AFTER		POST-DISASTER	
Q40	Which source of income is fishing?	□ Main income □ Side income		□ Main income □ Side income		□ Main income □ Side income	
			Own/Rent/ Loan/Share		Own/Rent/ Loan/Share		Own/Rent/ Loan/Share
Q41	What do you have to carry out fishing activities?	□ Sampan □ Boat □ Motor engine □ Fishing net □ Others (specify:)		□ Sampan □ Boat □ Motor engine □ Fishing net □ Others (specify:)		□ Sampan □ Boat □ Motor engine □ Fishing net □ Others (specify:)	
Q42	How many hours you spend to fish?	□ < 3 hours □ 3 – 5 hours □ > 6 hours		□ < 3 hours □ 3 – 5 hours □ > 6 hours		□ < 3 hours □ 3 – 5 hours □ > 6 hours	
Q43	What do you do with your catch? (multiple answers)	□ Sell □ Own consumption □ Others (specify:)		□ Sell □ Own consumption □ Others (specify:)		□ Sell □ Own consumption □ Others (specify:)	
Q44	Where do you sell your produce? (multiple answers)	□ Toke ikan □ Local market □ Others (specify:)		□ Toke ikan □ Local market □ Others (specify:)		□ Toke ikan □ Local market □ Others (specify:)	

Q45 Compared to the ***pre-disaster situation and now***, how was your catch?

Very little	Little	About the same	Somewhat better	Much better
1	2	3	4	5

i. Please specify the reason of increased/decreased: _____

ii. If decreased, how did you respond/cope?

_____

【Other Income Generating Activities】

		PRE-DISASTER	IMMEDIATELY AFTER	POST-DISASTER
Q46	What kind of other income generating activities does your household carry out?	1. Sewing 2. Trader/Grocery shop 3. Making snacks (specify:) 4. Others (specify:)	1. Sewing 2. Trader/Grocery shop 3. Making snacks (specify:) 4. Others (specify:)	1. Sewing 2. Trader/Grocery shop 3. Making snacks (specify:) 4. Others (specify:)
Q47	When you start?	Since	days/weeks/months	Since
Q48	How many hours you spend for this activity?	1. < 3 hours 2. 3 – 5 hours 3. > 6 hours	1. < 3 hours 2. 3 – 5 hours 3. > 6 hours	1. < 3 hours 2. 3 – 5 hours 3. > 6 hours
Q49	How much of your produce do you usually sell? *(*INR x per piece/monthly or INR x per gram/weekly)*			
Q50	Where do you sell your produce? (multiple answers)	1. Neighbors 2. Shops 3. Local market 4. Others (specify:)	1. Neighbors 2. Shops 3. Local market 4. Others (specify:)	1. Neighbors 2. Shops 3. Local market 4. Others (specify:)

【House Financial Matters】

		PRE-DISASTER	IMMEDIATELY AFTER	POST-DISASTER
Q51	What is the household **TOTAL** monthly income? (main + side income)	1. < IDR 500, 000 2. IDR500,000 – IDR1 million 3. IDR 1 million – IDR 3 million 4. > IDR3 million	1. < IDR 500, 000 2. IDR500,000 – IDR1 million 3. IDR 1 million – IDR 3 million 4. > IDR3 million	1. < IDR 500, 000 2. IDR500,000 – IDR1 million 3. IDR 1 million – IDR 3 million 4. > IDR3 million
Q52	Receive social security from the government (e.g. poor relief)	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No

【2004 Tsunami/2009 earthquake Disaster Impacts】

Q53	Have you received any assistance/support from any source after the 2004 Tsunami/2009 Earthquake disaster? (multiple answer)

Type of assistance	From whom			Received period (after disaster)			Scale on benefit of assistance received				
	Gov	NGO	Others	1 – 2 months	Within 1 year	Within 6 years	No at all beneficial	Slightly beneficial	Somewhat beneficial	Very beneficial	Extremely beneficial
1. Shelter/ Housing							1	2	3	4	5
2. Cash for Work							1	2	3	4	5
3. Food							1	2	3	4	5
4. Drinking water							1	2	3	4	5
5. Health care							1	2	3	4	5
6. Cash grant							1	2	3	4	5
7. Livelihood (boat, nets, equipment, skill/training)							1	2	3	4	5
8. Others (specify:)							1	2	3	4	5
9. NONE							1	2	3	4	5

APPENDIX 4: Coding for questionnaire

ID	Question	Selection
village name		
house no.	original	
	map	
date		
Q1	Name	
Q2	Age	
Q3	Gender	1. Female, 2. Male
Q4	How many people are living in the household?	adult, child
Q5	Do you have family members who were killed by the recent disaster?	1. No 2. Yes
Q6	How much is your TOTAL family	( ) Rp/month
Q7	How long have you been living in this COMMUNITY?	1. < 1 year
		2. 1 – 10 years
		3. 11 – 15 years
		4. > 20 years
Q8	What kind of activities do you participate in? (Multiple answer)	1. Community meeting
		2. Local festival
		3. Cleaning up
		4. Mosque (church/temple) activity
		5. Children group
		6. Women's group
		7. Elderly group
		8. No participation
		9. Others
		9-list
Q9	Was your house damaged by the recent disaster?	1. No
		2-a. light damage
		2-b. middle damage
		2-c. heavy damage
Q10	How many years have you been living in this HOUSE?	1. < 1 year
		2. 1 – 5 years
		3. 6 – 9 years
		4. > 10 years
Q11	House ownership status	1-a. Owner_Before disaster, 1-b. Owner_After disaster
		2-a. Rent_Before disaster, 2-b. Rent_After disaster
Q12	How did you took part in the housing reconstruction project? (to add before or after Q11)	1. Constructed based on aid agency
		2. Worked together with the facilitator
		3. Participated in the training
		4. Received a guideline booklet
		5. Employed donor-designated-mason
		6. Appointed mason by myself
		7. Constructed the house by myself
		8. Renting
Q13	Which process/es did you participate during the reconstruction of your house? (Multiple answer)	1. Reconstruction consultation / Attended Donor explanation
		2. Selection of housing reconstruction committee
		3. Selection of housing group
		4. Community assessment
		5. Land consolidation
		6. Community planning
		7. House design
		8. Purchasing of materials
		9. Technical training

		10. Construction of house
		11. Quality control
		12. None
		13. Others
Q14	Are you satisfied with your reconstructed house? why	1. No 2. Yes
Q15	What have you learnt from or have changed due to participating in the housing reconstruction project?	1. Technical knowledge about housing construction
		2. Money management/budgeting
		3. Relationship with/among neighbors
		4. Ways/method of disaster preparedness
		5. Importance of coordination with others
		6. Being able to express my opinion
		7. Communicating with the facilitators
		8. Building relationship with donor
		9. Others
Q16	When did receive your house or house reconstruction aid?	1. House (when? MM/YY)
		2. House reconstruction aid (when? MM/YY)
		3. No
Q17	Who built this/your house? (Multiple answer)	1. Myself/Family
		2. Carpenter/Mason
		3. Building Contractor
		4. Community help
		5. Other
Q18	Which part of the house did you repair/renovate? (Multiple answer)	1. Roof
		2. Pillar
		3. Inside wall
		4. Outside wall
		5. Floor
		6. Water function like Toilet/Kitchen
		7. Others ( )
		8. None
Q19	Please select the current state of your house (Multiple answer)	1. Brick fall off
		2. Paint peel off
		3. Exposed reinforcement bars
		4. Cracks on the floor
		5. Cracks on the wall
		6. House/wall is tilting
		7. Leaking roof
		8. Others ( )
		9. None
Q20	Have you extended or renovated the house after the completion?	1. No 2. Yes
Q21	Who constructed the extension or renovation? (Multiple answer)	1. Myself
		2. Carpenter/Mason
		3. Building Contractor
		4. Community help
		5. Other
Q22	How much did it cost to extend or renovate the house?	1. < 1,000,000 Rp
		2. 1,000,001 – 5,000,000 Rp
		3. 5,000,001 – 10,000,000 Rp
		10. > 10,000,001 Rp
Q23	Were you prepared for the disaster BEFORE the previously disaster?	1. No
		2-a. Add strength by repairing pillar and wall
		2-b. Preparing emergency kit (eg. Flashlight)
		2-c. Prepare valuables/important documents
		2-d. Know where to evacuate

		2-e. Know how to protect myself from falling objects
		2-f. Others
Q24	Are you prepared for disasters NOW?	1. No
		2-a. Add strength by repairing pillar and wall
		2-b. Preparing emergency kit (eg. Flashlight)
		2-c. Prepare valuables/important documents
		2-d. Know where to evacuate
		2-e. Know how to protect myself from falling objects
		2-f. Others
		2-f-list
Q25	Do you think this house will suffer damage by the next disaster?	1. No, I don't think so
		2. Yes, I think so
		3. Not sure
Q26-1	What has changed after the disaster?	( ) weaker
	Family relashinship	( ) stronger
		( ) no change
Q26-2	Community relationship	( ) weaker
		( ) stronger
		( ) no change
Q26-3	Disaster awareness	( ) weaker
		( ) stronger
		( ) no change
Q26-4	Financial situation	( ) weaker
		( ) stronger
		( ) no change
Q26-5	Technical knowledge of housing	( ) weaker
		( ) stronger
		( ) no change
Q26-6	Strength of house	( ) weaker
		( ) stronger
		( ) no change
Q26-7	Others	
Q27-1	You trust your neighbors	1. Not at all
		2. Not aso much
		3. Fairly yes
		4. Very much
Q27-2	You will help you neighbor when disaster happens	1. Not at all
		2. Not aso much
		3. Dairy yes
		4. Very much
Q27-3	You borrowed money from neighbors	1. Not at all
		2. Not aso much
		3. Dairy yes
		4. Very much
Q27-4	You lend out money to your neighbors	1. Not at all
		2. Not aso much
		3. Dairy yes
		4. Very much
Q27-5	You often participate in the local activities	1. Not at all
		2. Not aso much
		3. Dairy yes
		4. Very much
Q27-6	You know your neighbor's financial situation	1. Not at all
		2. Not aso much
		3. Dairy yes
		4. Very much

Q27-7	You know your neighbor's family situation	1. Not at all
		2. Not aso much
		3. Dairy yes
		4. Very much
Q28	1 Room size	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	2 Property size	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	3 Room temperature	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	4 House proximity	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	5 Exterior design	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	6 Kitchen	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	7 Toilet and bath facility	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	8 Commuting time, distance to work	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	9 Distance to education facility	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	10 Cleanliness (outside of house)	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	11 Common facility (eg.: community space)	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	12 Infrastructure (water, electricity, road, garbage service)	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	13 Relationship with neighbors in the community	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	14 Relationship with village leader	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied

	15 Relationship with local government	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	16 Relationship with private sector	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	17 Community activity	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
	18 Life in general	1. Very dissatisfied
		2. Dissatisfied
		3. Satisfied
		4. Very satisfied
Q29	Why do you decided to live in this location? (select one)	1. Original residence was here.
		2. Family house available.
		3. Land and House given.
		4. Moved here for work.
		5. Rent was cheaper.
		6. Close to the town
		7. Other
Q29-7-reason		
Q30	Where is your favorite place in your community?	
	And Why	
Q31	What is a good proportion in volume of cement, sand, gravel and water for good normal concrete for making column and beams?	1. 1 : 3 : 5 : 2
		2. 1 : 3 : 6 : 2
		3. 1 : 2 : 3 : 1
		4. 1 : 2 : 4 : 1
		5. Don't know
Q31-revised		1. correct answer (answered 3)
		2. wrong answer (answered other than 3)
		3. Don't know (answered 5)
Q32	What is the normal size for the main steel reinforcement bar in columns and beams for standard simple house (1 story)?	1. 6 mm
		2. 8 mm
		3. 10 mm
		4. 12 mm
		5. Don't know
Q32-revised		1. correct answer (answered 3)
		2. wrong answer (answered other than 3)
		3. Don't know (answered 5)
Q33	Which one is correct in bending the end of stirrup steel as in the following pictures?	a)=1
		b)=2 CORRECT answer
		c)=3 Don't know
Q34	Please make a correction on this drawing of iron bar connection.	1. Wrong
		2. Right

mode of transportation	Q35-a-pre	1.Motor
		2.Car
		3.Others
	Q35-b-post	1.Motor
		2.Car
		3.Others
Energy for lighting	Q36-a-pre	1.Electric
		2.Oil Lamp
		3.Others
	Q36-b-post	1.Electric
		2.Oil Lamp

		3.Others
Cooking energy	Q37-a-pre	1.Gas
		2.Firewood
		3.Others
	Q37-b-post	1.Gas
		2.Firewood
		3.Others
Drinking water source	Q38-a-pre	1.Pipe
		2.Well
		3.Others
	Q38-b-post	1.Pipe
		2.Well
		3.Others
Telecommunication media	Q39-a-pre	1.TV
		2.Radio
		3.Handphone
		4.Others
	Q39-b-post	1.TV
		2.Radio
		3.Handphone
		4.Others
Source of income	Q40-a	1.Main income
		2.Side income
	Q40-b	1.Main income
		2.Side income
	Q40-c	1.Main income

Available assets	Q41-a-pre	1.Own 2.Rent	1.Sampan
			2.Boat
			3.Motor engine
			4.Fishing net
			5.Others
	Q41-b-immediately	1.Own 2.Rent	1.Sampan
			2.Boat
			3.Motor engine
			4.Fishing net
			5.Others
	Q41-c-post	1.Own 2.Rent	1.Sampan
			2.Boat
			3.Motor engine
			4.Fishing net
			5.Others

Hours spent in the sea	Q42-a-pre	1.<3hours
		2.3-5 hours
		3.>6 hours
	Q42-b-immediately	1.<3hours
		2.3-5 hours
		3.>6 hours
	Q42-c-post	1.<3hours
		2.3-5 hours
		3.>6 hours
What do you do with the catch?	Q43-a-pre	1.Sell
		2.Process into different product
		3.Own consumption
		4.Others
	Q43-b-immediately	1.Sell
		2.Process into different product
		3.Own consumption

		4.Others
	Q43-c-post	1.Sell
		2.Process into different product
		3.Own consumption
		4.Others
Where do you sell those catches/product?	Q44-a-pre	1.Toke ikan
		2.Local market
		3.Others
	Q44-b-immediately	1.Toke ikan
		2.Local market
		3.Others
	Q44-c-post	1.Toke ikan
		2.Local market
		3.Others
	Q45 Catch Condition	1.Very little
		2.Little
		3.No change
		4.Much
		5.Very much
	Q45-I Reason for changed of condition	
	Q45-ii If little/very little, what do you do?	
Other generating activities	Q46-a-pre	1.Sewing
		2.Open grocery stall
		3.Selling snacks
		4.Others
	Q46-b-immediately	1.Sewing
		2.Open grocery stall
		3.Selling snacks
		4.Others
	Q46-c-post	1.Sewing
		2.Open grocery stall
		3.Selling snacks
		4.Others
When did you start?	Q47-a-pre	
	Q47-b-immediately	
	Q47-c-post	
Working hours	Q48-a-pre	1.<3hours
		2.3-5 hours
		3.>6 hours
	Q48-b-immediately	1.<3hours
		2.3-5 hours
		3.>6 hours
	Q48-c-post	1.<3hours
		2.3-5 hours
		3.>6 hours
How much product made?	Q49-a-pre	
	Q49-b-immediately	
	Q49-c-post	
Where do you sell those product?	Q50-a-pre	1.Neighbours
		2.Shops
		3.Local market
		4.Others
	Q50-b-immediately	1.Neighbours
		2.Shops
		3.Local market
		4.Others
	Q50-c-post	1.Neighbours
		2.Shops
		3.Local market
		4.Others

Total monthly income	Q51-a-pre	1.<IDR500,000
		2.IDR500,001-IDR1,000,000
		3.IDR1,000,001-IDR3,000,000
		4.>IDR3,000,001
	Q51-b-immediately	1.<IDR500,000
		2.IDR500,001-IDR1,000,000
		3.IDR1,000,001-IDR3,000,000
		4.>IDR3,000,001
	Q51-c-post	1.<IDR500,000
		2.IDR500,001-IDR1,000,000
		3.IDR1,000,001-IDR3,000,000
		4.>IDR3,000,001
Received any social security	Q51-a-pre Q51-a-list	1.Yes
		2.No
		Name of support
	Q51-b-immediately Q51-b-list	1.Yes
		2.No
		Name of support
	Q51-c-post Q51-c-list	1.Yes
		2.No
		Name of support

		a-whom	b-period	c-scale
Disaster Support Received	Q53.2 Shelter Q53.3 CFW Q53.4 Fod Q53.5 Drinking Q53.6 Healthcare Q53.7 cash grant Q53.8 Livelihood Q53.9 Others	1. Gov 2. NGO 3. Others	1.1-2 months after disaster 2.Within 1 year of disaster 3.Within 6 years after disaster	1.No benefit at all 2.Less benefit 3.Dont know

APPENDIX 5: Data of Gampong Pande

	house no.		date	Q1	Q2	Q3	Q4		Q5	Q6	Q7	Q8									Q9				Q10	Q11			
	original	map					adult	child				1	2	3	4	5	6	7	8	9	1	2-a	2-b	2-c		1-a	1-b	2-a	2-b
1	34	132	9-09	Hera	53	1	2	0	2		4								1		2			1					
2	57	57	9-08	Desi	27	1	4	4	2	1,000,000	4	1	1	1	1	1	1				2			1	4	1			
3	60	60	9-08	Surya Darma	45	2	4	0	2	500,000	4	1	1	1	1	1	1	1			2			1	4		1		
4	61	59	9-08	Desi Agustria	29	1	2	2	2	1,000,000	3	1	1	1	1	1	1				2	1			4	1			
5	62	69	9-08	Yusmani	60	1	2	0	1	500,000	4	1		1							2	1			4	1			
6	47	53	9-08	Juli	32	1	2	1	2	1,000,000	4	1		1	1		1				2	1			4	1			
7	65	65	9-08	Alfiana	30	1	2	1	1	3,000,000	3		1	1		1	1				2	1				1			
8	59	58	9-08	Darmayanti	42	1	2	0	2	1,000,000	4	1	1	1	1		1				2			1	4	1			
9	42	164	9-09	Syukri	42	2	2	3	2	1,000,000	3	1	1	1	1						2			1	4	1			
10	44	162	9-09	Anzar	40	2	2	3	2	1,000,000	3			1							2			1	4	1			
11	2	22	9-09	Jaafar Is	62	2	2	1	2	500,000	4	1	1		1						2			1	4	1			
12	1	105	9-08	Azhari	50	2	2	3		1,000,000	3								1		2			1	4	1			
13	3	103	9-08	Suryani	52	2	3	1	2		2								1		2			1	4	1			
14	7	100	9-08	Yani	32	1	2	2	2	1,000,000	2						1				2			1	4	1			
15	11	91	9-08	Adnin	42	1	2	3		1,000,000	3								1		2			1	4	1			
16	8	99	9-08	Juairiah	50	1	2	0	2	500,000	4								1		2			1	4	1			
17	24	94	9-08	Marlinda	30	1	2	3	2	1,000,000	2								1		2			1	4	1			
18	22	92	9-08	Marzuki	37	2	4	3		1,000,000	2								1		2			1	3	1			
19	22	96	9-08	M. Hakim	45	2	2	1	2	500,000	4								1		2			1	4	1			
20	23	95	9-08	Ratna Wati	29	1	2	1	2	1,000,000	2								1		2			1	4	1			
21	13	111	9-08	Erni Ningsih	46	4	2	1	2	1,000,000	4	1	1	1	1	1	1				2	1			4	1			
22	48	35	9-08	Zukarnain	38	2	2	3	2	500,000	4	1		1	1						2			1	3	1	1		
23		A1	9-08	Nurhanisah	37	1	2	4	2	1,000,000	3	1	1	1	1	1	1				2			1	3	1	1		
24	23	26	9-08	Irna	32	1	2	2	2	3,000,000	3	1	1	1	1		1				2			1	3	1	1		
25	22	25	9-08	Cut Sri Mawarni	28	1	2	2	2	500,000	4	1		1	1	1	1				2			1	3	1	1		
26		12	9-08	Deni Arianti	34	1	2	2	2	3,000,000	4	1		1	1	1	1				2			1	3	1	1		
27	29	30	9-08	Desmawati	35	1	3	2	2	500,000	4	1	1	1		1					2			1	4	1	1		
28	200	31	9-08	Rosni	49	1	1	2	2	500,000	4		1	1		1	1				2			1	3	1	1		
29	18	A2	9-08	Rusli Abdullah	47	2	3	2	2	750,000	4	1		1		1	1				2			1	1	1	1		
30	13	8	9-08	Rusli	75	2	4	3	2	500,000	4			1		1	1				2			1	3	1	1		
31	29	128	9-08	Nurul	26	1	2	2	2	2,000,000	4								1		2	1			4	1			
32	46	52	9-08	Amiruddin	43	3	3	4	1	2,000,000	3	1	1	1	1	1	1	1			2	1			4		1		
33	41	45	9-08	Nurul Afni	33	1	2	3	2	2,000,000	4	1	1	1			1				2	1			4	1			
34	42	44	9-08	Munira	58	4	4	0	1	2,000,000	4	1	1	1							2	1			4	1			
35	44	43	9-08	Nasiati	47	1	3	0		750,000	3	1	1	1	1		1				2	1			4		1		
36	39	51	9-08	Jumaini	36	1	2	3	2	750,000	4	1	1	1	1		1				2	1			4	1			
37	38	50	9-08	Juraida	45	1	2	2	2	750,000	4	1	1	1	1		1				2	1			4	1			
38	32	32	9-08	Ernilla	33	1	1	3	2	750,000	3	1		1	1	1	1				2	1			4		1		
39	2	135	9-08	Mira Wardani	28	1	3	2	2	2,000,000	2	1	1				1				2			1	3	1			
40	1	134	9-08	Suhendri	26	2	1	0		750,000	2								1					1	3	1			
41	4	139	9-08	Asmawati	43	1	3	1	1	3,000,000	4		1		1		1				2			1	4	1			
42	10	144	9-08	Epi Sofiani	38	1	2	4	1	2,000,000	2	1	1	1	1						2			1	3	1			
43	27	38	9-08	Safrina	31	1	2	2	2	2,000,000	4	1	1	1	1						2	1			4	1			
44	13	147	9-08	Novirwan	38	2	2	1	2	2,000,000	2	1			1						2			1	3	1			
45		156	9-08	Nuraini	43	1	2	2		750,000	2				1						2			1	3		1		
46	29	127	9-08	Agus Hermawan	32	2	2	2	2	2,000,000	3	1			1						2			1	4	1			
47	20	119	9-08	Fitria	29	1	2	2	2	2,000,000	2	1	1		1						2			1	3	1			
48	17	110	9-08	Hendriyeni	33	1	2	5	2	2,000,000	2	1	1								2			1	2	1			
49	49	159	9-08	Nurhayati	68	1	1	0	1	2,000,000	4								1		2			1	4	1			
50	47	160	9-08	Zikri	30	2	2	2	2	2,000,000	3	1	1	1	1						2			1	4	1			
51	40	166	9-08	Hazia	44	1	4	4	1	2,000,000	2				1		1								3	1			
52	39	167	9-08	Nurmani	35	1	2	3		2,000,000	3				1						2			1	4	1			
53	38	168	9-08	T. Hafsah	30	1	3	3	1	500,000	2	1	1	1			1				2			1	3	1			
54	26	37	9-16	Siti Raisa	58	1	3	3		750,000	1		1			1									1				1
55	36	116	9-08	Salmalisa	30	1	2	2	2	2,000,000	3										2			1	4	1			
56	34	118	9-08	Susi Ema Fitri	36	1	2	4	1	2,000,000	4								1		2			1	4	1			
57		47	9-15	Sayed Zulkarnain	50	2	1	0	2	4,000,000	4	1	1	1	1						2			1	4	1			
58	37	49	9-15	Nur Fitra	35	1	2	2	1	2,000,000	2	1	1	1	1		1				2			1	2		1		
59	39	87	9-15	T. Samsuddin	75	2	2	0	2	1,500,000	4	1	1	1	1						2			1	4	1			
60	25	122	9-16	Nurmala	35	1	2	4		2,000,000	2		1	1											2				1
61	35	82	9-15	Yahya Andurrahman	60	2	2	0	2	3,000,000	4	1	1	1	1						2			1	4	1			
62	55	155	9-09	Mahfud Effendi	38	2	2	2	2	2,000,000	3	1		1							2			1	4	1			
63	18	78	9-16	Armayani	31	1	4	2		2,000,000	2								1						2				1
64	19	E1	9-16	Boy	29	2	2	1		2,000,000	1	1	1	1	1										1				1
65	10	3	9-16	Sabariah	25	1	2	1		2,000,000	2	1	1	1	1		1								2				1
66	28	32	9-16	Fatimah	27	1	2	1		3,000,000	2	1	1	1	1										2				1
67	11	9	9-16	Nenden	48	1	3	1		2,000,000	2	1	1	1	1		1								2				1
68	47	36	9-15	Zaini	60	2	2	3	2	1,000,000	4			1	1						2			1	4	1			
69	34	41	9-15	Tsaifanora	32	1	3	0	1	660,000	2	1	1	1	1		1				2			1	3	1			
70	50	33	9-15	Nursiyah	35	1	2	2	2	2,500,000	2	1	1	1	1						2			1	3	1			
71	39	115	9-15	Nurma Ningsih	35	1	2	3	2	2,000,000	4	1	1	1	1	1					2	1			4	1			
72	42	165	9-15	Suproadi	46	2	5	1	1	3,000,000	3	1	1	1	1										3		1		
73	10	113	9-15	Saiful Jalil	38	2	2	4	2	2,000,000	4	1	1	1	1	1	1	1			2	1			4	1			
74	31	81	9-08	M. Ridwan Arusman	46	2	3	2	2	2,000,000	3	1	1	1	1						2			1	4	1			
75	24	121	9-15	M. Ali Rahman	60	2	2	0	2	500,000	4	1	1	1	1			1			2			1	4	1			
76	3	21	9-08	Rosmiati	39	1	2	3	2	750,000	4	1		1		1	1				2			1	3	1	1		
77	6	150	9-08	T. Husein	60	2	2	0	2	750,000	2	1	1								2			1	3	1			

	Q18									Q20	Q22				Q26-1			Q26-2			Q26-3			Q26-4			Q26-5			Q26-6		
	1	2	3	4	5	6	7	7-reason	8		1	2	3	4	w	s	n	w	s	n	w	s	n	w	s	n	w	s	n	w	s	n
1									1	1																						
2					1		1	kitchen		2				1			1			1		1		1				1		1		
3	1	1	1		1	1				2				1			1			1		1			1			1		1		
4					1	1	1	kitchen, toilet floor		2				1		1			1			1				1			1		1	
5					1	1				2				1	1				1			1			1		1				1	
6						1				2		1			1				1			1			1				1		1	
7			1	1		1				2				1			1			1		1			1				1	1		
8						1				2				1		1			1			1			1				1		1	
9		1	1	1	1	1				2				1		1			1			1				1		1			1	
10				1		1				2			1			1			1			1				1		1				1
11						1	1	terrace		2			1			1			1			1		1					1			1
12					1	1				2			1			1			1			1				1		1			1	
13					1	1				2			1			1			1			1				1			1		1	
14					1	1				2				1		1			1				1			1		1		1		
15					1	1				2				1		1			1				1		1				1		1	
16					1	1				2			1			1			1			1				1		1			1	
17									1	1						1			1			1				1		1			1	
18					1	1	1	terrace		2				1		1			1			1				1		1			1	
19					1	1				2			1			1			1			1				1		1				1
20					1	1				2			1			1			1			1				1			1			1
21	1					1				2				1	1				1			1			1			1			1	
22	1	1	1	1	1	1				2				1		1			1			1		1				1			1	
23							1	kitchen and bedroom		2				1			1		1			1			1			1			1	
24	1		1		1		1	kitchen		2				1			1		1			1				1		1			1	
25						1	1	kitchen		2			1			1			1			1			1			1			1	
26	1				1	1	1	door and sills		2				1		1			1			1			1			1			1	
27									1	2				1		1			1			1		1				1			1	
28	1									2					1				1			1				1		1			1	
29									1	1						1			1			1		1					1			1
30	1	1	1	1	1					2				1		1			1			1			1			1			1	
31					1	1				2				1		1			1			1			1			1	1			
32			1	1	1	1	1	veranda		2				1		1			1			1		1			1				1	
33	1				1	1				2				1		1			1			1				1	1			1		
34			1	1	1	1	1	veranda		2				1	1				1			1		1				1		1		
35	1		1	1		1				2				1		1			1			1		1				1			1	
36			1	1	1	1	1	door and sills		2				1	1				1			1			1			1			1	
37	1		1	1	1	1	1	door and sills		2				1	1				1			1		1			1			1		
38			1		1	1				2				1	1				1			1			1			1		1		
39						1				2				1			1			1		1			1				1			1
40				1		1				2				1		1			1			1				1		1				1
41			1			1				2			1			1				1		1			1				1			1
42				1	1	1				2			1				1			1		1				1			1			1
43						1				2		1			1				1			1				1	1			1		
44	1					1				2				1		1			1			1			1				1			1
45									1	1						1				1		1			1			1			1	
46					1	1				2			1			1			1			1				1			1			1
47					1	1				2				1		1			1			1			1				1			1
48									1	1						1				1		1		1					1			1
49									1	1							1		1			1				1		1			1	
50									1							1			1			1				1		1				1
51						1				2			1			1			1			1				1		1				1
52	1		1	1	1	1				2				1			1		1			1				1		1			1	
53			1			1				2				1		1			1				1			1			1			1
54						1				3						1		1				1				1	1			1		
55			1	1	1	1				2				1			1		1			1				1		1			1	
56									1	1							1		1			1				1		1				1
57						1	1	added trellis		2			1		1			1				1		1				1			1	
58						1				2			1			1			1			1				1			1			1
59									1	1					1					1		1		1				1			1	
60									1	3						1				1		1			1		1			1		
61									7	2				1		1			1			1				1		1			1	
62		1	1	1	1	1				2				1		1			1			1				1		1			1	
63							1	rent		2		1				1		1				1			1				1	1		
64									1	3						1			1			1				1	1			1		
65						1				2		1				1			1			1				1			1			1
66									1	3						1			1			1				1	1			1		
67							1	rent		3						1			1			1		1				1			1	
68	1		1	1		1				2		1					1			1		1		1					1			1
69						1				2				1		1			1			1				1		1			1	
70										2	1					1			1			1		1				1			1	
71	1					1	1	bedroom		2				1		1			1			1			1			1			1	
72	1	1	1	1	1	1	1	changed everything		2				1		1			1			1			1			1			1	
73						1				2			1			1			1			1				1		1		1		
74	1					1	1	paint, terrace, room		2				1		1			1			1			1				1			1
75						1	1	terrace and kitchen's ceiling		2					1				1			1		1				1		1		
76							1	painted the house		2		1					1		1			1		1				1			1	
77									1	1							1		1			1				1			1			1

	Q27															
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9
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6	3	3	1	1	3	3	3	3	3	3	3	3	2	3	3	3
7	3	3	2	2	3	3	3	2	3	3	4	3	1	2	3	3
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9	3	3	1	1	4	1	1	2	2	3	3	2	3	2	2	3
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11	3	3	2	1	4	1	1	3	3	3	3	2	1	1	2	3
12	3	3	2	2	4	1	1	3	3	3	4	3	3	2	2	2
13	3	3	1	1	4	1	1	3	3	3	4	3	2	2	2	2
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19	3	3	2	2	3	2	2	3	4	3		3	3	3	3	3
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21	3	3	1	1	4	2	2	3	3	3	3	1	1	2	3	3
22	3	3	3	3	4	1	1	2	2	2	2	2	4	2	3	3
23	3	3	3	3	4	1	1	1	2	2	2	2	1	2	2	2
24	3	3	2	4	4	1	1	1	3	2	2	3	1	1	4	3
25	3	3	3	3	4	1	1	1	3	1	1	3	1	2	3	3
26	4	4	3	3	3	1	1	1	4	2	2	3	1	2	3	2
27	3	3	2	2	3	1	1	3	3	3	2	3	2	3	3	3
28	3	3	2	2	4	1	1	4	4	3	2	4	3	3	3	4
29	3	3	2	2	3	1	1	2	3	2	1	2	2	2	3	3
30	3	3	3	3	4	1	1	3	4	2	2	3	2	3	3	3
31	3	3	1	2	2	2	3	3	3	3	3	2	1	1	1	1
32	3	3	2	1	4	2	4	2	3	3	3	2	2	2	3	3
33	4	3	1	1	2	1	1	2	3	3	3	3	2	2	3	3
34	3	3	1	2	3	2	1	3	3	3	3	2	1	2	3	3
35	3	2	1	1	3	2	2	2	3	3	3	2	1	2	3	3
36	3	3	2	1	2	1	1	2	3	3	3	3	1	2	3	3
37	3	3	1	1	2	1	1	2	3	3	3	2	1	2	3	3
38	3	3	1	1	3	1	1	3	3	2	3	3	1	2	3	3
39	3	3	2	3	4	1	1	2	2	2	3	2	2	2	4	4
40	3	3	3	2	1	1	1	3	3	3	3	3	3	3	3	3
41	4	4	2	3	3	1	1	1	2	2	4	2	1	2	4	4
42	3	3	2	2	4	1	1	2	2	2	3	2	2	2	3	3
43	4	3	1	2	4	2	2	3	3	3	3	2	1	2	3	3
44	3	3	2	2	3	1	1	3	3	2	3	3	1	1	4	3
45	3	3	2	2	3	2	2	3	3	3	3	3	3	3	3	3
46	2	3	1	1	3	1	1	3	3	3	2	2	1	1	3	3
47	3	3	1	3	3	1	1	3	3	3	3	2	1	1	3	3
48	2	3	1	2	2	1	1	2	2	2	2	2	1	1	3	3
49	1	2	2	2	3	1	1	3	3	3	2	2	3	3	3	3
50	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
51	3	3	3	3	3	1	2	3	3	3	3	2	3	3	3	3
52	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3	3
53	3	3	1	1	2	1	1	2	2	2	3	2	2	3	2	2
54	3	3	1	1	2	1	2	3	3	3	3	3	2	2	1	3
55	3	3	2	1	3	1	1	3	3	2	2	4	3	4	2	3
56	3	3	3	3	3	3	3	2	2	3	3	2	3	3	2	2
57	3	3	2	2	3	4	4	2	3	3	2	2	1	3	3	3
58	3	3	1	1	3	3	3	3	3	3	3	3	1	3	2	2
59	3	3	1	1	3	3	3	1	1	1	1	1	1	3	2	2
60	3	3	1	2	2	1	2	3	3	3	3	3	1	2	3	3
61	3	3	1	1	3	3	3	3	4	3	3	3	1	3	3	3
62	3	4	2	1	3	4	4	3	3	2	2	3	2	2	2	3
63	3	3	1	2	1	1	2	3	3	3	3	3	2	2	3	3
64	3	3	1	2	2	2	2	3	3	3	3	3	2	2	3	3
65	3	3	1	2	4	1	2	3	3	3	2	1	2	3	3	3
66	3	3	2	2	4	1	2	3	3	3	3	3	1	2	4	3
67	3	3	1	2	4	2	2		3	3	3	3	2	2	3	3
68	3	3	1	3	3	3	3	3	3	3	4	2	1	3	3	3
69	3	3	1	1	3	1	1	2	4	2	2	2	1	2	3	3
70	3	3	3	3	2	4	2	2	3	2	3	3	1	3	2	2
71	4	3	1	2	4	1	1	3	3	3	3	2	1	2	4	3
72	3	3	1	1	3	1	2	2	2	2	3	3	1	2	3	3
73	4	4	1	2	4	2	3	3	3	3	3	3	1	2	3	3
74	3	4	2	3	4	1	1	2	2	3	3	3	1	1	3	3
75	3	3	2	1	4	2	3	3	3	3	3	3	1	2	3	3
76	3	3	3	3	4	2	2	2	3	3	2	2	1	2	4	3
77	2	3	2	2	2	1	1	2	2	3	3	2	2	2	3	3

APPENDIX 5: Data of Gampong Pande

Q28									Q35-a.pre				Q35-b.post				Q36-a			Q36-b			Q37-a			Q37-b				Q38-a				Q38-b				Q39-a				Q39-b							Q41-a						Q41-b					Q41-c					
10	11	12	13	14	15	16	17	18	1	2	3	3-reason	1	2	3	3-reason	1	2	3	1	2	3	1	2	3	3-reason	1	2	3	3-reason	1	2	3	3-reason	1	2	3	3-reson	1	2	3	4	4-reason	1	2	3	4	4-reason	Q40-a	Q40-b	Q40-c	1	2	3	4	5	5-reason	1	2	3	4	5	1	2	3	4	5	Q42-a
3	3	3	4	4	4	4	4	4	1				1				1			1			1				1				1				1				1		1			1																									
4	3	3	3	3	3	2	3	3	1				1				1			1			1				1				1				1				1		1			1																									
3	3	3	4	4	4	3	4	4			1	bicycle			1	becak	1			1			1				1	1			1				1				1				1	1	1																									
3	3	3	3	3	3	3	3	3	1				1		1	becak	1			1			1				1				1				1	1	1		1	1	1																									
3	3	3	3	3	3	3	3	3	1				1				1			1					1	oil stove	1				1				1	1	1		1	1	1																									
3	3	3	3	3	3	3	3	3	1				1				1			1				1	oil stove			1	oil stove	1				1	1	1		1	1	1																									
3	3	4	3	3	3	3	3	3	1	1			1	1			1			1			1				1				1				1	1	1		1	1	1																									
3	3	3	4	4	4	3	3	3	1		1	becak	1				1			1					1	oil stove	1				1				1				1		1																									
3	3	3	4	4	4	3	4	4	1	1			1	1			1			1			1				1				1				1				1		1			1																									
3	3	3	4	4	4	4	4	4	1				1				1			1			1				1				1				1				1		1			1																									
3	3	3	3	3	3	3	3	3							1	becak	1			1			1				1				1								1		1			1						1			fishing rod																									3
3	3	2	3	4	4	3	4	4			1	becak	1		1	becak	1			1			1				1				1				1				1		1			1																									
3	3	2	2	3	3	3	3	3					1				1			1			1				1				1				1				1					1																									
3	3	2	4	4	4	4	4	4					1				1			1			1				1				1				1				1		1			1																									
3	3	3	4	4	4	4	4	4	1				1				1			1			1				1				1				1				1		1			1						1	1				2					2					3
3	3	2	4	4	4	4	4	4			1	bicycle			1	bicycle	1			1			1					1			1				1				1																																	
2	3	2	3	3	3	3	3	3	1				1				1			1			1				1				1				1				1																									
3	4	4	3	3	3	4	4	4			1	becak	1		1	becak	1			1			1				1				1				1				1		1			1																									
3	3	3	4	4	4	4	4	4			1	becak			1	becak	1			1			1				1				1				1				1																															
3	2	3	2	4	4	4	4	4	1				1				1			1			1				1				1				1				1																									
3	3	3	2	2	2	3	2	3	1				1				1			1		1	oil stove	1				1	1			1				1				1																									
2	4	1	3	3	3	3	3	3	1				1				1			1		1	oil stove	1				1						1	gallon	1				1					1				1	1				1					1	1			1					1
2	4	1	3	3	3	3	3	3	1				1				1			1		1	oil stove	1				1						1	gallon	1				1					1				1	1				1					1	1			1					1
2	3	3	4	4	3	3	4	4	1				1				1			1			1				1				1				1				1																									
1	2	3	3	4	3	3	4	4	1				1				1			1			1				1				1				1				1																									
1	3	3	3	3	3	3	3	3					1				1			1			1			oil stove	1				1				1				1																									
1	3	3	3	3	3	3	3	3					1				1			1			1			oil stove	1				1	1			1	1			1																									
2	3	2	4	3	3	3	3	3	1				1				1			1			1			oil stove	1				1				1				1																									
2	3	3	3	3	3	3	4	4			1	bicycle			1	bicycle	1			1			1			oil stove		1	oil stove			1	gallon		1	gallon	1				1																									
2	3	1	3	3	2	3	4	4			1	bicycle			1	becak	1			1			1				1				1						1					1																									
3	4	3	3	3	3	4	4	4	1				1				1			1			1			oil stove	1				1				1				1																									
3	3	3	4	3	3	3	3	3	1				1				1			1			1			oil stove	1					1	gallon		1			1					1																									
2	3	3	3	3	3	3	3	3	1				1				1			1			1			oil stove	1					1	gallon		1	gallon	1	1	1		1	1	1																									
3	3	2	3	3	3	2	3	3					1				1			1			1				1				1				1	1		1	newspaper	1	1	1	1	newspaper																									
3	3	2	3	4	3	3	4	3	1								1			1			1				1				1				1								1	1																									
3	3	3	3	4	4	4	4	3	1				1				1			1			1				1				1				1	1				1	1	1																									
3	3	2	3	4	4	4	4	3	1				1				1			1			1				1				1				1	1	1			1	1	1																									
3	3	2	3	4	4	4	4	3	1				1				1			1			1				1				1				1	1	1				1																									
3	3	3	3	3	4	4	3	3					1		1	bicycle	1			1			1			oil stove	1				1				1				1					1	1	1																									
4	2	3	3	3	3	3	3	3	1				1				1			1			1				1				1				1				1																									
3	3	3	2	3	2	3	2	3	1				1				1			1			1				1				1				1				1																									
3	3	2	3	3	3	3	3	3	1				1				1			1			1				1				1				1	1	1		1	1	1																									
4	4	2	3	2	2	2	3	3	1				1				1			1			1				1				1				1				1																									
3	3	4	3	4	3	3	4	3	1				1				1			1			1				1				1				1	1	1		1	1	1																									
3	2	2	3	3	3	3	3	3	1				1					1		1			1				1				1				1				1																									
3	3	3	3	3	3	3	3	3	1				1				1			1			1				1				1				1				1					1	1	1	1																					
3	3	3	3	2	2	2	3	3	1				1					1		1			1				1				1				1				1																									
3	2	2	3	2	2	3	3	3	1				1				1			1			1				1				1				1				1																									
3	3	2	2	2	2	3	3	3	1				1				1			1			1				1				1				1				1																									
3	3	3	2	3	3	3	2	3					1				1			1			1					1			1				1				1																									
3	3	3	3	3	3	3	3	3			1	becak			1	becak	1			1			1				1				1				1				1																									
2	3	3	3	3	3	3	3	3					1				1			1			1				1				1				1				1																									
3	3	3	3	3	3	3	3	3	1				1				1			1			1				1				1				1				1					1																					
2	3	3	4	4	3	3	4	3									1			1			1				1				1				1				1																									
3	4	4	2	2	3	3	3	3	RENT						1	becak				1			1				1				1				1				1					1																									
3	3	3	3	3	3	3	4	4	1				1	1	1	becak	1			1			1				1				1				1				1					1																									
3	3	3	3	3	3	3	3	3			1	becak	1		1	becak	1			1			1				1				1				1				1					1																									
3	3	2	3	3	2	3	3	3	1	1			1				1			1			1				1				1				1	1				1	1																									
2	2	3	3	3	3	3	3	3	1				1	1			1			1			1				1				1				1	1	1			1	1	1																									
1	3	3	3	3	3	3	3	3			1	bicycle	1				1			1			1				1				1				1				1					1	1	1																									
3	3	2	3	2	3	3	3	3	RENT				1							1			1				1				1				1				1					1																					
3	3	3	3	3	3	4	3	3	1				1				1			1			1				1				1				1	1				1	1	1																									
3	3	2	3	4	4	3	4	4	1				1	1			1			1			1				1				1				1				1		1			1																					
3	3	2	2	2	2	2	2	2	RENT				1							1			1				1				1				1				1					1																					
3	3	2	3	3	2	3	3	3	RENT				1							1			1				1				1				1				1					1																					
3	4	3	3	3	3	3	4	4	RENT				1							1			1				1				1				1				1					1																					
3	3	4	4	4	4	3	3	3	RENT				1							1			1				1				1				1				1					1																					
3	3	1	3	3	3	3	4	3	RENT				1							1			1					1			1	1				1				1					1																					
2	3	3	3	3	3	3	3	3			1	bicycle	1				1			1			1				1				1				1				1					1																									
2	3	2	3	3	3	3	3	3			1	bicycle	1				1			1			1		1	oil stiove		1	oil stove		1				1				1	1				1																									
3	3	2	3	2	2	2	3	3							1	becak	1			1			1		1	oil stiove	1				1				1				1					1																									
3	3	4	3	4	4	3	3	3	1				1				1			1			1					1		1	gallon	1			1	1			1					1																					
3	3	4	3	3	4	4	3	3	1	1			1	1			1			1			1				1				1				1	1	1		1	1	1																									
3	4	4	4	4	4	4	4	4			1	becak			1	becak motor		1		1			1					1	1			1				1				1				1	1	1																									
3	3	3	3	2	3	3	3	3							1	becak		1		1			1				1				1				1				1					1																									
4	3	4	3	4	3	3	4	3									1			1				1	oil stiove		1	oil stove		1				1				1																									
2	3	3	3	3	2	2	4	3					1				1			1				1	oil stiove	1				1	1			1				1																									
3	3	3	2	3	3	3	3	3	1				1				1			1			1				1				1				1				1																									

APPENDIX 5: Data of Gampong Pande

Q42-b	Q42-c	Q43-a				Q43-b				Q43-c				Q44-a			Q44-b			Q44-c			Q45	Q45-reason	Q46-a	Q46-b	Q46-c	started when			hours spend			how much sold			Q50-a		Q50-b	Q50-b-reason	Q50-c	Q50-c-reason
																												Q47-a	Q47-b	Q47-c	Q48-a	Q48-b	Q48-c	Q49-a	Q49-b	Q49-c						
																										2			2005			3								4	house
																									labourer		labourer		2006			3										
																									labourer	labourer	labourer		2005		3	3	3									
																									sell food		3	1990		2010				1 cak for 30 kg 2 cak for 60 kg		not fixed	3				4	house
																									worked in Malaysia		labourer			2012			2									
																									poultry distributor		poultry distributor	2000		2000	3		3	300 chickens		500 chickens	3				3	
																									1		1	1990		2006	3		3	not fixed		not fixed	3				3	
		1											1										4				rickshaw					3										
																											honorer					3										
																									3		3				3		3									
																									entrepeneur		entrepeneur				3		3									
3	3	1				1			1				1			1			1				3																			
																									fish monger		fish monger				3		3									
																									fish monger		fish monger				3		3									
																									SATPAM		SATPAM				3		3									
																									rickshaw		rickshaw				3		3									
																											1				3		3									
																											veggie seller			2010			2			100 packet							1	
3	3	1				1			1				1			1			1				3																			
																									Government	PNS	PNS	2002			3	3	3									
																									fish monger	fish monger	fish monger	2000			3	3	3	50-60kg	50kg	60kg	3		4	toke ikan	4	toke ikan
																									maid	maid	maid				1	1	1									
2	2	1		1		1		1		1		1			1			1				2																			
																										1	1	oensioner	1975			3	3	3									
																									fish monger	fish monger	fish monger	1997		2007	3	2	3				3		3		3	
																									selling crab	selling crab	selling crab			2008	2	2	2	2-3 keranjang		1-2 keranjang	3		3		3	
																										2		2			2006	3		3				3				3	
																										3		3															
																									labourer		catering			2007			2								4	house
																										2	2	2	1993		2006	3	3	3									
																												ojek			2008												
																									slaughterhouse		cleaning service	2000		2016													
																										2		2	2003		2008	3		3				2		2			
																										2		3	2002		2012	2		2				2				3	
																										3		3	1994		2008	2		2				4	street			4	street
																												2			2008			2								2	
																									cook		cook	2000		2007	3		3									
																												2					3									3	
		1											1										3				laborer															
																									fishmonger		fishmonger				3		3				2				2	
																									policeman		policeman				3		3				4				4	
																									fishmonger		fishmonger	2002		2013	2		2				3				2	
																											rickshaw			2007													
																												PNS			2008												
																										2		2	2007			3		3				2				2	
																												2			2002											4	house
																										2		2				3		3				3				3	
																									labourer		labourer			2005	3		3									
																									brackish shrimp		PNS						3									
																											honorer			2008			3									
																									workshop	workshop	selling gas and cement brick	1980			3	3				500 bricks						
																											driver					3										
																									PNS	PNS	pensioner	1981			3	3	1								4	online and pesantren
																									private		private				3		3									
																											army						3									
																											entrepeneur						3									
																											laborer						3									
																											poultry distributor						3			100 chicken					3	
																											driver			2012			3									
																									workshop			1978		2014	3											
																											nurse			2014	3	2	1									
																												driver	fishmonger				3	3								2	
																									honorer	honorer	PNS	1996	2007	2006	3	3	3									
																									private	NGO	private	1995			3	3	3									
																									rickshaw	coffee shop	laborer	2000	2005	2012	3	3	3									
																											rickshaw						2									
																									bracksih shrimp and fish		bracksih shrimp and fish				3		2				3				3	
3		1	1	1	1	1			1	1	1			1			1			1			2	lesser catch																		

APPENDIX 5: Data of Gampong Pande

51-total monthly income			52-social security			Q53.2-shelter			Q53.3-CFW			Q53.4-Food			Q53.5-Drinking			Q53.6-Healthcare			Q53.7-Cash grant			Q53.8-Livelihood			Q53.9-Others		
Q51-a	Q51-b	Q51-c	Q52-a	Q52-b	Q52-c	a-whom	b-period	c-scale	a-whom	b-period	c-scale	a-whom	b-period	c-scale	a-whom	b-period	c-scale	a-whom	b-period	c-scale	a-whom	b-period	c-scale	a-whom	b-period	c-scale	a-whom	b-period	c-scale
			2	1	2	2	2	5																					
	2	3	2	2	2	2	2	5				2	1	5	2	1	5												
1		2	1	1	2	2	2	5				1	1	5	1	1	5	1	2	5									
	2	3	2	1	2	2	2	5				1	1	4	1	1	4	1	1	4									
3		2	2	1	2	2	2	5				1	1	5	1	1	5	1	1	5									
		3	2	1	2	2	2	5				1	1	4	1	1	4												
4		4	2		2	2	3	5				1	1	4	1	1	4												
2		3	2	1	1	2	2	5				1	1	4	1	1	4												
3		3	2	1	2	2	2	5																					
2		3	2	1	2	2	2	5																					
3		2				2	2	4				1	1	4															
		3	2	1	2																								
			2	1	2	2	2	5																					
3		3	2	1	2	2	2	5																					
3		3	2	1	2	2	2																						
5		5	2	1	2	2	2	5																					
3		3	2	1	2	2	2	5																					
3		3	2	1	2	2	2	5																					
2		2	2	1	2	2	2	5																					
3		3	2	1	2	2	2	5																					
		3	1	2	2	2	2	5				1	2	5	1	2	5				3	3	5						
2	1	1	2	1	2	2		4	1		4	2		3	2		3	2		3			3	1		2			
2	1	1	2	1	2	2		4	1		4	2		3	2		3	2		3			3	1		2			
1	2	3	2	1	1	2		4				2		4	2		4	2		4				2		4			
1	2	4	2	2	2	2		4				2		4	2		3	2		3				2		3			
1	2	2	2	2	2	2		4				1	3	3	2		3	2		3				1		2			
2	3	4	2	2	2	2	3	4				1	1	3										1		3			
3	2	2	2	2	2													1		4				1		4			
1	1	1	2	2	2	1		5				1		4															
3	2	2	2	2	2	1		4				1		4															
2	3	1		1	1	2		4	1	2	3	1		4															
3	2	3	2	1	1	2	2	5				1	2	4	1	2	4												
3	3	3	2	1	2	2	2	5				1	1	4	1	1	4												
2		3	2	1	1	2	2	5				1		5	1		5												
3		3				2	2	5				1		5	1		4												
3		2	2	1	2	2	2	5				1	1	4	1	1	4												
3	2	2	2	1	1	2	2	5				1	1	5	1	1	5												
		3	2	1	1	2	2	5				1	1	4	1	1	4												
		2		1	2	2	2	5				1		4	1		4												
4		3	2	1	2	2	2	3																					
3		2	2	1	2	2	2	3																					
4		4	2	1	2	2	2	3																					
		3	2	1	2	2	2	4																					
3		3	2	1	1	2	2	5				1	2	5	1	2	4												
		3	2	1	2	2	2	4																					
		2	2	1	2																								
3		3	2	1	2	2	2	3																					
3		3	2	1	2	2	2	4																					
3		3				2	2	3																					
3		3	2		2	2		4																					
2	2	3	2	1	2																								
2	2	3	2	1	2																								
3		3	2	1	1	2	2	5																					
3		3	2	1	2	2	2	5																					
1		1	2	1	1	2	2	5																					
		2			2																								
3		3	2	1	2	2	2	5																					
3		3	2	1	2	2	2	5																					
3	3	4				2	2	5				1	1	5	1	1	5				1	3	5						
		3	2	1	2	2	2	5				1	1	5	1	1	5										1	1	5
3	3	3	2	1	2	2	2	5				1	1	5	1	1	5												
		3			2																								
4	4	3	2	1	2	2	2	5				2	1	5	2	1	5				1	2	5	1	2				
3		3	2	1	2	2	2	5																					
		3			2																								
		3			2																								
		3			2																								
		4			2																								
		3			2																								
3		2	2	1	2	2	2	5				1	1	5							1	3	5						
3	1	1	2	1	2	2	3	5				1	1	5	1	1	5	1	1	5				1	1	5			
		3		1	2	2	2	5				1	1	5										1	1	5			
2	2	3	2	1	2	2	2	5				1	2	5	1	2	5												
4	4	4	2	2	2																								
2	2	3	2	1	2	2	2	5				1	2	5	1	2	4												
2		3	2	1	2	2	2	4				1	2	4										1	2	3			
3		1	2	1	1	2	2	5				1	2	5	1	2	5	1	3	4									
3	2	2	2	2	2	2		5				1		5	1		5	1		4	1		4	1		4			
2		2	2	2		2		4																					

APPENDIX 6: Data of Gampong Lambung

No.	house no. original	house no. map	date	Q1	Q2	Q3	Q4 adult	Q4 child	Q5	Q6	Q7	Q8 1	Q8 2	Q8 3	Q8 4	Q8 5	Q8 6	Q8 7	Q8 8	Q8 9	Q8 9-list
1	25	91	9-07	Nuraini	28	1	2	1	2	2,000,000	3			1			1				
2	47	86	9-07	Fitria	37	1	2	2	2	3,000,000	2								1		
3	16	108	9-07	Safrijal	45	2	2	1	2	1,500,000	3	1	1	1	1						
4	52	38	9-07	Riska	26	1	2	1	1	2,500,000	2						1				
5	49	26	9-07	Haslian	32	2	2	0	2	2,800,000	3	1									
6	66	9	9-07	Supriadi	48	2	2	2	1	4,000,000	2	1	1	1	1						
7	71	13	9-07	Nur haifa	48	1	1	0	2	500,000	4	1	1	1	1		1				
8	70	7	9-10	Idrus	52	2	3	0	2	500,000	2	1	1	1	1						
9	61	19	9-10	Siti Hawa	57	1	3	0	2	1,500,000	4	1	1	1			1	1			
10	61	69		Amirdawati	54	1	1	0	2	500,000	4	1	1	1			1				
11	38	83	9-10	Zulfani	33	2	2	1	2	2,000,000	3			1							
12	15	99	9-10	Gemai Bakri	34	2	2	2	2	2,500,000	2	1	1	1							
13	17	98	9-10	Fadhli Husni	42	2	1	2	2	1,500,000	4			1							
14	36	43	9-10	Nur Aini	45	1	1	0	2	1,000,000	3	1									
15	19	97	9-10	Nofriana	48	1	3	0	2	1,000,000	4								1		
16	12	106	9-10	Numairi	42	2	2	3	2	10,000,000	4	1	1	1	1						
17	44	80	9-10	Fitra Umar	31	2	2	2	2	3,000,000	3				1						
18	33	46	9-07	Supriyadi	48	2	2	3	2	3,000,000	4	1	1	1	1						
19	37	42	9-07	Amelia	34	1	2	2	2	1,500,000	2	1			1		1				
20	70	F1	9-07	Yunizar Usman	48	2	1	0	1	1,500,000	3	1	1	1	1						
21	68	F2	9-07	Rahmad	44	2	2	2	1	1,000,000	3	1	1	1	1						
22	8	F3	9-07	Yusnidar	30	1	2	3		600,000	3								1		
23	32	48	9-07	Rita Maulina	33	1	2	2	2	500,000	4	1	1	1		1	1				
24	6	102	9-07	Jumiah	47	1	2	2	2	3,000,000	2	1					1				
25	123	114	9-07	Aswadi	40	2	3	2	2	3,000,000	2		1								
26	49	85	9-07	Ayu Purnama Sari	45	1	2	2	2	5,000,000	2		1	1			1				
27	65	16	9-07	Rahmat Saputra	29	2	2	0	2	8,000,000	4	1		1	1						
28	75	11	9-07	Nasibah	50	1	2	2	2	3,000,000	4	1	1	1	1		1				
29	46	37	9-07	Cut mulia	27	1	2	1	1	2,000,000	2	1					1				
30	80	A3	9-07	Chairil Anwar	38	2	2	3	2	2,000,000	3	1			1						
31	41	A1	9-09	Syarifah Zahrina	44	1	5	2	2	2,500,000	2				1						
32	14	A2	9-09	Siti Sarminah	29	1	2	2	1	2,000,000	2			1							
33	86	A4	9-09	Fakhrrurazi	53	2	2	1	2	3,000,000	2	1	1		1						
34	52	76	9-09	Muliadi	45	2	5	1	1	2,000,000	2			1							
35	29	51	9-09	Hardiansyah	39	2	2	0	2	1,000,000	3	1	1	1	1						
36	30	50	9-09	Zuarni	67	1	1	0	2	1,000,000	3								1		
37	64	62	9-09	Masykur	48	2	3	2	2	2,500,000	4	1	1	1	1						
38	39	89	9-09	Samdani	48	2	2	2	2	3,000,000	4	1	1	1	1						
39	17	97	9-09	Diana	37	1	2	2	2		4										
40	43	Y1	9-09	Agustiar	52	2	2	4	2	1,000,000	4	1	1	1		1					
41		Y2	9-09	Nia Kurniasih	36	1	2	2	2	1,500,000	4	1	1	1		1	1				
42	63	Y3	9-09	Suriati	37	1	3	3	2	1,000,000	4	1	1	1		1					
43		Y8	9-09	Vivi riani	39	1	2	2	2	3,000,000	4								1		
44		Y5	9-09	Murni	31	1	2	2	2	2,500,000	4		1	1	1	1					
45	15	Y6	9-09	Yulianti	42	1	4	0	2	1,000,000	4	1	1	1	1		1				
46	75	59	9-09	Nila Wati	47	1	4	1			4	1	1	1		1	1				
47		Y4	9-09	Sulastri	52	1	2	2	1	4,500,000	4	1				1	1				
48		45	9-07	Maulina	28	1	2	1	1	2,000,000	2			1	1						
49	51	64	9-07	Saprina	37	1	1	3	1		2	1	1	1	1	1					
50	31	92	9-07	Eka	59	1	3	2	2	2,000,000	2								1		
51	63	18	9-10	Azmi	59	2	4	0	1	3,000,000	4	1	1	1	1						
52	23	95	9-07	Ira	27	1	2	1	1	2,800,000	1	1			1		1				
53	51	27	9-07	Faizah	27	1	2	0	1	2,500,000	2						1				
54	14	107	9-07	Darmadi	33	2	2	1			2			1	1						
55	55	30	9-07	Dedi	42	2	2	0		1,500,000	1	1	1	1	1						
56	26	112	9-07	Siti Maghfira	26	1	2	1	1		2	1	1	1	1	1	1				
57	54	39	9-07	Suliadi	39	2	2	5	2	1,500,000	2								1		
58	62	63	9-14	Masykur	48	2	3	2	2	3,000,000	4	1	1	1	1	1	1				
59	39	89	9-14	Siti Della	35	1	2	2	2	2,000,000	4	1	1	1	1		1			1	agricultural group
60	35	91	9-14	Munawarah	31	1	2	1	2	2,000,000	2	1	1	1	1		1				
61		78	9-14	Nurlaili	56	1	4	2	2	5,000,000	4			1	1						
62	43	87	9-14	Ruwaida	48	4	2	1	2	3,000,000	4	1	1	1	1		1				
63	78	1	9-14	Dewi	33	1	1	2	2	1,800,000	4	1	1	1	1	1	1	1			
64	9	M1	9-14	Elvisa	37	1	2	4	2	3,500,000	3	1	1	1	1		1				
65	8	M2	9-14	Yusnidar	30	2	2	3	2	1,000,000	4	1	1	1	1			1			
66	14	M3	9-14	Suryani	39	1	2	2	1	1,500,000	3	1	1	1	1	1	1				
67	28	M4	9-14	Syahrul	55	2	4	2	2	400,000	4	1	1	1	1			1			
68	23	M5	9-14	Yuni Indrawati	34	1	2	2	1	3,000,000	2	1	1	1	1	1	1				
69	26	M6	9-14	Ikhwani	28	2	4	2	2	1,000,000	4	1	1	1	1						
70	19	2	9-15	Juwariah	39	1	2	1	2	2,000,000	2	1					1				
71	39	28	9-15	Sunarto	71	2	2	0	2	500,000	1	1		1							
72		4	9-15	Ersan	45	2	2	3	1	5,000,000	2	1	1	1							
73	30	6	9-15	M. Hasyim	44	2	6	3	1	5,000,000	2								1		
74		34	9-15	M. Nasir	35	2	2	2	2	2,000,000	2	1	1	1							
75	21	3	9-15	Sri	43	1	2	1	2	2,000,000	2						1				
76	44	33	9-15	Hendra	32	2	3	1	2	2,500,000	2	1	1	1							
77	41	29	9-15	Sayid	19	2	5	1	2	1,500,000	2	1		1							
78		Z6	9-16	Salwa	30	1	3	2	2	2,500,000	2		1	1			1				
79	71	72	9-16	Satria	27	2	2	0	1	1,500,000	2		1	1							
80	22	58	9-16	Zulfahmi	21	2	3	2	1	2,000,000	1		1	1							
81	65	71	9-16	Mawar	30	1	2	3	1	2,000,000	2			1			1				
82	25	55	9-16	Suharto	35	3	3	3	1	2,000,000	2	1	1	1							
83	27	53	9-16	Muhammad	25	2	2	0	1	1,500,000	2	1	1	1							
84	26	54	9-16	Jajang	28	2	1	0	1	1,500,000	2	1	1	1							
85	38	34	9-16	Zulkifli	50	2	2	3	1	5,000,000	2	1	1	1							
86	40	33	9-16	Thamren	42	2	2	3	1	2,500,000	2	1	1	1							
87	60	Z7	9-16	Ilyas	28	2	2	0	1	1,000,000	2								1		
88	23	Z3	9-16	Yasrul	37	2	3	3	2	5,000,000	2	1	1	1							
89		Z5	9-16	Isra Firdaus	18	1	3	1	1	2,000,000	2	1	1	1							
90	55	Z8	9-16	Kusmini	35	2	2	2	2	2,000,000	2	1	1	1							
91		Z7	9-16	Safriana	25	1	2	2	1	1,500,000	2								1		
92	21	Z2	9-16	Ahmad	31	2	3	2	2	2,000,000	2								1		
93	84	Z4	9-16	Radali	30	2	2	1	1	2,000,000	2								1		

No.	Q9 1	Q9 2-a	Q9 2-b	Q9 2-c	Q10	Q11 1-a	Q11 1-b	Q11 2-a	Q11 2-b	Q18 1	Q18 2	Q18 3	Q18 4	Q18 5	Q18 6	Q18 7	Q18 7-reason	Q18 8	Q20	Q22 1	Q22 2	Q22 3	Q22 4	Q26-1 w	Q26-1 s	Q26-1 n	Q26-2 w	Q26-2 s	Q26-2 n	Q26-3 w	Q26-3 s	Q26-3 n	Q26-4 w	Q26-4 s	Q26-4 n	Q26-5 w	Q26-5 s	Q26-5 n	Q26-6 w	Q26-6 s	Q26-6 n	Q26-7
1	2			1	3	1												1	1						1			1			1			1				1		1		
2	2			1	4		1					1	1	1	1				2				1		1			1			1				1			1			1	
3	2			1	4	1								1					2		1				1			1			1			1				1			1	
4	2			1	2		1						1						1							1		1			1				1			1		1		
5	2			1	4		1						1		1				2		1					1			1		1				1			1		1		
6	2	1			2		1			1									2				1		1			1			1			1				1	1			
7	2	1			4	1				1		1	1	1	1				2				1	1				1			1		1				1			1		
8	2	1			2		1											1	2				1		1			1			1		1				1		1			
9	2	1			4	1									1				2				1	1				1			1		1			1			1			
10	2	1			4	1				1		1	1	1	1				2				1	1				1			1		1				1		1			
11	2			1	4	1							1	1	1	1	terrace		2				1		1			1			1				1		1				1	
12	2			1	3	1						1		1	1				2				1		1			1			1				1		1			1		
13	2			1	4	1								1	1				2			1			1			1			1				1			1		1		
14	2			1	4	1												1	1						1			1			1				1			1			1	
15	2			1	4	1					1			1	1	1	terrace		2			1			1			1			1				1			1			1	
16	2			1	4	1				1	1	1	1	1	1	1	terrace, garage, garden		2				1		1			1			1				1			1			1	
17	2			1	4	1					1	1		1	1	1	terrace		2				1		1			1			1				1			1		1		
18	2			1	4	1				1	1	1	1	1	1				2			1		1			1				1				1		1		1			
19	2		1		2	1										1	paint		1							1			1		1		1					1			1	
20	2			1	4		1								1				1						1			1			1		1				1				1	
21	2			1	4		1								1				1						1			1			1		1				1				1	
22	2			1	4		1			1									2		1					1			1		1				1		1				1	
23	2			1	4	1												1	1					1			1				1		1			1			1			
24	2			1	2	1							1	1	1				2				1			1			1		1		1					1		1		
25	2			1	3							1	1	1	1				2				1			1			1		1				1		1			1		
26	2			1	3		1				1		1	1					2		1				1			1			1				1		1			1		
27	2			1	3	1	1			1	1	1	1	1	1				2				1		1			1			1			1			1			1		
28	2			1	3	1					1			1	1				2				1		1			1			1		1				1			1		
29	1				2		1							1	1	1	terrace canopy, garden, garage		2				1			1			1		1			1				1			1	
30	2			1	4	1												1	1						1			1			1			1			1		1			
31	2			1	2		1								1				2			1			1			1			1				1			1			1	
32	1				3		1							1	1	1	terrace		2			1			1			1			1			1				1			1	
33	2			1	3	1									1	1	paint		2			1			1			1			1			1				1			1	
34	2			1	3	1									1				2			1			1			1			1				1			1		1		
35	2			1	3	1									1				2				1		1			1			1				1			1			1	
36	2			1	4						1			1					2		1				1			1			1				1			1			1	
37	2			1	4	1					1	1	1	1	1	1	living room and bedroom		2				1		1			1			1			1			1				1	
38	2			1	4	1					1	1	1	1	1				2				1		1			1			1			1			1			1		
39	2			1	3	1	1								1				2				1			1		1			1			1			1			1		
40	2			1	3	1	1				1			1	1				2				1			1		1			1		1				1			1		
41	2			1	3	1	1											1	1							1		1			1		1				1				1	
42	2			1	3	1	1			1	1	1							2				1			1		1			1		1				1			1		
43	2			1	3	1	1			1	1	1							2				1			1	1					1		1				1		1		
44	2			1	4	1	1						1						1							1		1			1			1				1			1	
45	2			1	3	1	1					1			1				2				1		1			1			1			1			1				1	
46	2			1	3	1	1								1				2				1		1			1			1		1					1			1	
47	2			1	3	1	1			1		1		1					2				1			1		1			1				1		1			1		
48					2				1									1	1							1			1		1			1				1			1	
49					2				1									1	1					1			1				1		1				1		1			
50	2		1		3				1										1							1			1		1			1				1			1	
51	2	1			4	1									1				2				1		1			1			1				1			1			1	
52	1				1				1									1	1																							
53	1				2				1																																	
54					2				1																																	
55					1				1																																	
56					2				1																																	
57	2			1	3				1																																	
58	2			1	4	1				1					1				2				1		1				1		1		1				1		1			
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67	2	1			4	1										1	terrace's stairs		2			1		1				1			1		1				1		1	1		
68					3		1									1	window, terrace's stairs, gate		2			1			1			1			1			1			1		1			
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No.	Q27 1	Q27 2	Q27 3	Q27 4	Q27 5	Q27 6	Q27 7	Q28 1	Q28 2	Q28 3	Q28 4	Q28 5	Q28 6	Q28 7	Q28 8	Q28 9	Q28 10	Q28 11	Q28 12	Q28 13	Q28 14	Q28 15	Q28 16	Q28 17	Q28 18
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54																									
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56																									
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APPENDIX 7: Data obtained on general information and demographics of the households

Results from data analyses for Gampong Pande (n=77) and Gampong Lambung (n=93)

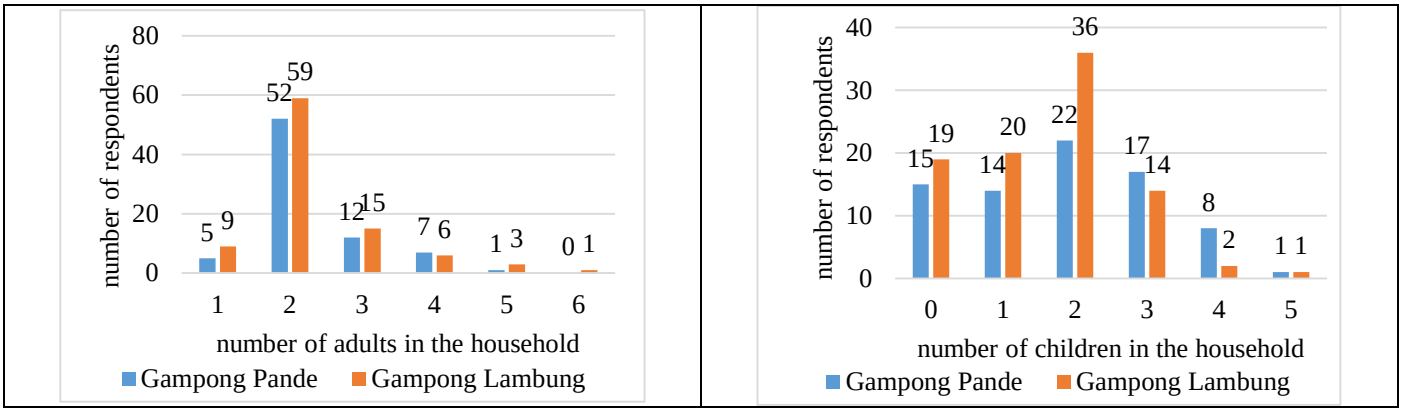
Q2 Age of respondents

	Gampong Pande	Gampong Lambung
Age range (average)	25 to 75 years old (41 years old)	18 to 71 years old (39 years old)

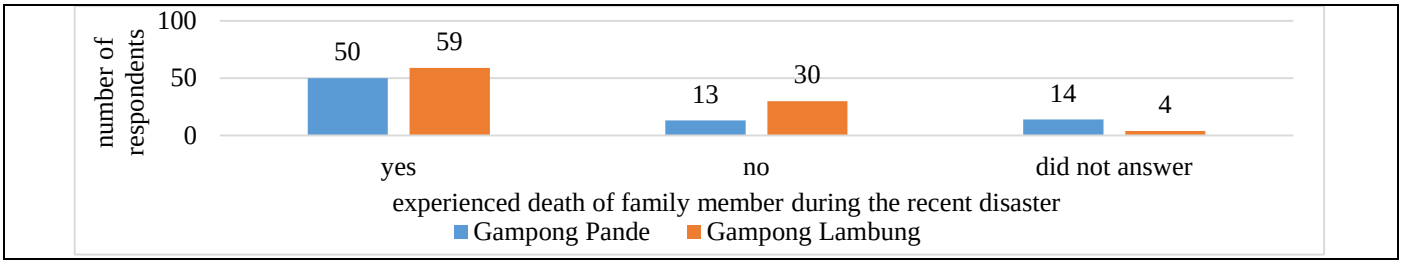
Q3 Gender of respondents

	Gampong Pande	Gampong Lambung
Gender (number of respondents)	Male= 27 Female= 50	Male= 47 Female= 46

Q4 Number of people in the households



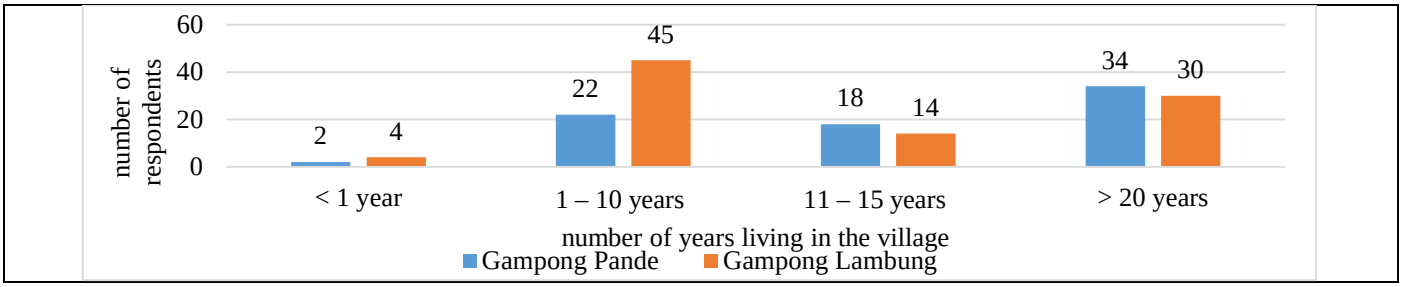
Q5 Do you have family members who were killed by the recent disaster?



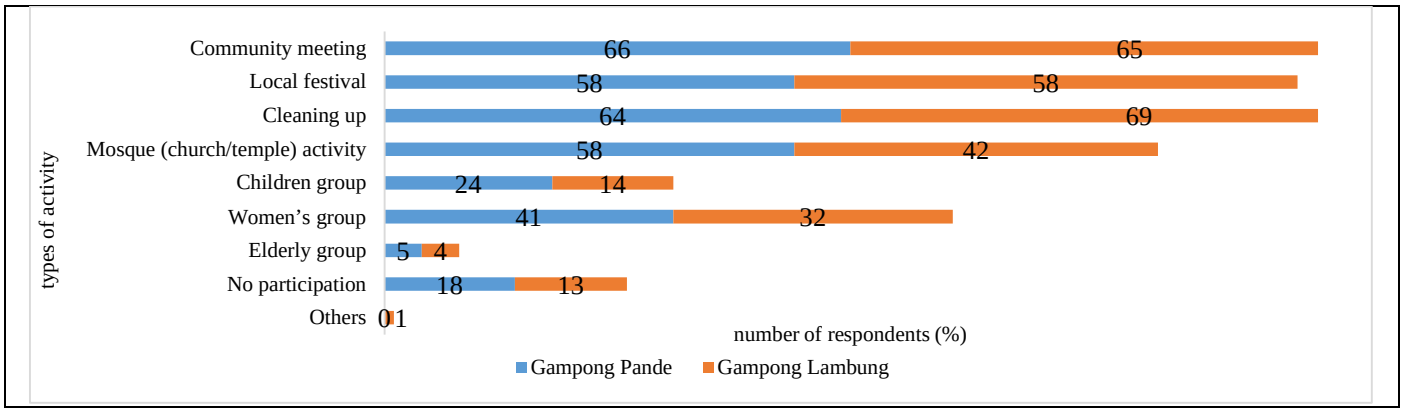
Q6 How much is your total family income per month (Rate at USD1 = IDR13,539)

	Gampong Pande	Gampong Lambung
Total monthly income	Average monthly income = IDR 1,515,065 (USD111) Min = IDR 500,000 (USD37) Max = IDR 4,000,000 (USD295)	Average monthly income = IDR 2,322,727 (USD171) Min = IDR 400,000 (USD29) Max = IDR 10,000,000 (USD738)

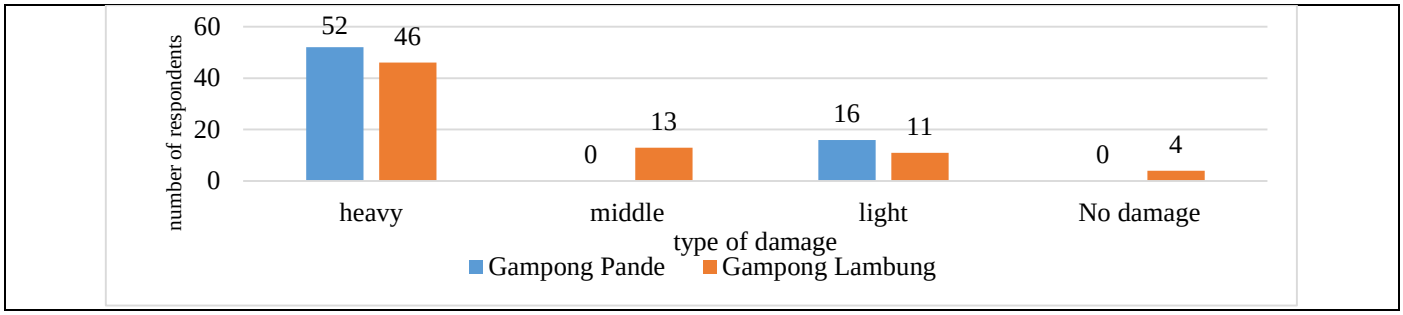
Q7 Length of residency in the village



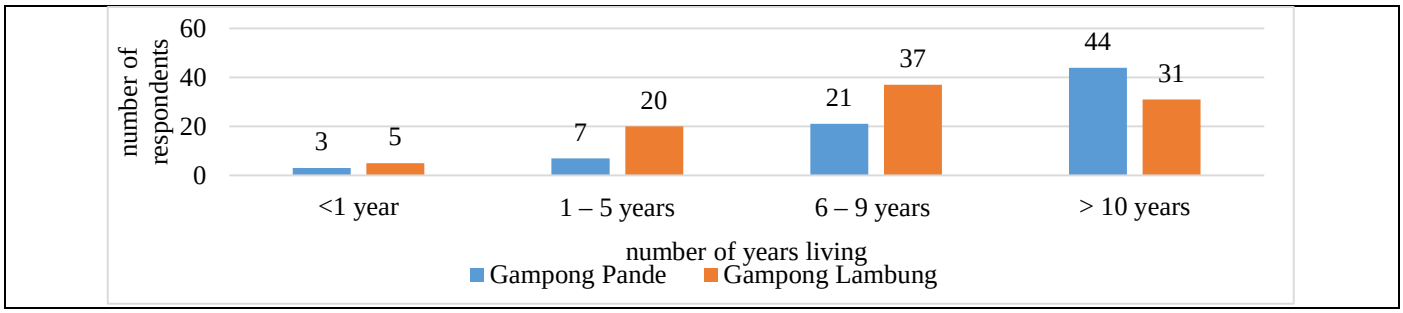
Q8 Types of participation in the community (Multiple answers)



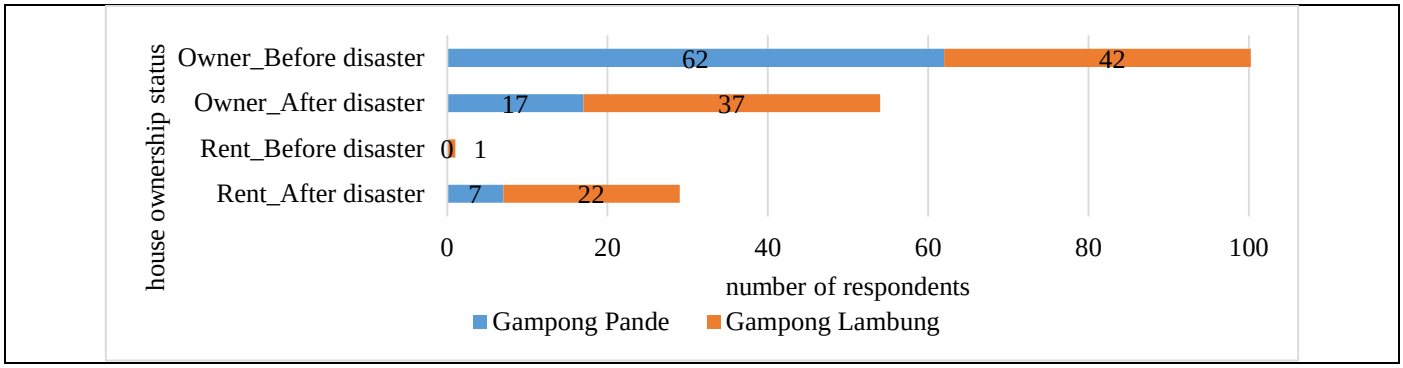
Q9 House damage after the disaster



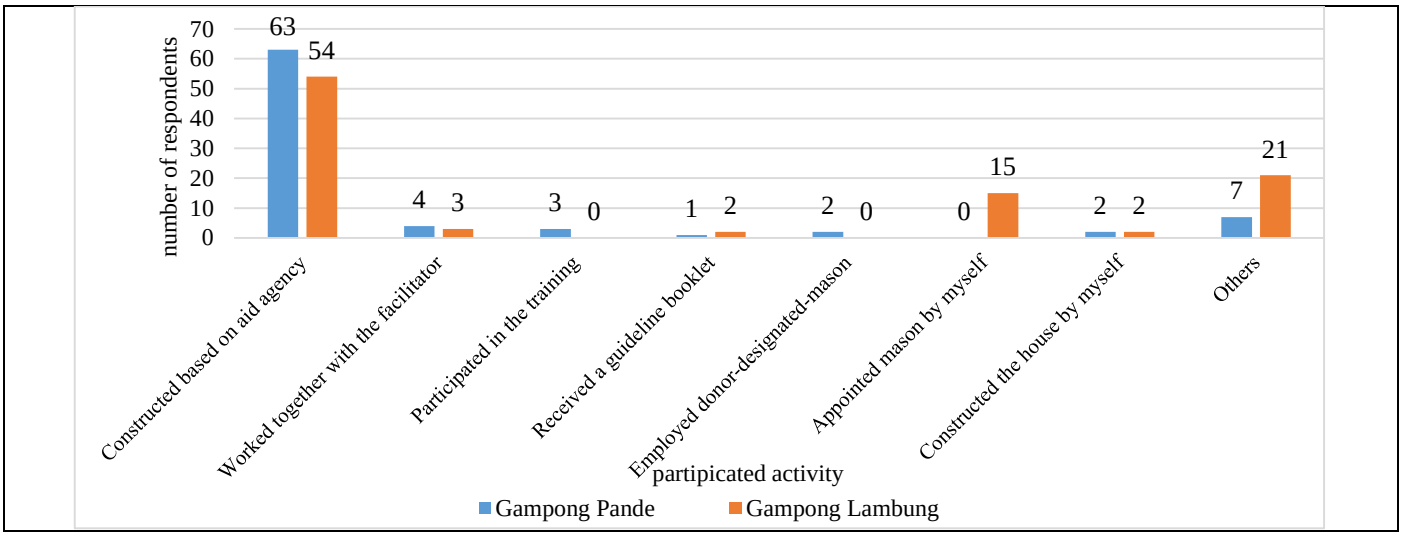
Q10 Length of residency in the current house



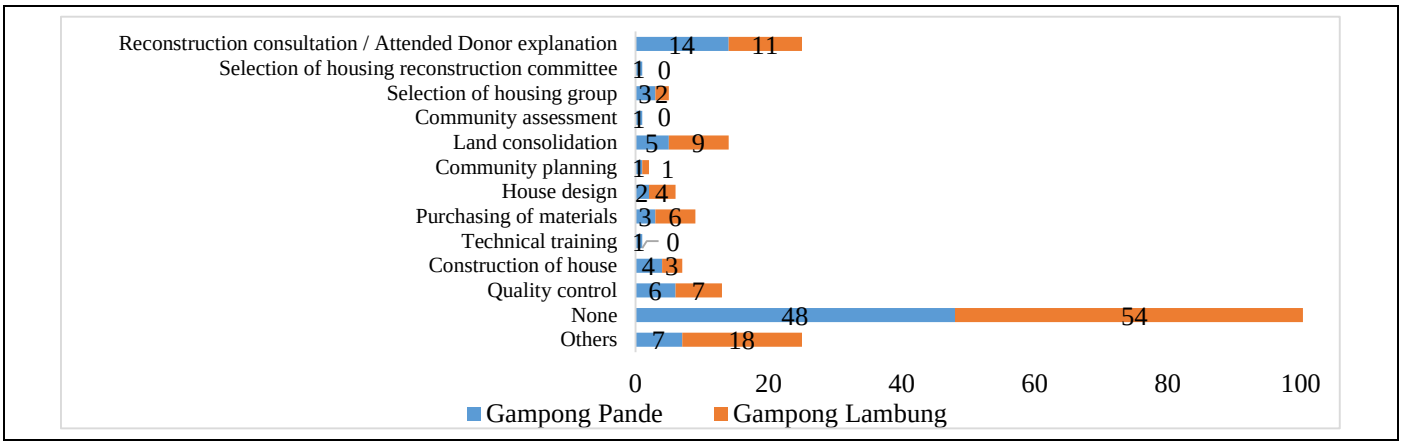
Q11 House ownership status



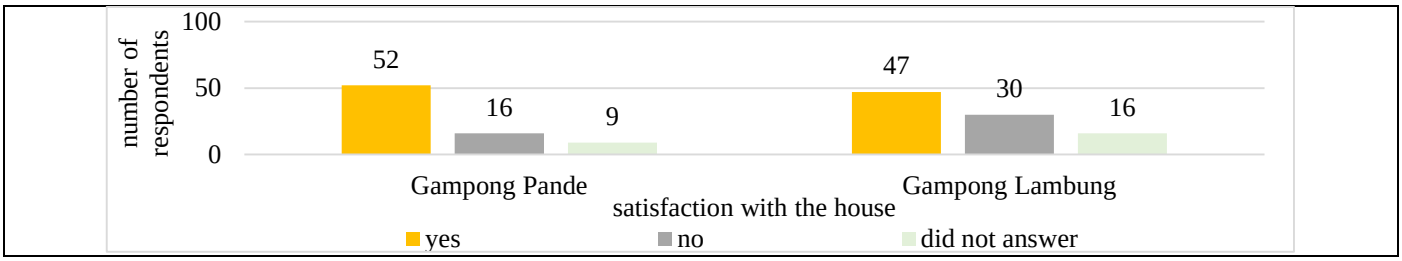
Q12 How did you took part in the housing reconstruction project?



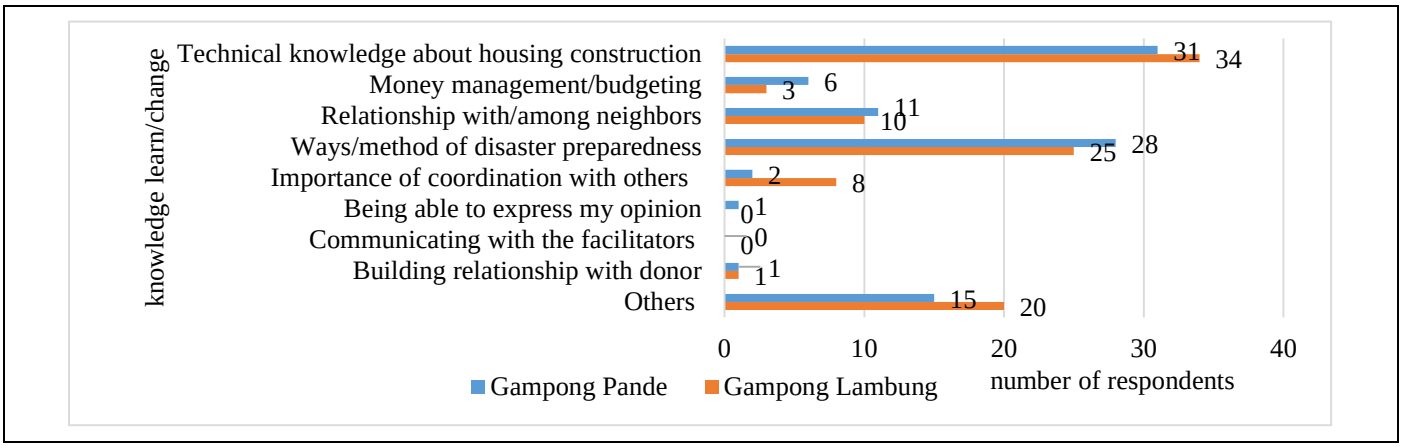
Q13 Which process (es) did you participate during the reconstruction of your house? (Multiple answers)



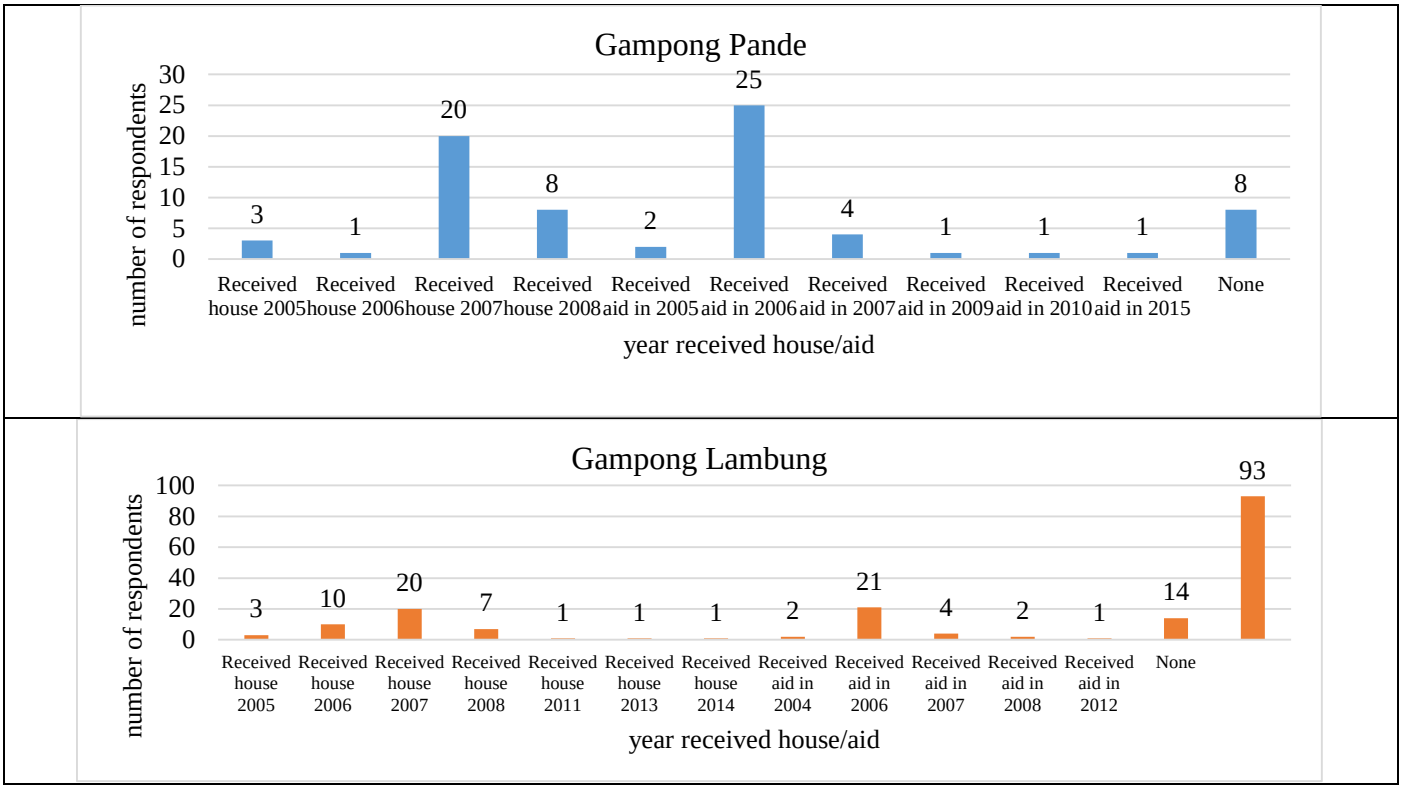
Q14 Are you satisfied with your reconstructed house?



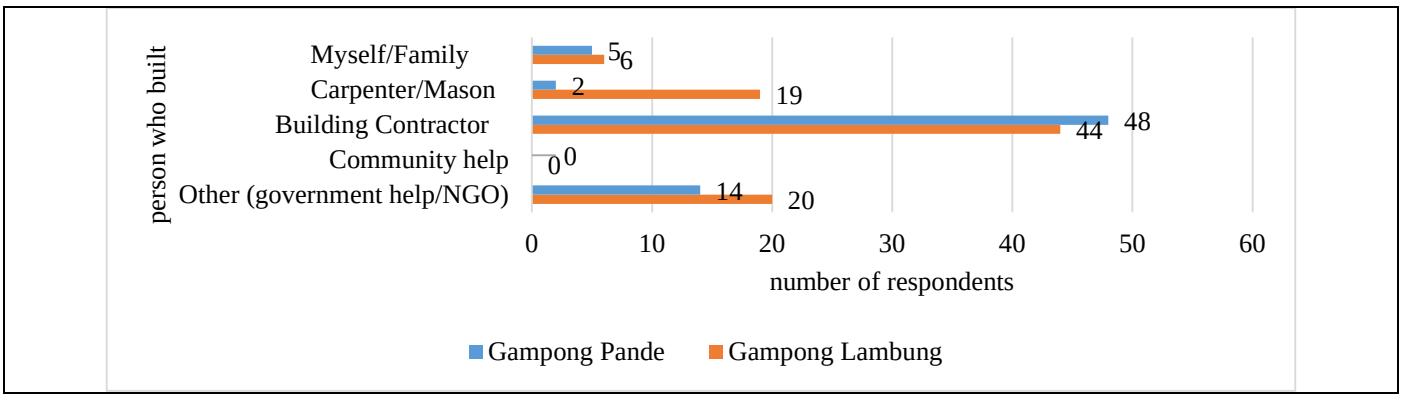
Q15 What have you learnt from or have changed due to participating in the housing reconstruction project?



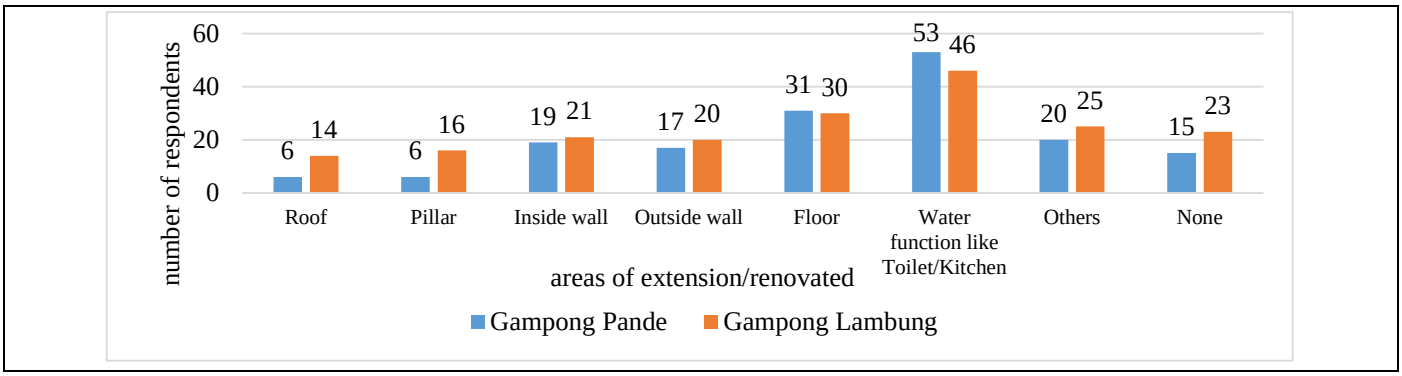
Q16 When did receive your house or house reconstruction aid?



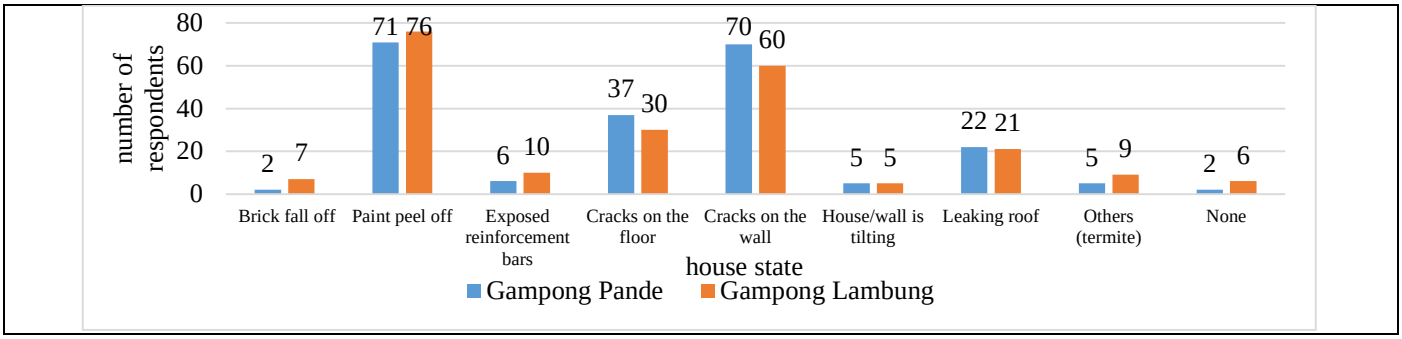
Q17 Who built this/your house? (Multiple answers)



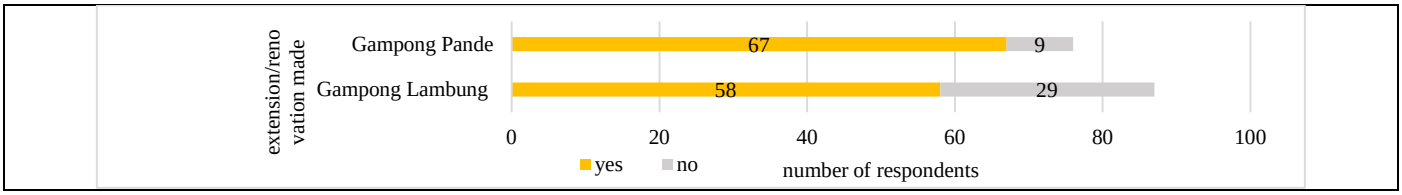
Q18 Which part of the house did you repair/renovate? (Multiple answers)



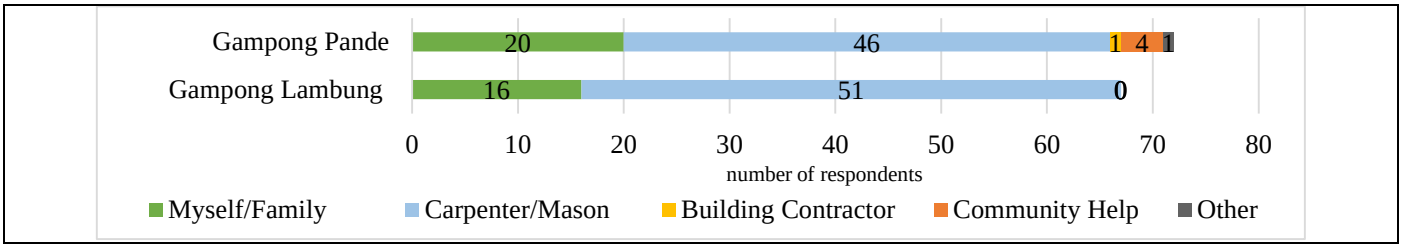
Q19 Please select the current state of your house (Multiple answers)



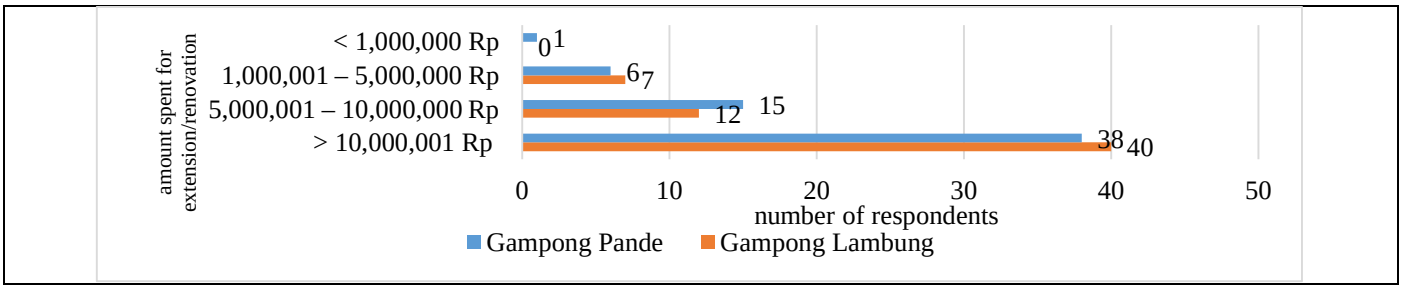
Q20 Have you extended or renovated the house after the completion?



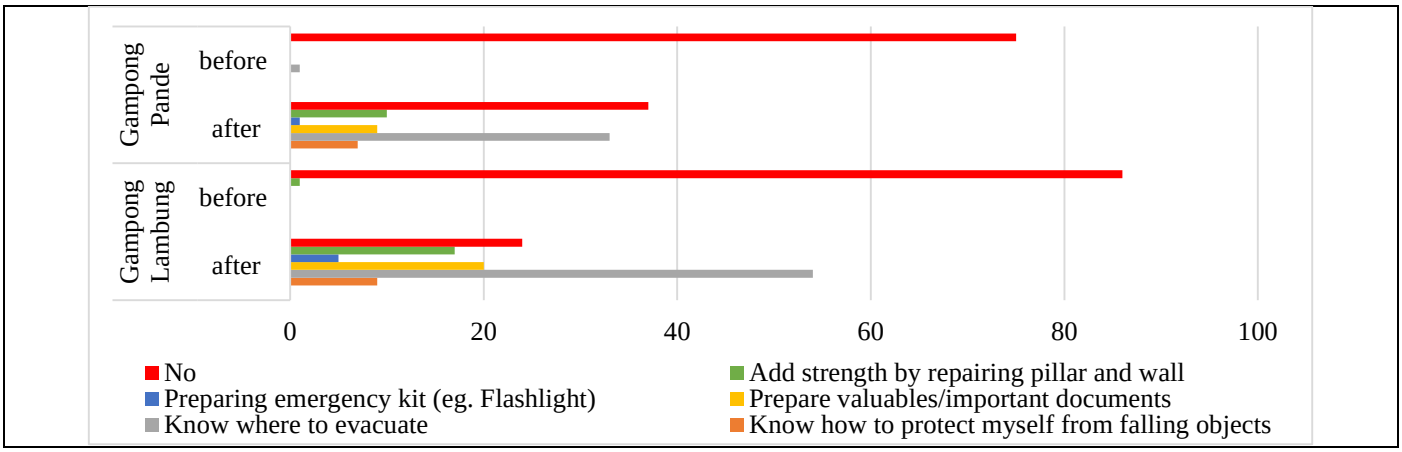
Q21 Who constructed the extension or renovation? (Multiple answer)



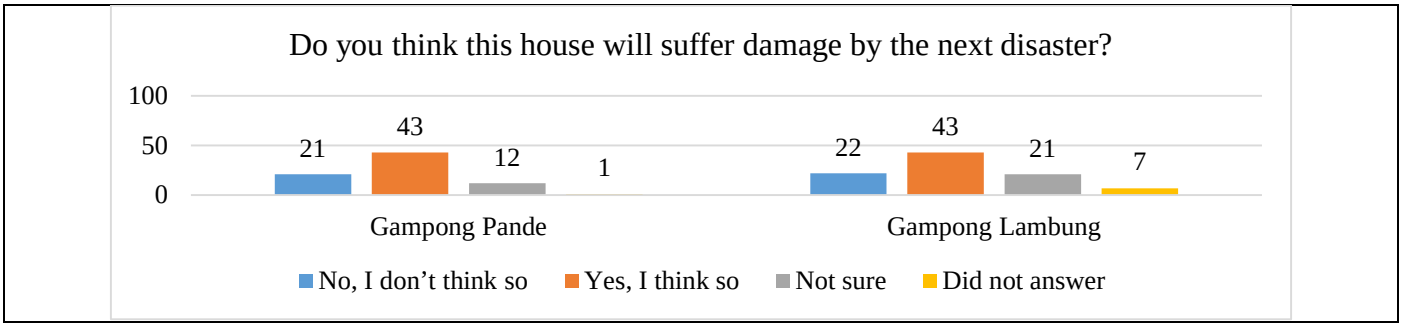
Q22 How much did it cost to extend or renovate the house?



Q23 Were you prepared for the disaster BEFORE the previously disaster? + Q24 Are you prepared for disasters NOW?

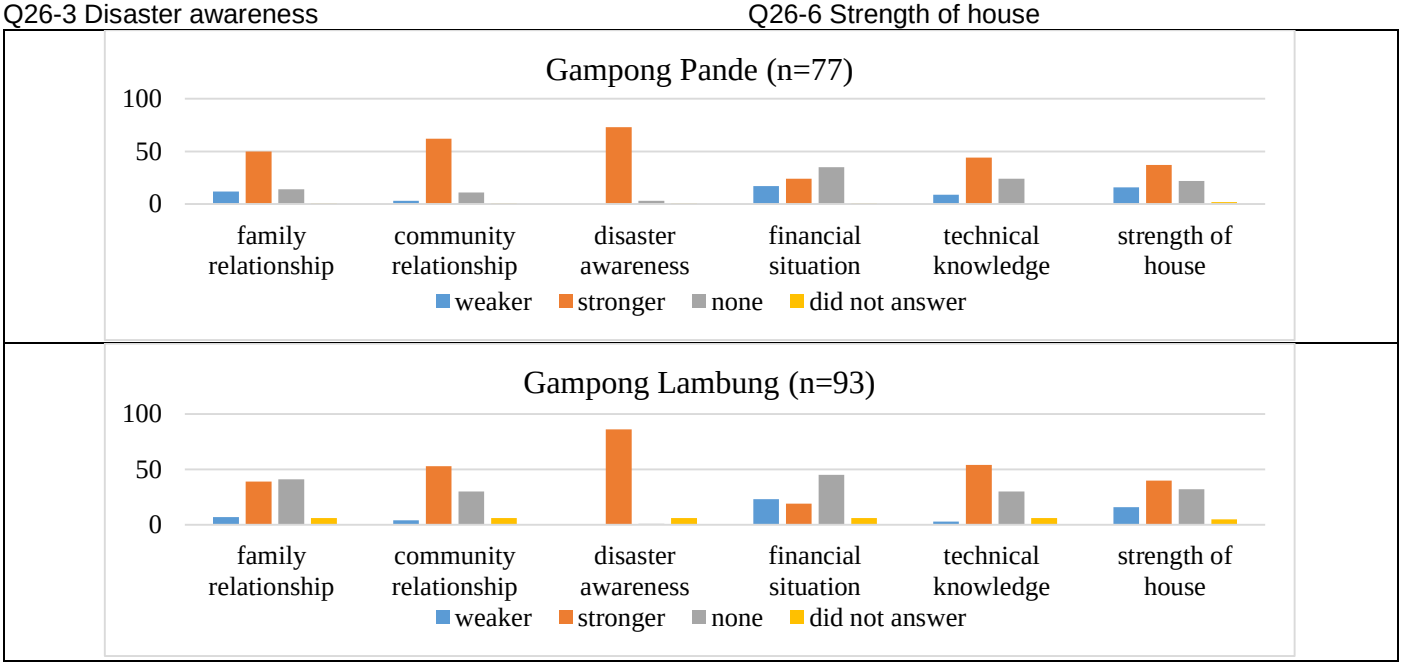


Q25 Do you think this house will suffer damage by the next disaster?

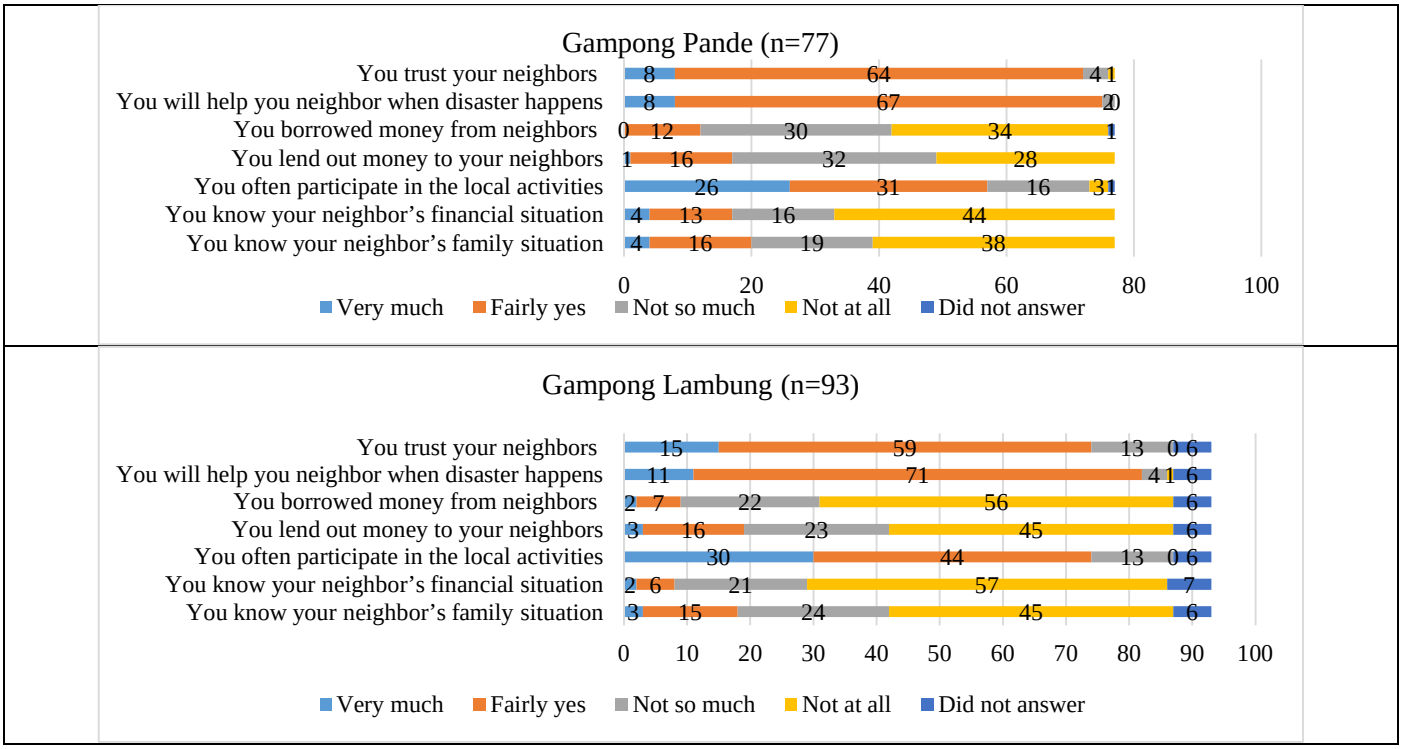


What has changed after the disaster?

Q26-1 Family relationship
Q26-2 Community relationship
Q26-3 Disaster awareness
Q26-4 Financial situation
Q26-5 Technical knowledge of housing
Q26-6 Strength of house

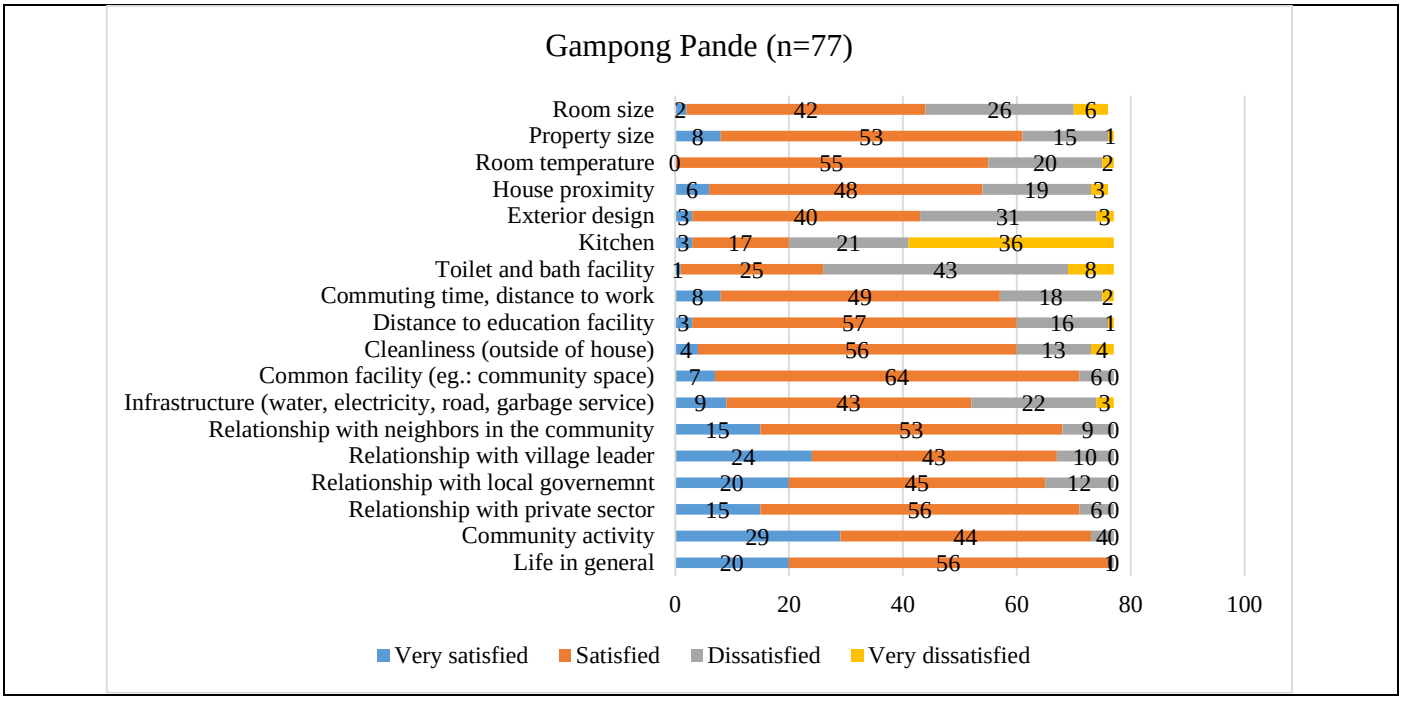


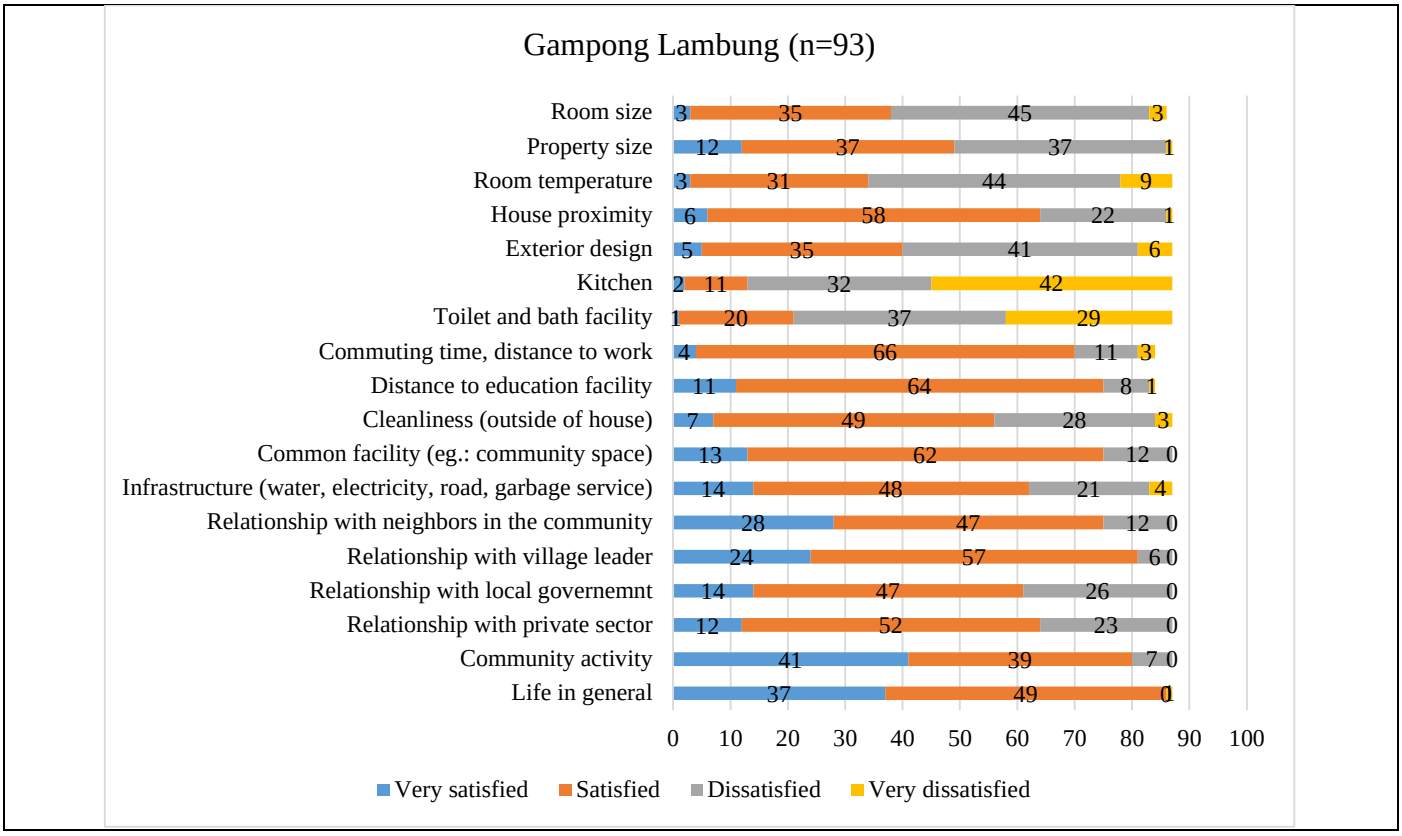
Q27-1 You trust your neighbour's
Q27-2 You will help you neighbour when disaster happens
Q27-3 You borrowed money from neighbours
Q27-4 You lend out money to your neighbours
Q27-5 You often participate in the local activities
Q27-6 You know your neighbour's financial situation
Q27-7 You know your neighbour's family situation



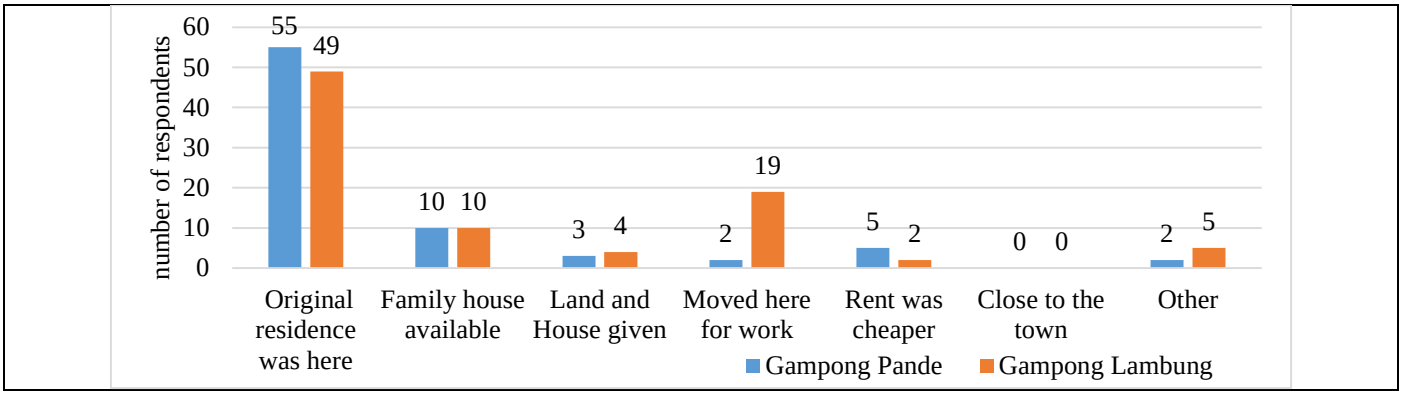
Q28

1 Room size
2 Property size
3 Room temperature
4 House proximity
5 Exterior design
6 Kitchen
7 Toilet and bath facility
8 Commuting time, distance to work
9 Distance to education
10 Cleanliness (outside house)
11 Common facility (eg.: community space)
12 Infrastructure (water, electricity, road, garbage service)
13 Relationship with neighbours in the community
14 Relationship with village leader
15 Relationship with local government
16 Relationship with private sector
17 Community activity
18 Life in general

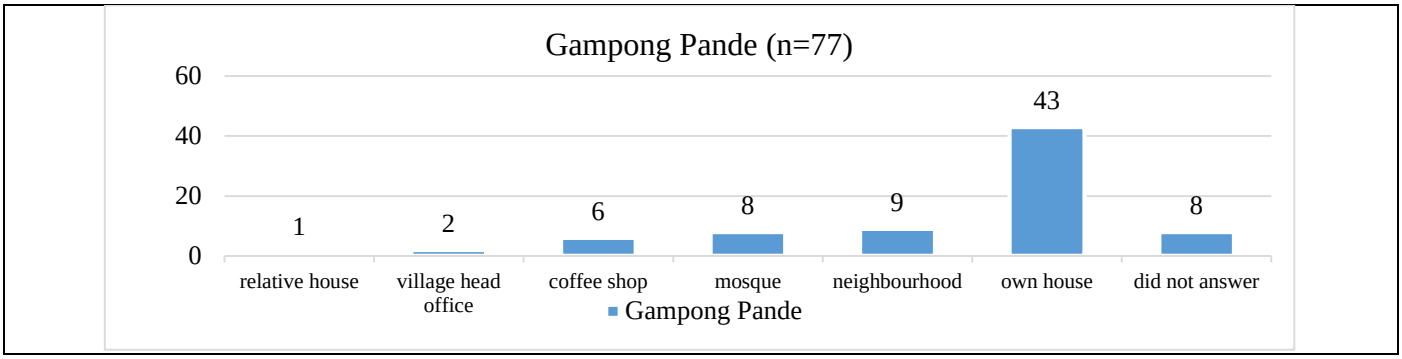


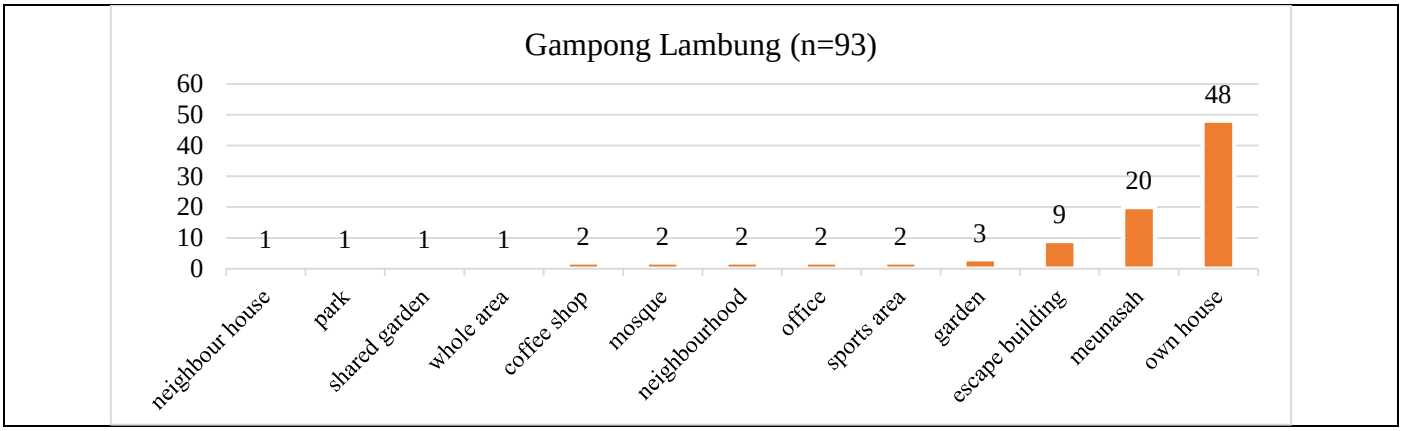


Q29 Why do you decided to live in this location? (select one)



Q30 Where is your favourite place in your community?



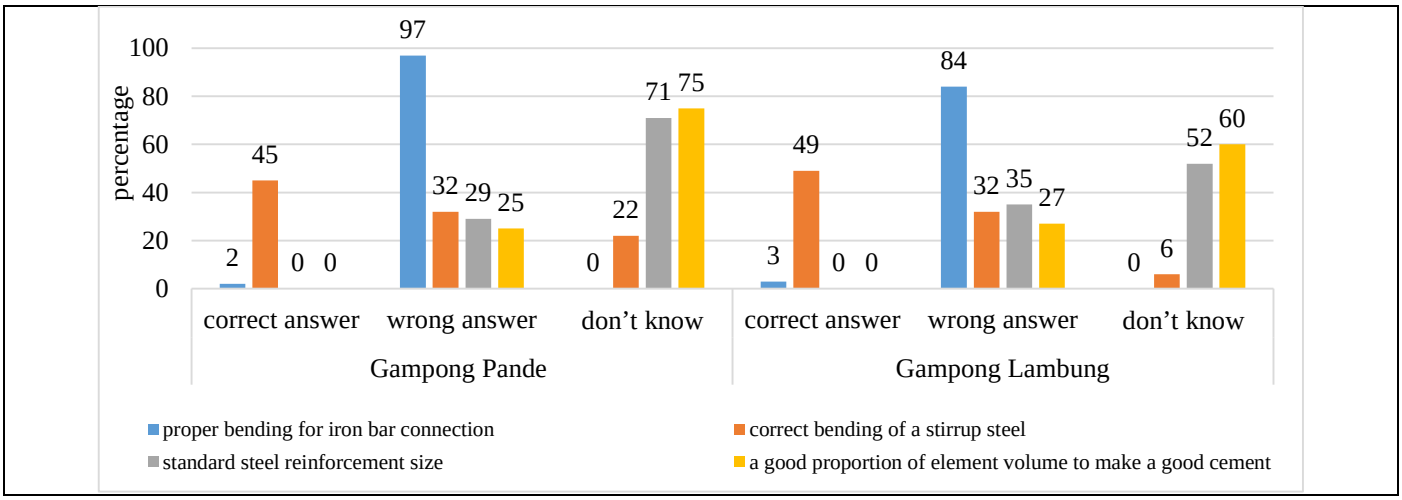


Q31 What is a good proportion in volume of cement, sand, gravel and water for good normal concrete for making column and beams?

Q32 What is the normal size for the main steel reinforcement bar in columns and beams for standard simple house (1 story)?

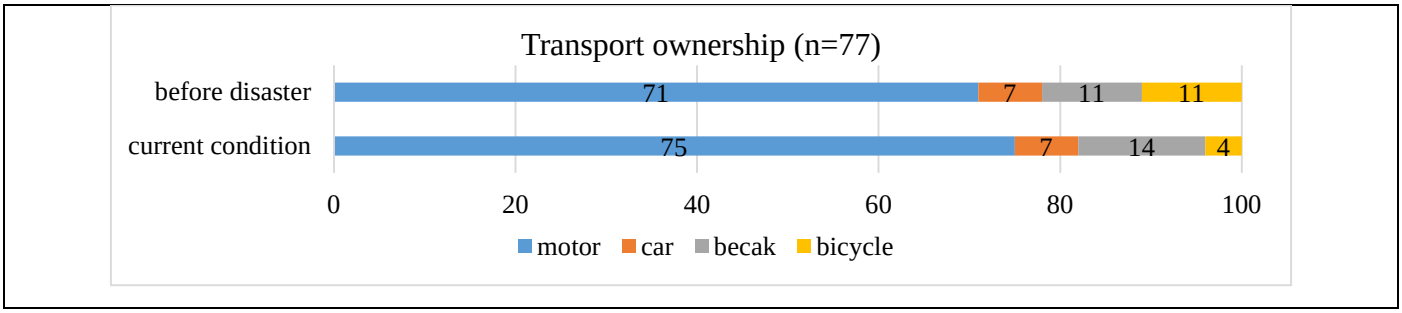
Q33 Which one is correct in bending the end of stirrup steel as in the following pictures?

Q34 Please make a correction on this drawing of iron bar connection.

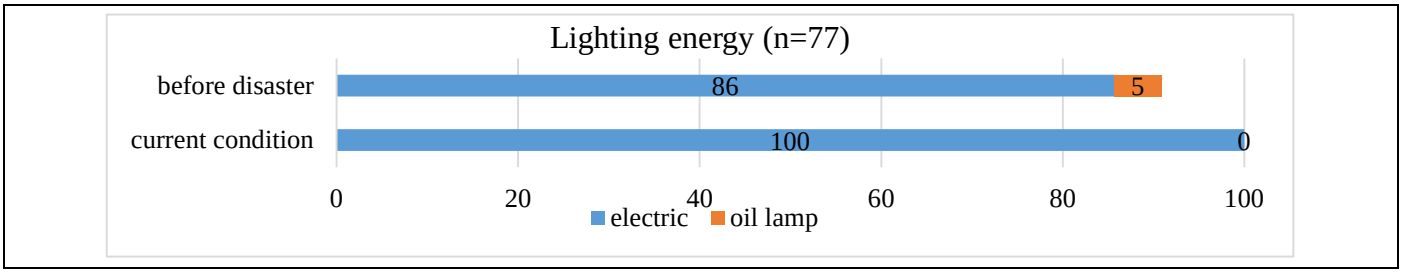


APPENDIX 8: Data obtained on livelihood assets changes (Gampong Pande)

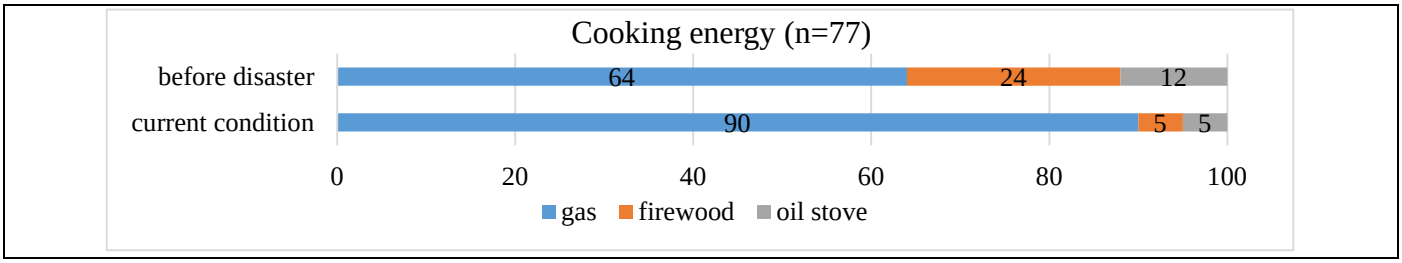
Q35 Mode of transportation (multiple answer)



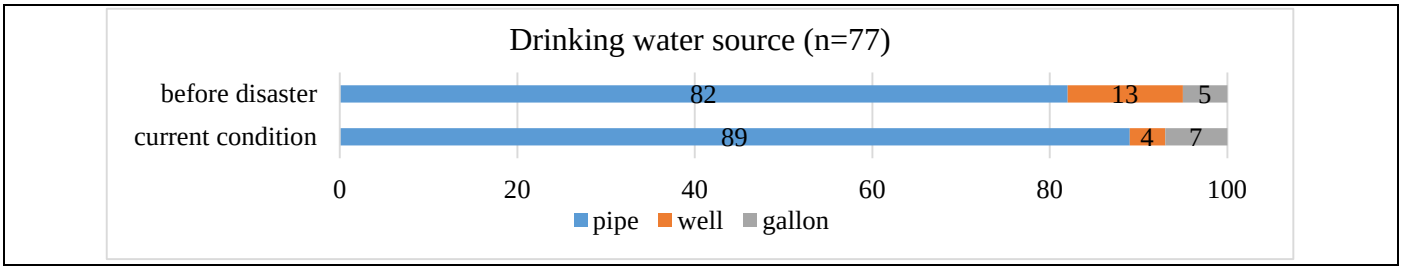
Q36 Energy for lighting (multiple answer)



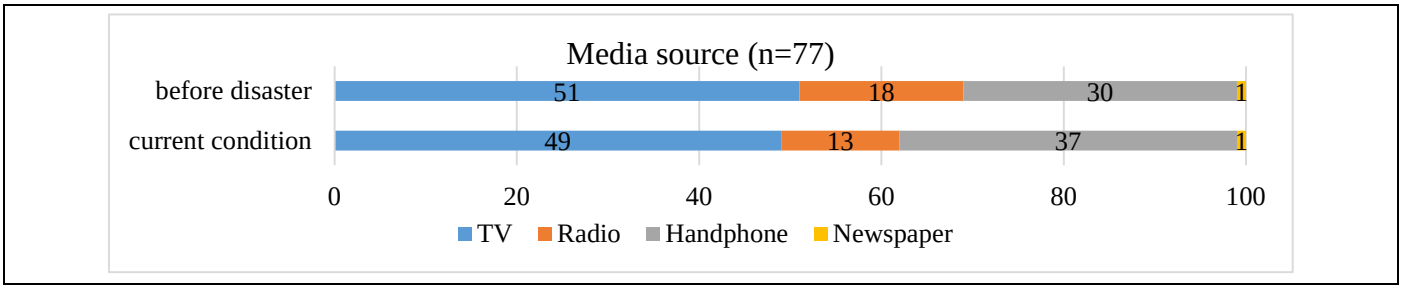
Q37 Cooking energy (multiple answer)



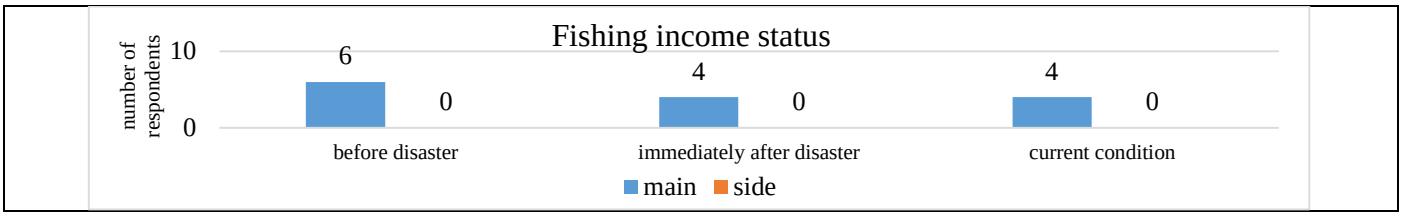
Q38 Drinking water source (multiple answer)



Q39 Telecommunication media (multiple answer)



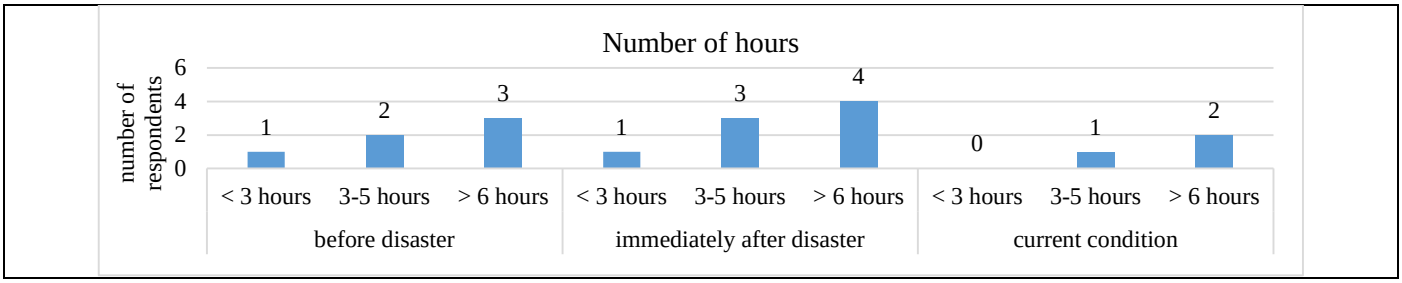
Q40 Source of income (fishing)



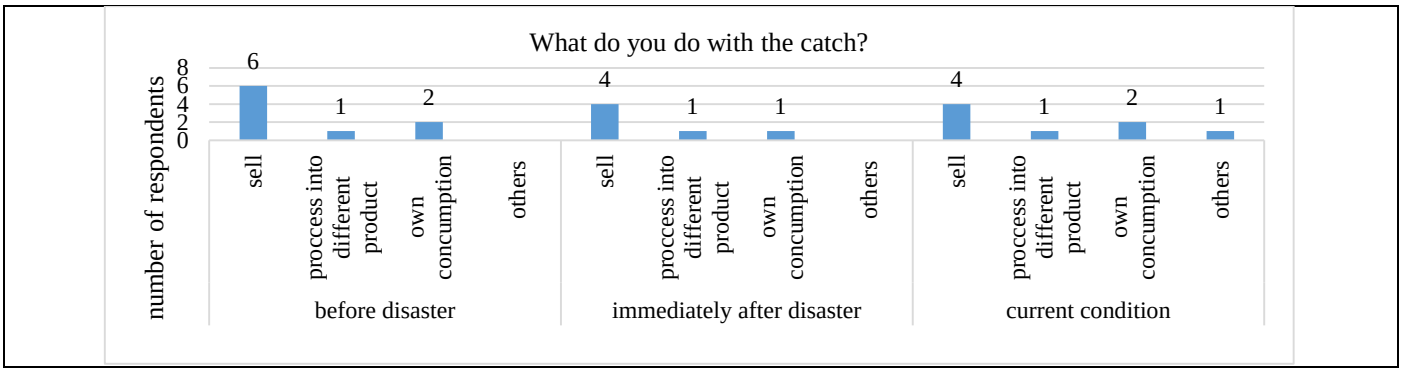
Q41 Available asset (number of respondents)

	before disaster		immediately after		current condition	
	own	rent	own	rent	own	rent
sampan	1	0	0	1	1	0
boat	1	0	0	1	1	1
motor engine	2	0	1	2	0	0
fishing net	3	0	0	0	1	0
fishing rod	1	0	0	0	0	0

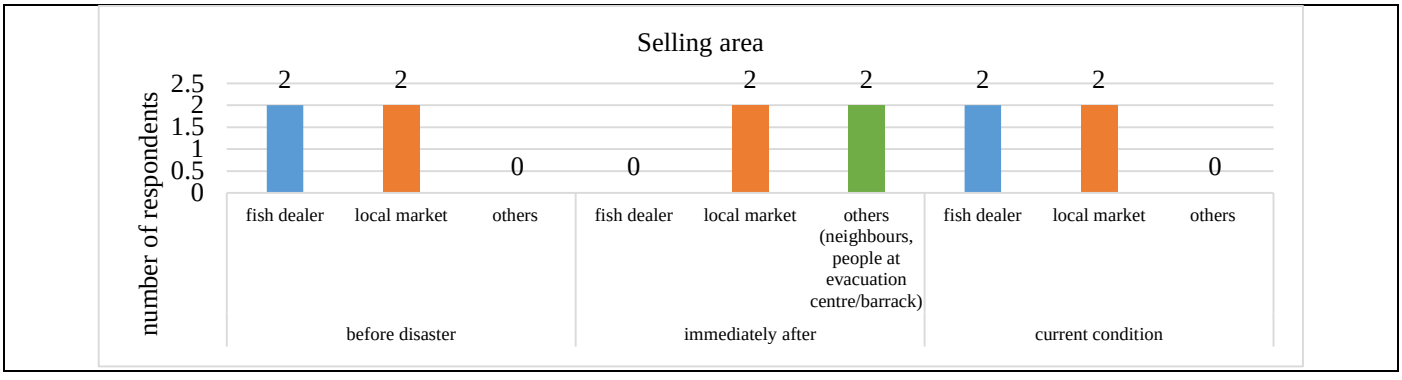
Q42 Hours spend in the sea



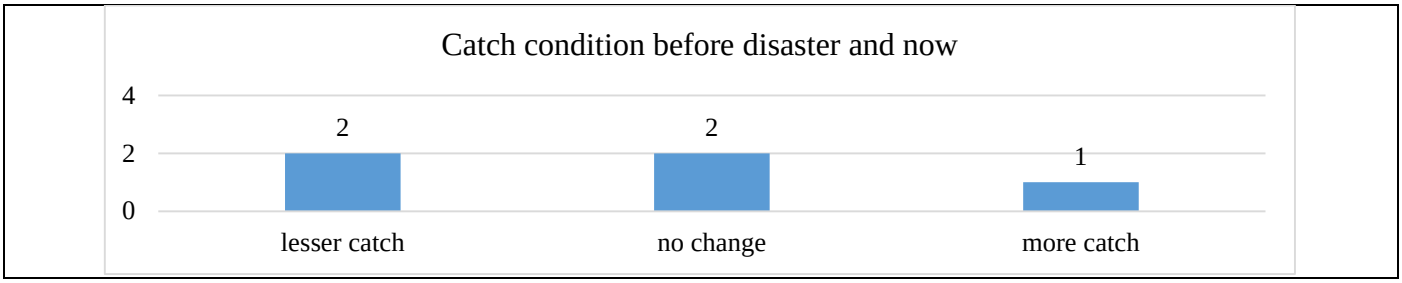
Q43 What do you do with the catch?



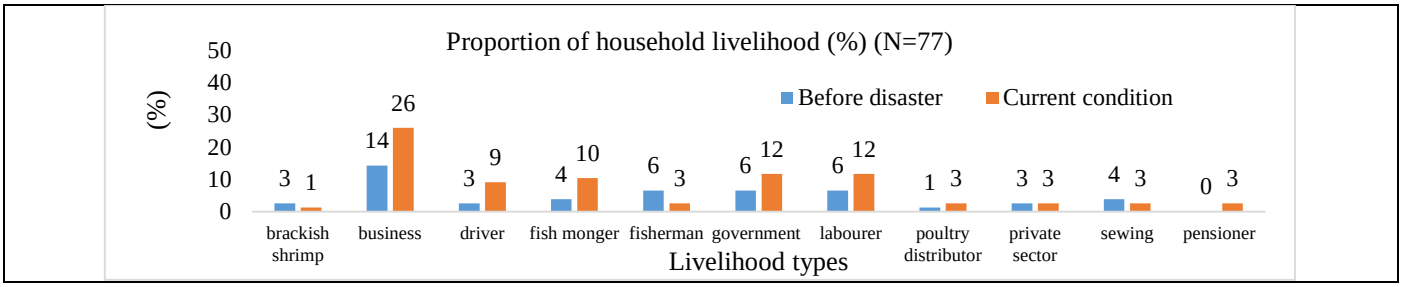
Q44 Where do you sell those catches/product?



Q45 Catch Condition



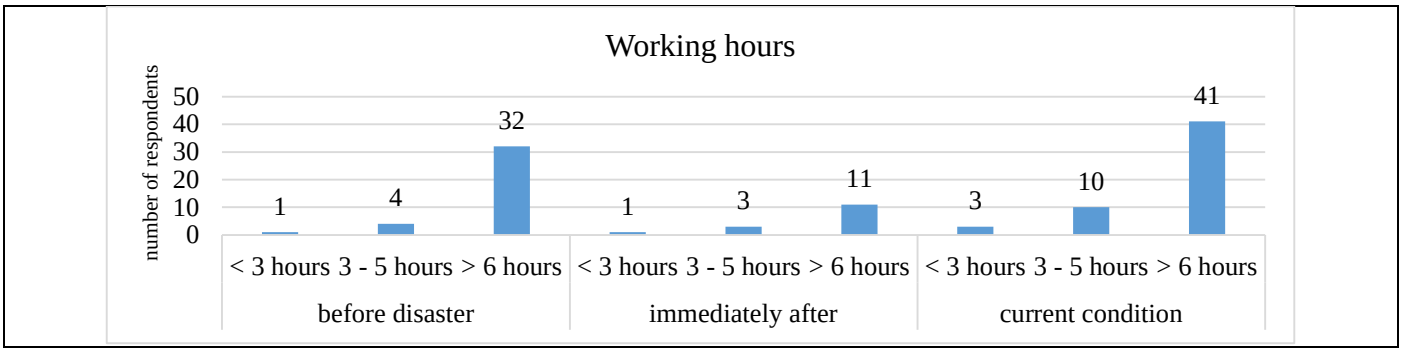
Q46 Other generating activities



Q47 When did you start?

	Before disaster	Reconstruction period	Current condition
~2004	20	0	2
2005-2009	1	2	19
2010~	0	0	10

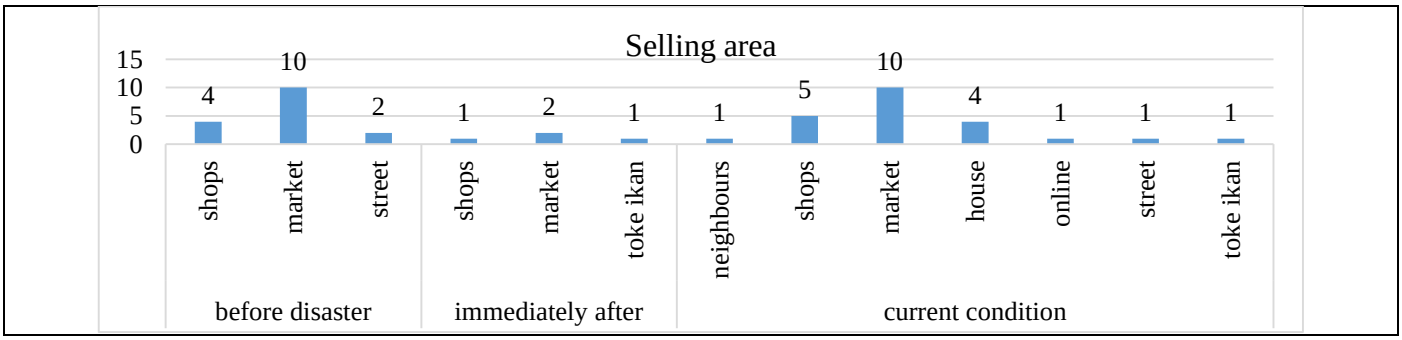
Q48 Working hours



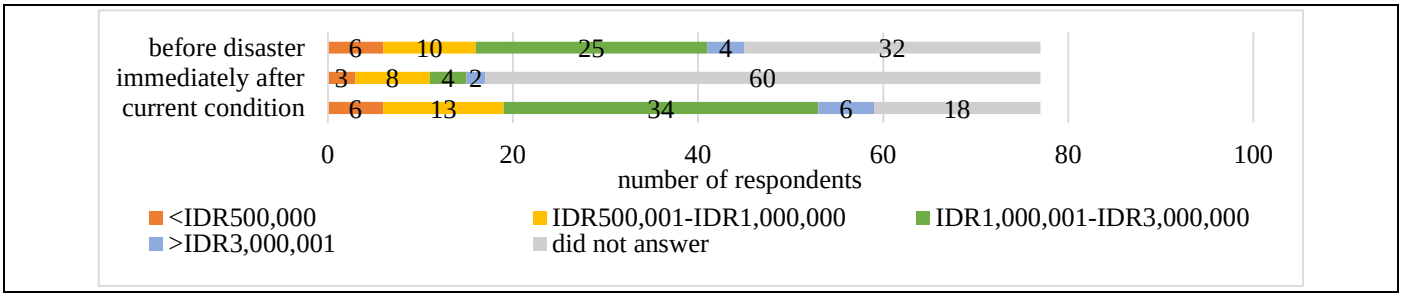
Q49 How much product is made?

Before disaster	Immediately after	Current condition
1 rattan basket (30 kg)/catch	Did not go to sea	Did not continue
2 rattan basket (60 kg) /catch	Did not go to sea	Did not continue
2 to 3 baskets/catch	Did not go to sea	1 to 2 baskets/catch
300 chickens/monthly	Stopped	500 chicken/monthly
50 kg to 60kg of fishes/catch	50 kg one time catch	60 kg of fishes/catch
Did not conduct activity		500 brick/monthly

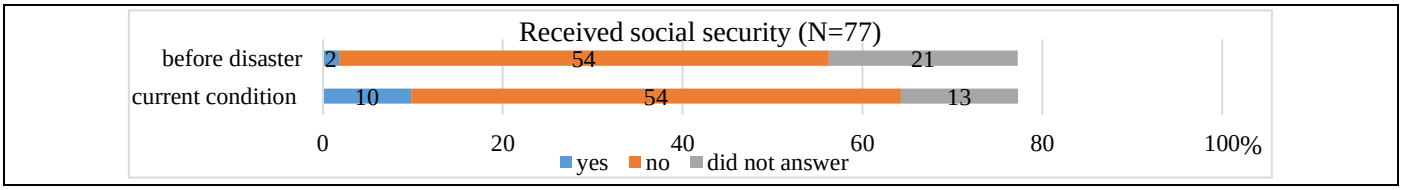
Q50 Where do you sell those product?



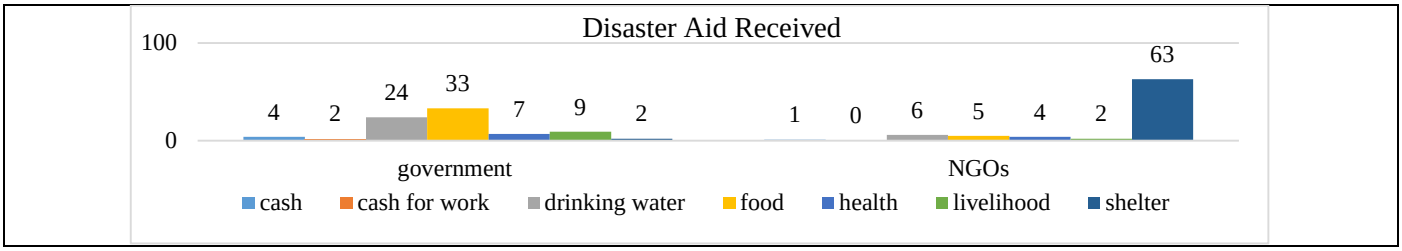
Q51 Total monthly income



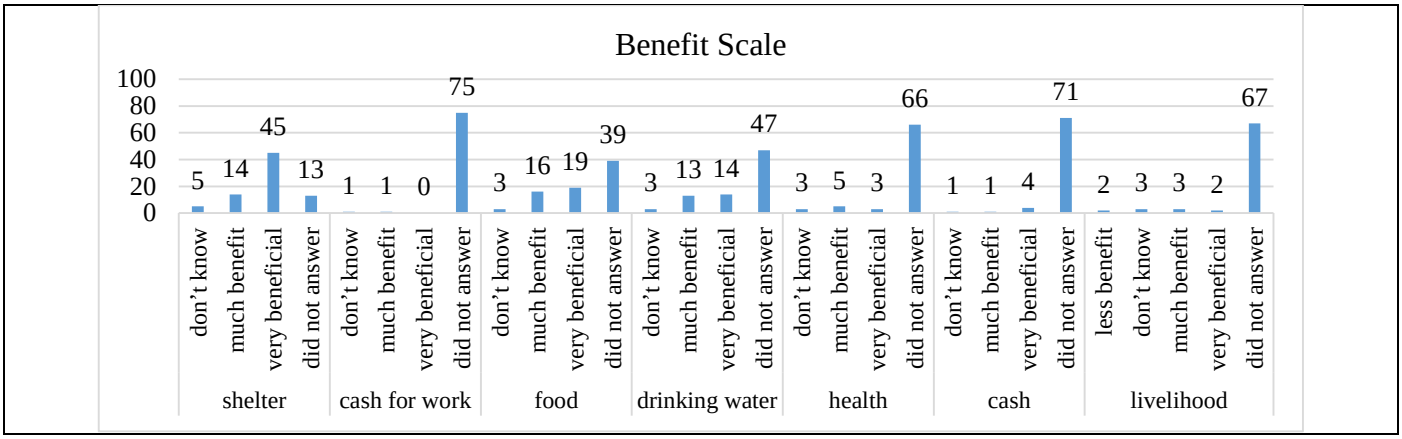
Q52 Received any social security



Q53 Disaster Support Received (Multiple answers)



Q54 Benefits from the air received



APPENDIX 9: Data of the interviews (Gampong Pande)

Rec 20 : Pak Irdus-ex-geuchik, Mutia-assistant, Nafesa-surveyor

Content:
Data are given to ADB (first gampong planning) immediately after tsunami (data taken in 2005)
ADB taught Pande leader's on how to make the village replanning, to include wider roads for evacuation routes. Oversee by Wastuwidiyawan – consultant from BRR & one consultant is from ADB. Size of planned road: 50cm x .5m x 10m x 100,000IDR per meter. This is the cost the people donated to build roads.

Pilkadasung - Pemilihan Kepala Daerah Langsung

Livelihood: Gampong Pande 25 hectare in land size, Technology do not have for agriculture

Live with aquauculture pond since long time ago.
Those who do not have aquaculture ponds→ they work as labourer, owner (can be people living outside of gampong pande; origin gampong pande but live outside of the village; inheritance/marriage), cultivators, pond manager, pond labourer.
Women received money from doing Nipah traditional cigarette.
The women also worked: make/sell cakes (within the village area or outside)

Proposed to P2KP to build a market within the village area (sell handmade products: cakes etc). There was available empty land. But P2KP rejected explaining that market was not needed at that time. The land can be made into coffee shops or groceries stall (selling locally grown herbs, spices)→ contribute to household's income

Immediately after disaster: no more aquauculture pond, no more human capital →the intrusion of saltwater into the pond, look for crabs and fishes→sell those catch to earn some money. Didn't take for own consumption. No cooking tools. Received free food. No bad image on fish.

The size of the fish and crabs were big. No competition as food resource were already there received from the aid. More fish, big crabs. Price of fish was trhe same as before the tsunbami.
People always have cash. The BRR also spent money on the local local people as they always order for crabs. Generate income for the people. Crab curry was the food of Gampong Pande
People don't really care about money then. As food was abundant, cash-for-work also took place. CFW from one of the Australian organization. No assesement made for CFW. They just launched the CFW program giving the people IDR1.5 million for business strat-up to do business etc. Pak Irdus said it doent work like in Maluku. Acehnese is different. They will spend on something else.

Look at the the household's financial status, then see the resources in the village (natural resources: aquauculture pond, farm, paddy etc. The CFW→ didn't helped! Morality was disrupted.
Everything was expensive back then, cannot buy anything with the given aid.

Use natural resources: Ocean
Ikan Tongkol>diolah jadi keumamah>turned into canned fish (di Ulee Kareng)
Ikan Lubin> fish jerkey and fish flakes (abon ikan)

Mr Agus:
Father worked in aquauckture pond. He followed his father's step and also worked in the pond.
After the tsunami, no longer hace pond: Pak Irdus found him some modal for usaha fish jerkey. But it didn't work because apparently the fish has season. Fish was not constantly available and fierce competition at that time. Many were doing same business. Have to go big if want to succeed.

Pak Irdus conducted and invited training and seminar to develop skill such as for the women.
Make Hijab and sewing works
Invite and ask from government to provide teachers/trainers and he was expecting some modals to be given/assisted as well such as market, packaging, selling. But the government only provided skill training and not marketing opportunities. Hence, cannot blame the people are lazy or at fault.

COMU (JICA) group→in Alue Naga. Oyster cultivation / Basket fishing. However, GP Pande wasn't involved because the projcecft was still in the early stage. Pak Irdus is one of the COMU member.

There is a plan to cultivate crab in the village, the mangrove area.

Pak geuchik→before tsunami was a kepiting hunter. Now, he is the middle man/boss. He also has livestock (goats).
Morning go out for look for crab and sell them in the evening. Sold till the marlets in Aceh Utara and Aceh Timur. Those who worked hard are those who earn more. The poor usually don't not exert effort to earn income.

Now, more than half of the population are outsiders. The people do not have any attachements towards the village.
25% only are original. But these balance are youngsters who don't really care about the village anymore.
e.g. artefacts problem in the village. Village head are not really concerned about the artefacts disrupting the livelihoods. do not have the 'belonging' feeling

Current pak geuchik had different priority. He is more into looking for money rather than about village things. Don't really care about the bad road condition due to the Tarik nipah works.
Pak Irdus feels that the leaders now are nepotism. Do not care the needs of the people.

Artefacts and livelihood: Could make Pande like Jogja. Historical tourism sites.
Planted mango and soursoup → can be sold as home-made product of Pande for the tourist→generate income for the local people. Idea he generated for the current geuchik but was ignored. He planted the mango trees. Due to the green ecological village.
Pak Irdus→ to make the village become green forest.

With proper rehabilitation on the ponds, livelihood will work well and people will be living in a bigger house. Not 36m2 anymore. As crab can give good income. The price of crab is high. But do not have the information or the knowledge on how to cultivate. Cultivation activities are in Aceh Timur / Aceh Utara. GpPande has tambak and labour but there is no effort to improve or make-sue. People here has the knowledge about cultivation but do not have the capital to make the cultivation work. People of Gp Pande can make basket to cultivate the crab. Assistance for cultivation do not exist. Government only provided financial capital. People have to repay what they have borrowed plus interest.

Crab is more popular in Pande and has more importance than fish.No one has the idea of basket cultivation for crab. Can replace the pond activities and tranfornmed the pond into crab basket. Type of crab: Kepiting songkak/kepiting lembek aka Soft-shell crab. Has high demand. Higher price.

Pak Irdus keep on have to think about the gampong. And also artefacts problems in the village. He is too tired to be concerned about all these. He has eye-sight problem.

No migration from Pande because people do not have skill. People from Aceh Besar (Pande) are the laziest and they do not help each other when they are in trouble. They are just satisfied with what they already have. Aceh Besar people are working as labourer (reconstruction) not having stable income but they don't mind. It is not even seen as a problem or hindrance to their daily life. Only those who are already rich, wanted to keep improving their wealth and lives. The poor don't reallt care much. But the poor are actually have all these expensive assets.

Unlike in Pidie→the people will help each other to also become as successful as them. Most of the outsiders that cae into Pande are people from Aceh Utara. Poultry owner. And invited more from his hometown to come into Pande.

Religious: probably those who are poor are poor becauise they do not pray much.
Having money from: scholarship, credit (but not enough), Allah gives to those He wants.

No poor households in Pande. However, not clear about the types of jobs they are conducting. P2KP came in to help Pande but in reality, households were actually better off and didn't require assistance (households were overqualified). Their houses were with 'keramik' and proper flooring.

NGO/Pemerintah don't really know about the village information.
GP Pande x pernah ada hewan korban. Paling 1 or 2 ekor goat for Eid. Some have the money but they do not want to participate in the Eid event. Through the meeting, 1 lane will have 1 cow/goat that is shared among 7 people. During pak Irdus was the village head, every year the Eid event will be conducted and the arisan to coillect money to buy the cow/goat will take place. No more now.

To offer religious in the village. Emphasize on religious study to the villaers. Wants people to become closer to each other as well as to God. IDR 1.5 million for a goat for Eidhul Adha festival.

Garbage collection fee: 10,000IDR/month; for labour salary
Worked back then but when changed geuchik, everyone was not doing it anymore. Too troublesome to do it. Alat2 sampah udah di bantu oleh NGO, sepeda motor dibantu oleh Muslim aid. (but given away to dinas kebersihan)

People do not have strong awareness to help each other, local government also do not pay enough attention to improve village economic condition, a 'begger' rented a house in Pande, but not really a begger. House rent in Pande is about IDR 4-5 million/year. Acehnese are nice, they will donate money, motivate the begger to continue this kind of profession.
Recent problem→ prostitution. And sell the baby, IDR 10 million/child

Local government do not coe down to visit village anymore. Less concern towards village condition.

*lazy is not a problem of the people. People should be helped by the authorities.

He loves agriculture-related works. Planted mangoes and tried to make Pande more green.
He assumen that people should be help and they will be successull. *BUT if no monitoring and evaluation, it wont work ←nafesa's idea

Microcredit/soft loans → to help the people

Orang swasta kerja nya: gak jelas, kerja at kantor kontraok, kantor swasta, pekerjaan tidak tetap
Tukang, Jualan, Jual ayam, Swasta is wiraswasta, PNS is civil servant, Police and army, Lain-lain: petambak

KK angka berubah: perkahwinan, masuk dari luar, sewa, buat rumah baru,
Kahwin jadi KK baru, but still living in the same house. So can have more than 1 KK in a house

2011→ mendadak meningkat KK into GP Pande; probably sewa
Rumah baru banyak da siap, therefore byk KK masuk. Rumah dibina around 2008. Rumah dibina sendiri

Selamat dari GP Pande: Keluar as posisi pedagang, very few yang di gampong yang terselamat. Lucky. Diberi peluang utk hidup.

Pak geuchik has tambak and masih menambak. Ada 4 or 5 orang yang menambak. There are a few who still active.

Why some dusun has so many KK and other not? Reasons:
GP Pande was a garbage landfill, Historical village but Daerah rawa2 ialah di kandang itu.
Masjid was Tambak ikan/udang. Orng sedekah untuk timbus

Rumah dekat2 masjid was derah2 rawa, derah sampah. Tahun 1970-60an.
Nipah terlalu dekat dengan jalan. No lahan in that dusun kandang area. Because no lahan for people to stay.
Sedikit orang tinggal.

Dusun yang ada banyak KK, Dulu, daerah kebun. Abang mamak was living in kebun area. But due to abrasion, people start moving deeper towards the in land.

Kantor geuchik area was also daerah rawa2.
When it was better, after di beri tanggul, pembatasan air, setelah tsunami diberi tanggul.
Dulu pon mmg udah ada tanggul but tanggul biasa2 aja.
Setiap bulan air asin naik, dulu tak da tanama. Yang ada pohon kuda2 pagar. Not a single tree available in GP Pande.
Pak Irdus jadikan greeny and tanam mango tree.
Pak Irdus ada pandangan jauh about the village
He planted the mangrove near the tanggul for wall pemisah/penahan wind. Anggota gampong yang tanam sendiri. Pupuk semnagat utk mereka jaga and appreciate and care for their own village.
Pak Irdus has many channel and networking to him to get support for aid/as well as motivating the people.

Trauma immediately tsunami apabila tengok laut and strong wind.
Tanam mangrove at tambak yang tak terpakai lagi.
He believed that a strong wall for the Gampong Pande.
Pak Irdus orang yang jenis banyak akal.

He also planted bamboo along the road. But because the flat land and water cepat tergenang air.

Bamboo got through contractor (connection)
But bamboo masyarakat x tanam. Masyarakat malah potong2.

The first development book was the first among the Kota Banda Aceh.
Siap guna auto-cad siap sudah
Buat sama2 dengan masyarakat through estimation and identification of land and land size
Sebulan setelah tsunami, baru he gathered the penduduk and came up the village planning.
Mapping out the old location and identifying whose is whose.
The survivors evacuated to his brother's house in Ketapang. Brother moved his own family to Medan and let he people stayed at house. Buat POSKO di gampong pande.
He stayed in different district for 6 years after married. He started staying Pande in 2000 at his uncle's house. He became PNS since 1990. Pak Irdus was a PNS before tsunami. After tsunami, Pak irdus ran to Medan.
Kantaor Camat head called Pak Irdus and terus jadi gampong pande head. He was appointed.
Esok pulang ke gampong pande and tinggal di rumah besar yang masih selamat. Gotong-royong utk bersigkan rumah besar for three days and on 4th day, left the Ketapang house to stay at Pande.
Pak Irdus tell camat and polsek with name of survivors to get some bantuan. Aid came in after that.
Orang2 selamat>orng2 tua ingat siapa yang tinggal and write them their name.
Gather all people, and do rechecking and confirmation.
Perkecilkan tingkat kesalahan with discussion with masyarakat when making the first plan book.
GP Pande was the first village to have that book which was 2005 already ada.
ADB work was made easier.
Camat tak pernah urus Pande. Meaning, Pande village can survive on their own.
2007 rumah siap. Acara perasmian kenduri rumah gampong. 1000 guests. So, was given to the masyarakat to handle the acara.
Kumpulkan orang di barak2 (while waiting for rumah utk siap). IDR 30 million to held the event.

Responsibilities as leader is important and vital. Need to realise the importance and the function of the position
Good image for Pande

Ada propagator yang merusak village. Dia pikir meminpin utk enak. Apa kebutuhan masyarakat.

CFW yang merusakan, sebelum rumah dibina. Pak Irdus wasn't involved. Sbb gotong royong di rumah sendiri dibayar.
Illogical
Sore, bagi wang. Merusak social pande. Ajak rapat, masyarakat lagi tanya ada bagi wang tak.

Setengah masyakat x senang sama Pak Irdus. Sebab duit. Nilai2 aceh ialah gotong-royong. Orang gampong xda pembelajaran.
Kurang pendidikan and kurang kesedaran

BAPPEDA Kota Banda Aceh→foto tambak, ukuran and pastikan pemilik di GP Pande
Cerita about mata pencaharian hanya can get from Kantor Camat and the GP Pande from Kantor Pak Geuchik only.
Orang yang kerja di pemerintah, kurang peduli with data.

Pak Irdus made after tsunami: a data book orang yang selamat in 2005
Data, jumlah penduduk, pendidikan, lahan before and after tsunami, peta sebelum tsunami, peta perencaan rumah

Majority Pande: Original was Aquauculture farmer

Artefacts existed even before tsunami. Many artefacts in the ponds. Ponf rehabilitation assessment conducted by expert from ADB, results was ponds cannot be rehabilitate because there were too many artecfacts and graveyards there. Therefore, should just be left alone.
Pak Irdus is very attached to the village. He knows whats going on Pande. He is also is one of the Tuha Peut.
BPN (Dinas Agraria@Pertanahan) gave Pak Irdus peta Pande.

Home Industry-> 1 village, 1 product
Can get from
:Kantor PKK Banda Aceh

He doesnt know the current condition of the village.

Kota Banda Aceh tiada GAM, it is ok to go in and out. Constant watch by police and soldier. Forest or bushes area are dangerous, that's where the GAM members usually hide. In the city→not so scary.

Rec 23 : Pak Rudianto (PMI Banda Aceh), Mutia-assistant, Nafesa-surveyor

Content:
Livelihood aid

Operation immediately after tsunami worked with IRC
Quick Impact Program (QIP) – UK and Netherland collaboration
-sub program on economics for those having business, fisherman, tambak people, boat, perahu, petani (specific minyak nilam, perfume usage only Aceh Jaya, Lamnor and Tenom)
Early stage 1st and 2nd year was good. Successful
After 3 years, reports from Board member meniotned that ada financial tightness. Others: bad leadership, no maintenance, no management and terus meneruk and akhirnya habis. Todak terkam lagi jejaknya.
Around 2005-2006, 2008 lost totally. For the IRC, exit program at 2007.

World Vision came again and used the same template. Hidup kembali the program. The same people, same community, same project. They started from the beginning because new organization. Society already knew whats gonna happened. So during FGD, villagers already know whats gopnna happen. So NGO was sharing knowledge and motivating and comparison studies with other places. Di situ mula, kecurangan mentality. Villagers already know about what goal needed, the budget. Perspective of villagers that they don't need to work what they are working on but follow this program. Because program pays daily salary and the total is higher than the income they can get from the original work. Example, X is fisher but joined the kelompok for the program to gain extra money. He get money from the program at the same time skipped at times when he is bored and went fishing and claimed that he was stressed and needed a break; came in the morning just to ensure he will get payment later in the evening padahal half way lari ke laut, tangkap ikan.
No criteria of who can join the program. NGO who came in didn't have good enough local knowledge on the area they were giving aid and assistance.
Weakness of NGO: 80% of the officer or people who conduct the program were not from Aceh> dunno about the culture & dunno characteristics of Acehnese.
He has experience about LV program when he was in IRC but after IRC was closed down, he went to work with WV but as accountant. And his authority was limited to only on financial things despite he knows there is something wrong with the LV which was going on at that time.
He have experienced but he was not allowed to share his knowledge about LV.
Opinion: to check and to know the background of the people of the village who is layak to participate in the LV Program. Then, can make analisa layak atau gak.
They found out that the participants were not the targeted people (those who have businesses but people from various background/jobs). E.g. nelayan actualy work but because he saw many people ikut, dia juga jadi ikut.
Ada incentive (some money for transport and lunch=IDR135,000 per day) given during the program duration)
So can get amount 135,000IDR x 30 days. Earning was more. 4.5juta per month

Looking at budget from accounting side, spending was like not bagus, unnecessary spending. No quality control don't care. When it is the vital part. Concern was How when WV close, what happened to the people. How can they survive go on after that?

Quality utk program tidak terukur, kerana hanya dinilai di tingkat kemahuan penduduk utk menghadiri rapat, document2 yang dibuat sama penduduk. These are just to show people worked together and bermuafakat.

But in reality, it wasn't the same people in a group. They keep changing groups just to make sure there is name to be filled. Problem among the officers as well. The perception of the officers about what is going on field and the experienced shared by other experienced officer weren't taken seriously. And officers assumed that another officer Don't really understand what is that they are doing in field.
Hence, LV is not sustanaible in Aceh.

Pemerintah ada bangunkan pasar di Ulee Kareng but no one is using the pasar. Either tak strategic, atau masyarakat lebih suka jual di tempat lain. Pemerintah tak buat assesemmnt and the wants and needs from the people. Pemerintah just buat aja. Tak ada matching of kebutuhan and penyajian tidak match between pemerintah and the people.

Many LV program conducted till 2010 at the 23 sub district and 100 sub districts by
World Visions, IRC, Caldi, UNICEF, Redcross: Spanish, Canadian, American, Indoensia, Australia, British
OXFAM

Narrative on LV ada but limited story.
→Try check budget and see. Budget and expenses is very high but LV program sikit aja., what happened??

NGO terlalu kejar success stories, because bagi help at sekali big communities, many people. So successful stories has bigger impact. Having nice image to show and published.
Contoh aid: PALONG kapal
15 orang kerja in panglong,
1-2 tonnes of ikan sekali Tarik one night
→Theoretically ada byk yang telah ditolong.
2005-2006 year, 270juta IDR price worth for satu set kapal panglong
Kalau analysis side, udah bagus. Sebab 1 billion IDR ada 4 panglong and ada 4 group. So anggota nya ramai yg bekerja. One KK ada 5 anak, berapa da dapat makan..hence, budget spending is good. Ramai bisa bekerja, ikanlkebihan ada boleh buat olahan etc,isteri bekerja etc..Pencitraan organisasi is bagus. Udah bangunkan komunitas. So mcam da tolong banyak KK. How many ppl can eat and was helped..
BUT
Reality, because it is a group, and pendekatan for grouping wasn't that good, ada terjadi conflict among the people about leadership of the ship. And been taken over a rich person buy over the ship and take over to manage the panglong boat (deemed fairer by the villagers as rules and regulation by the boss) e.g Seudhu in Aceh Besar and Lieun di Aceh Besar

Weakness of WV, tidak beri ilmu leadership to the people. We want democratic boat but Acehnese tak boleh democratic not in Acehnese (due to the conflict)
Leader's salary is not same with general workers. Conflict arises due to the money issues.
Conflict menyebar to other boats and other groups too. Hence, everything was stopped, sbb group hancur. Because gaduh sesame, sebab nepotism juga ada. To ganti orang yang bekerja.
Boat cannot function well if there is less working people on board, boat capsized and lost in sea.
Marah lebih penting dari nak kerja bersama2.

Why Aceh Besar→because to help traditional fishing culture of the village

Livestock also same prob.
Originally, was different job. But someone donated sapi, he took up the side work. But instead of keeping and rearing the livestock, they sell the cows when they in need of money. And make police report, that cow was stolen padahal telah dijual. Orang datang check tapi dia bilang hilang. Sapi tiada telinga dijual dipsar, sapi yang diberikan akan ditindik setelah bagi. Sebab maybe sapi di curi.

Why LV not sustain is Aceh:
NGO not completely taken detailed assessment
Didn't understand the background of the village, communities
Didn't make sure people wants and needs of the people, different communities has different needs

Aceh berbasis hukum agama. Ada unsur2 keislaman di mana.
Harga di Aceh mahal luar biasa. Maybe because operational di Aceh was tinggi sebab ada ada exxon Mobile. Taraf hidup was tinggi.
Conflict penyebab exxon. Org kerja exxon kaya-raya and orang yg kerja exxon ialah orang luar. Org local x ckup criteria. Criteria tinggi sangat. Pemerintah aceh tidak endah about this unbalance among the society.
So, ada org yg tak puas hati and therefore, conflict.

No trust among the people due to the conflict. The long conflict affected how the people think and trust others.
Since till 1974 till 2004, conflict period
Trust affected the livelihood of Acehnese: kalau group, selalunya hancur but if Acehnese work individually, lagi senang berhasil.

Orang Aceh pilih the easiest job among whatever option he has. The simplest and easiest job.
Pemerintah ada bagi becak after tsunami in 2006 about 1000/1 juta unit becak was given to the people to generate LV.
Sbb ada money bagi je lah. Pemerintah Gak buat assessment.
People were choosing the easiest way or what they have at that time.

Not enough capital to rehabilitate ponds. Pond is high risk, high return. Becak less risk, and atleast return is stable/confirmed.

After tsunami: conflict stopped, tsunami response, transaction high cash flow in aceh, have business→ business flourishes > inflation, price hike (seller will look at your appearance..style, transport etc to fix the price; manipulative)

Arisan hanya ibu2. But not much. Ibu2 duit arisan utk daily consumption.
Aceh is very conservative mindset. Characteristic of businessman especially from district pidie, pidie jaya, lokshemaweuhm, biruen, langsat, tangaon, blang pidie. These are mentality of business.
Yang lain, bertani cukup lah.

Why do work what you work: To pay: ZAKAT and for children's education/wedding, No one mentioned about re-paying loan.
Loan will influence the type of livelihood.

Acehnese don't save and they don't save in banks. They keep GOLD. Gold is for dowry. Gold has more value and don't depreciate. That's the advantage of having gold. Unique economy in Aceh. Also, buy land and farm as assets.
Bank has bad image> difficult + complicated. Acehnese prefers simple and easy method.

Response in Pidie Jaya: Cash Transfer Program (lesson taken from 2004 banda aceh)
Aid yang diberi: Ada shelter, ada LV program and drinking water
→Shelter: give CTP given based on what they need after detailed assessment. Don't give money. Money is already put in bank. Bank deals with market and business man, e.g if you need material, people can go to the designated market and give the card to buy the material. No cash is given directly to the people. Cash flow for that area. Pemisahan antara penyumbang and penerima manfaat
If ada direct cash, high risk > corruption can happened because too many transaction. And also people cannot complaint directly to the NGO. Lesser challenges/work to be done by the NGO
Melakukan pemisahan ini, have to have a system and also putaran cash to also membangunkan economic orang local itu sendiri.
Can protect beneficiaries from fraud, corruption nepotism

LV is very wide
Other factors affecting LV: Financial, Physical, Social, Psychology, Political situation, Government and people relationship, Between levels of administration district, sub district, Provincial to village relationship, Sustainability of LV
LV cannot be only from one side. Many factors are affecting the livelihood

LV is actually from micro, after detailed analysis can get macro LV (e.g LV in the village), also have to look at the livelihood on the district level. Need also some policies to advocate cth seperti makanan halal, packaging
Need to be on the same page among government, beneficiaries and the donor..same level of understanding and so that LV at least can sustain.

Rec 24 : Housewives, Mutia-assistant, Nafesa-surveyor

Content:
Livelihood program:
Skill and training given for women in GP Pande for racut and plastic flower making
Training is gratis
Ada dana
Dana utk PNPN utk ibu2 di desa
Pakai kelompok. 30 ibu2 yang turut serta
Ibu A: I got bored and not interested in making it anymore. It is so hard to make.

Nek Ti: Husband ajar mengaji to anak2 and people
Nek Ti buat racut for herself and when her friends order
But order is not frequent. Depending on demand and trend

Rec 25 : Elderly man, Mutia-assistant, Nafesa-surveyor

Content:
Bukan orang asli Pande but he already stayed 35 tahun tinggal di GP Pande
71 tahun, Tinggal sama keluarga (isteri and anak)

Kerja jahit2 baju and petani: having cocoa kebun di Aceh Besar, 2 hectare luas lahannya which is 50km away from Pande
28,000IDR per kg cocoa
Dijual di pasar and diolah di medan.
Panen nya ada yang tahunan, harian. Dipetik sendiri.

After tsunami, received a tsunami house and bought an extra land for garden

Households in Pande are Aquauculture farmers. Damaged ponds> became carpenter or construction labour, business.
Tambak yang rusak, tanggul pecah so rehab no usage. 10 hectare ada di rehab but semua gak bisa pakai
So new tanggul di bina oleh BRR and tambak can be used again

He has small garden for tanaman for daily usage for his house.
Plants: Timun, petola, pisang, jagung, lemon grass, kunyit, sayur pucuk paku
He worked on his own at the garden.
Makan sendiri, sedekah to neighbours

Now tgh buang tanaman yang dulu, dan bersihkan old tanaman to make new way for new plants.
He doesn't need to buy his food anymore. Organic and healthy

His house near swamp area. He do his activity in the morning and evening. His neighbours has chicken coop. about three chickens.
220,000IDr per meter when he bought the land. If land near road, it is 400,000IDR per meter. Pergi umrah with wife, pakai uang daripada jual tanah..jual tanah sawah yang ada kat kampong.

Rec 27 : Pak Zulkifli, Mutia-assistant, Nafesa-surveyor

Content:
To generate electric for the lights at the pondok (electrical pond)
For kincir air
Tambak kawan
3 tahun after tsunami
Kerja tambak sebelum tsunami
Luas 2 hectare: 2 besar kecil 6
Manager seorang.. tambak udah bagus..
Tambak dihentam tsunami, ada bantuan, biyai sendri too much, tak mampu..Bantuan dari ADB
Tambak bapak: udang paname
Masih bibit 12 hari
Biasanya pakai udang windu
100,000IDR to 120,000IDR seekor..pakai alami tambak
Just for fun only

Setiap hari kerja..cari kepiting juga simultaneously
Sebelum was better, hasilnya udang enak di panen. Ada banyak hasil..quality of udang change after tsunami..udang sakit.
Bibit bagus.. tambak nya yang ada racun..and jadi penyakit..thats why, he also do tambak alami for lepaskan belanja rumah which is about 3juta IDR.
Cannot do in big amount or big size of tambak, because too high risk.
Because belanja is mahal..seminggu for electric is about 100,000IDR.
Pelihara udang and ikan bandeng. Kepiting mmg udah ada dlm tambak.

Main tambak has risk.
Ada hasil and sometimes tiada hasil.
Ada TV at pondok, lampu and also to hidupkan the mesin, kincir angin for the shrimp for oxygen
Racun the tambak@clean the tambak and prepare for new batch of bibit>beli bibit>bibit letak dlm tambak, after 15 days pasang ali (jaring/tool) to check the development of the shrimp>no more pindah, bibit will stay there for 3 bulan>panen>jual
Bibit dari Sigli and Bireun. Harga: 40 IDR satu ekor udang. 200m for the working tambak. 50,000 ekor sekali masuk tambak..25,000JPY
Pakan is different according to age of the bibit. Lebih halus pakannya. After 15 days, use different pakan. He has to stay at the pond because the bibit ate 2x a day and he also need to ensure the oxygen machine keeps running. Electric mati because pre-paid or just bad connections.
Check udang: after 15 days, baru check

Rumah bapak di pinggir tanggul. 100m dari tanggul. Rumah number 11.
Air laut utk shrimp. Also ada air sumur mix with air masin for the environment to live.

Another tambak sedang diperbaiki, sedang di clean, Masuk and keluar air use different machine. Cangkul, di kapur, dibersihkan
Mesin electric to buang and put water in

He also do Tambak ikan: Ikan Bandeng
Pakannya beli di pasar.

Kalau udang sakit, there is also ubat to put into the tambak. Have to always check the bibit.

Anak nya 2 yang sekolah.
His basic salary is IDR3juta monthly. After panen, baru dapat additional duit.
Isterinya do extra work like kopek bawang. Depending on available of job.

Tokey is staying in Jakarta. Boss mom married with orang aceh yang ada tambak di pande people. Harta peninggalan bapaknya. Boss doent know about tambak. He cant speak aceh language. So, this Pak yang manage the tambak.

Pak Zul pay another 3 person to carry out labour work. But that labourer is just part-time as that person also may have another part-time job elsewhere.
During panen times, more people will be hired. 5-6 labourer. Orang pon dari Pande. Pilihan sendiri. Khusus utk panen time only.
Need more people to carry, 1 tonne box
Sekali angkat 10-20kg ke tempat atas tu, baru masuk big box.

Susahnya kerja nya tambak.
After tsunami, bapak rest.. 2007 baru rehab tambak..2 tahun x kerja, cari kepiting/udang utk makan2 sendiri. He was single before tsunami so he hasn't need much worry about feeding his family.
20,000IDR dapat sehari ketika emergency time. ckuplah utk seorang

He was at the tambak, sedang panen time. keranjang2 was bought to panen. Ready to panen already.
He loss a lot: keranjang, udang etc
Kepala pecah, kaki patah, badan pecah→ he tetap work at tambak, he felt that he only knows this, only know how to do this, x kisah eventhough duit sometimes tak da. Minat ke arah tambak.
Xlah miskin, cukup lah utk makan anak2.

He doesn't really go anywhere. Basically spends his life at the pond. Nights are chilly but he already used to it.
It was dark before the tsunami. Now, ada electric supply, tiang electric for lights.

Pak Zul tanam mangrove. Ikut tanam mangrove. Orang kampong x sanggup masuk sebab dalam and x suka lumpur.
He was already playing in pond.

Bandeng: harga dijual 1 kg IDR20,000 - 25,000/kg (2 ekor)
Lepas kan 50,000ekor bibit
Makan ular, makan udang
45-50 ekor yang akan mati..

Harga udang:
Ukuran udang diberikan three sizes:
Size 1:100 bibit bagus. So have better panen. Quality of bibit better.
Size 2: 80
Size 3: 65 →ukuran besar 120,000IDR/kg dijual, 1 kg ada 30 ekor
1 tonne or 2 tonne sekali panen

Eventhough makan sama, but turns out size won't be the same.
Pergi beli bibit sama boss
Beli di nursery bibit
Sometimes dia beli sama orang. and then do Alami style. Dibeli: 2 IDR seekor. But if beli and orang tu alamikan harga is more mahal. About 12,000 - 35,000IDR/ekor.

Bandeng: no size. Development are more stable. Setara size.
Dalam 100 ekor, ada 10-20 ekor yang kecil

Bandeng pakai jaring aja.
Panen jam 4am, no need ice. Ikan segar. Hantar pasar jam 6am, terus jual sendiri yang buat/hantar.
If Panen mlm, need ice.

How to differentiate:
Warna air tambak:
Hijau tua: baru racun, baru letak pupuk, letak, kapur
15days
Air jernih (transparent)
Gak ada apa2 di dalam..ini ialah process pembersihan tambak for the next bibit

*how to know which fungsi or not, the tambak: semua pak zul ada pakai.
Terbengkalai: everytime lepas mati, so di biarkan aja.
Aja juga di test di lab but water was fine. Don't know what the cause of rusak. Bibit x menjadi.

Everytime tambak, mesti ada je time yang akan tak menjadi. Ada risk yang akan bibit tak menjadi.
Hijau>merah>jernih> masuk bibit
Hanya tambah air according to the ukuran. Cannpt buang air, but can tambah air.

He also experiement to ensure better quality of panen but it seems nothing works. he approached dinas etc.
Pak bina Tanggul sendiri and control size tambak through the planned cetakan, cth 10 x 30 and nak 3 biji

He watched youtube on how to make DIY udang tool@ALI. Pakai pipa utk sambungan. Harga kos lebih murah. Just buy the benang. Lain gampong lain nama Ali tu.

Other tambak is alami. Hanya Pak Zul punya je yang ternak.
Perbezaan antara ternak and alami.
Pergi pagi, pula sore. X ya stay at night. This is alami style.
But hasil tak sebanytak hasil ternak.

Org yang kerja alami, ada kerja lain: ada jualan, ada yang tinggal rumah aja, jual kopi di malam hari
Quality udang Pak Zul is better and bigger in size. Rasa yang ternak better taste.

Pakan: different price.
15hari umur: 2x makan
5kg seminggu makan—>300,000IDR for 5 kg
Pakan yang number 2: murah sikit
*Makan tua, makan time makin banyak.
Cost for tambak: variety pakan, electric, labour, kapur, pupuk,
Pakan diolah di Medan.
Udang has more priorities than own anak.
Utk cari rezeki, terpaksa la.

He was at the coffee shop when the earthquake came, instead of running, he went to check for his udang because udah mau panen. How hard to earn money to get money. 2.5juta IDR masuk for cost, he can earned kotor gross 40juta IDR
Potong labour, electric, pakan: hasil bersih is about 20juta - 30 juta. Beri pada boss. Divide dengan boss. He get 10juta, boss get 10juta.
That's is for 3 months work is 10juta IDR. But he also earned the 3juta monthly basic salary from boss. 3 juta mmg tetap utk bapak. Tapi xlah ckup.

Orang yang dulu tambak, sekrang buat apa: dia cari2 kepiting, jualan ke, atau tak buat apa2 kerja
Too mnay tambak to be rehabilitated. Too much cost as people here are mainly tambak people. So have to be selective in rehabilitating.
*how ADB decide to select which tambak to rehab?<-- nafesa Q

Cari kerja lain: he don't really know what they work, labourer such as construction, tambak
Less pegawai, byk org pande ialah org tambak.
Sebelum tsunami:
In the morning, basically there are no man as all of them will go to the tambak to work. Kalau ada guest, they come at night.
Hanya women in the house.

Rec 28 : Pak Amiruddin (village head), Mutia-assistant, Nafesa-surveyor

Content:
Livestock KK ada 7 KK in Pande
Utk: sambilan/ liburan
Bisa jual utk lebaran juga
Beli kambing sendiri and ada juga yang dapat bantuan, bantuan daripad dinas atau anggota dewan/aspirasi/perwakilan rakyat.
No LSM bagi bantuan,

Why ramai renters masuk: maybe enak environment,
Start: Sewa>ada duit beli tanah>buat rumah
Why Pande tak keluar:
Kalau pande keluar pon, ke Jakarta: jadi pemborong,
Di kota muhammadiyah, Pindah gampong lain sebab kahwin baru

Mata pencaharian, x perlu dibantu
Tak berapa kaya tapi cukup lah
Sebelum tsunami ada bantuan anak 50,000IDR utk anak.

Rumah yang utk dijual=>
Rumah di pande kalau jual, selalunya udah ada pembeli. Cepat laku→sbb enak tinggal di sini.
Udah masuk, payah pindah.
Banyak yang masuk sewa, terus tinggal.

250,000IDR semester kalau jual lahan di Pande.
80juta rumah dijual oleh ahli wairs. Ahli waris yang dapat rumah, dia tak tinggal di pande, ahli waris dapat rumah and tanah di pande. But they don't live there, so they jual.

Setelah tsunami, Org yang tak kerja tambak→ kerja bangunan, jual ikan, juru bangunan,m tukang bangunan,
1 org beberapa kerja. Kerja yang tak menentu nya type
Habis kerja bangunan sore, sore pergi mencari kepiting

Pak geuchik dulu, tangkap kepiting>jualan kepiting

Rec 29 : Dedi Sastriyawan (Archaeologist), Nafesa-surveyor

Content:
Was in GP Pande from 2000-2003, Came back to Pande again in 2005/2006

2004 he collected the last data
Continued in 2006
Toponim is another name for Pande Village
Ada naskhah, Pak Tengku Iskandar→ specialist text on archaeologist. He wrote about some kuno hikayat Aceh.
Pande started with 'Kandang' is tempat istimewa. Bangsawan and org2 kaya. Sultan membutuhkan cash, org2 ini akan segera dapatkan cash itu. Tempat2 org2 yang hebat. 1030masihi. Byk temuan bnda2 emas.
Name began to change from: Kandang>200 year after name changed to Pande
Pande is specialist, mengerjakan semua benda yang bahan baku is metal. Various metal, paling popular is copper. But also having other metal called suasa (percampuran gold and copper). Yellow plus red yellowish color. Terkenal sekali. Masyrakat temukan reddish yellow di Pande.
Sensitive issue about findings if made public. Nnt org dtg korek at village.

Citus rosak because org change the tanah, bolak balik and jadi tambak ikan.

He found ceramic from China, Thai and Vietnam in Aceh area.
The artefacts were found from dynasty Ching, while blue porcelain 1644 Masihi – 1900 Masihi

Pengrajin Pande muncul di kemudian hari
Orang tua, Abdullah Saron (original Pande): Kandang itu hanya nama tempat yang kecil yang terdapat dlm Pande.

Estuaria di Pande; sedimentasi melahirkan beting2. Dihubung atau dipisah kan oleh canal. Naturally change surface. Terjadi secara semulajadi. The sand contained some gold and hence, the people in Pande who are specialist started to use the natural resources; non-metal (gold, gansa, porcelain perak, silver, copper etc) kerana bnda artefact itu dijumpai di Pande.

Peralatan dapur, peralatan utk perhiasan (ring, perlengkapan makan sirih, moulds for the sirih tool, small copper box with lotus-designed motif)

1530Masihi – 1900Masihi
At Pande, not everyone was a specialist/tukang/pengrajin non-metal, only half of the population in Pande was specialist,
Maybe 1640Masihi muncul orang2 specialist ini

→kolonial belanda masuk (Aceh War)

Pengrajin terakhir→Pengrajin Istana who lived at Pande
Utuh Sema (nickname given by the local language), small built, org kepercayaan raja, was excuted. He was the last orang original Pande who remained in Pande Village. 1916
Sultan Muhammad Daud was the last Sultan who was going for the revolution. Ada traitor yang menyebabkan the revolution fail.
The balance Pande people moved to northeast of Pande which is at Lam Gluampang, dekat dengan Pak Geuchik Leumik, orang yang pandai emas sekarang. Byk pengrajin ke sana. Area Simpang Surabaya.

Before tsunami, 2001-2003 di Pande Village, there was:
All was women doing
→pengrajin trasitional cigarrete
→Mengolah hasil laut; olah ikan kering/ikan asin
→anyaman but not much
*Jemur nipah di kuburan sebab tempat terbuka

Men were at the tambak or laut
Was alo a victim of the tsunami disaster; lost all evidence and books, and photos etc

ICAOS and Singapore research team was digging the citus and artefacts and were looking from the perspective of disaster.
Not for preservation of the historical sites.
He was against it.

He is looking at chronology 800-1900 range of year for Banda Aceh.
According to the Singapore Institue, ada melihat earthquake pattern
Tsunami is not an ancaman because it is natural event. and the cycle is long. Basically average age of human, maybe they will only experience earthquake or tsunami once in a life time. therefore, disaster preparedness or information/knowledge are not that important.

Life need to go no matter what is going to happen. The philosopist of life

→immediately after he saw Pande has new life
No nipah
No cigarette →export ke Medan, diminati orang, it was organic, so-called to be 'healthier'
Fish pond ada
Ibu2 jemur ikan

Aceh has conflict: in and out was hard
Pande was also hard to get in
He had to convince the people, sat at warung coffee and then started to tell stories about the Pande
After tsunami, many outsider came in and work and stay at the village, ada benefit there, regain normal life, usaha daripada pemerintah utk Pande jadi wisata area. But not that maju.

People were afraid as they have perception that outsiders are bad people. Jawa, wilayah luar aceh→people x bagi masuk.
Tawan hati and yakinkan through usage of local language.
Ramai yang tak percaya, orang tua and muda-mudi had a time time accepting his presence in the village.
Archelogy has less benefit to people. Faedah nya is future prospect. Not the kind yang segera faedah.

Government of Indoensia and local were not that interested to gather and compile these information about archelogiest/history.

Rec 33: Women, Mutia-assistant, Nafesa-surveyor → FGD

Content:
About activity ibu2 on livelihood
Racut:
Kuih:
Jualan shop:

Kerajinan. Dulu ada. Jahe. TOBA.
Dari jahe, dia olah jahe utk buat minuman jahe>utk dijual di gampong and di luar juga.
Dia ikut perlatihan di Pande.

Perlatihan dulu masih berlanjut dari 2007 masih yang berlanjut→jahit Jahit2 baju, bedsheet
Orang tempeh baru ada demand.

Relationship among villagers are good: visit orang mati, orang buat balik umrah

They know have to run to higher places but dunno where to run.
They know Pande is high risk area.

Rec 34: Ibu Era (BAPPEDA officer), Mutia-assistant, Nafesa-surveyor → FGD

Content:
Conflict time:
Going out for work was hard
Get activities during the day
In 2000, everyone already at home by 6pm
Scary feeling. Husband was witnessed.
It was very quiet.
After tsunami, culture change, big impact, very differect,
Outsiders came in as Banda Aceh was open.
No data because situation was very different. Data before tsunami is very hard to get. 2000 census, aceh was the only province that cannot do census. Due to the conflict census data for 2000 is actually projected data.

Most dinas, try build data after tsunami. District @ kebupaten kota je yang ada data. Lower than that cannot produce data; desa, dusun.
Weakness of indoensia data: people don't feel the need of registry or preservation of data.

Working hours during conflict:
Office don't open,
Work from home.
Sebelum magrib, toko2 tutup
Bisa suddenly ditembak.

Banda aceh now is totally different, people are everywhere at any time of the day.
Ada quantum leap. Big leap. Build data only after tsunami. Better than before tsunami.

No import and export transaction in Aceh.
Ada small import from Medan.
The conflict did not get into Banda Aceh but the feeling of fear spread up till Banda Aceh area.

Aceh is strict during conflict if compared with other province. Aceh was little mundur due to the conflict. Everything was tertutup. Everything was being controlled. Despite having, oil resources. Aceh was mundur

Tsunami was the starter to have aceh.
Puncak 2000, pergerakan utk merdeka makin hebat. TNI came into Banda Aceh.

The data she got→Data wawancara: nama asal usul Pande
Pak Irdus is the only one who has the most information about Pande. ICAIOS buat: How the perubahan lingkungan in Pande, Pande was just an extra village that was included

Data sharing is not possible because authority of data need from Singapore Group. Because funding received from the group. After publishing, data baru dapat di share. Publicly access.

*perbezaan lingkungan di Pande ada kemungkinan utk mempengaruhi livelihood Pande
Pande: ada resource buah nipah, also rokok nipah

Sebelum tsunami:
Ada beberapa org yang ditawarkan utk bekerja dengan pegawai pemerintah but the profit from nipah production was higher.
Sekali potong daun nipah can get as much as 200,000IDR profit. More than the income of the officer.
Tambak+buat nipah activities

After tsunami:
the quality of the nipah was not as good as before and the development of the trees was not also good.
(1 respondent)

*snowballing technique of respondent→ Pak Abu Bakar +
Kesulitan utk dapat data, sbb ramai asli pande ramai meninggal. Ramai pendatang. Ada org tua but have to be selective because not all orang tua are sane and able to tell the stories. Orang tua yang masih ingat.

Majority dapat bantuan but no one will want to tell what they have received because it is personal matter.

The problem with the village:
-need a penggerak from outside eventhough village has a lot of potential but they dunno how to make use

Residents of the village didn't know about the kepentingan of the citus.
No keuntungan so people don't really care.
But good for historical records.
Posisi kuburan itu di pinggir laut. Means there was a change of land. Kuburan usually located in high or safe places.
Characteristic Aceh and Jogja- sgt perbezaan. Orang jogja can stand up by themselves after they were given cash. But Acehnese-mcm xckup2 bantuan, asyik minta, mengaharap bantuan, dimanjakan.
Livelihood bantuan work only when the recipient mmg ada business dari before tsunami, ada that certain skill, atau ada motivation yang tinggi. Others wont go succeed.
Pak geuchik pagi jam 10am baru masuk kantor. Pagi he is out to jual kepiting.

Village head, kak Meni and Ibu FItri→ FGD with Mutia-assistant, Nafesa-surveyor → FGD

Content:
Ismail Saron udah meninggal

Depan rumah besar akan buat warung kopi. No bantuan. Duit peribadi utk wujudkan warung usaha kopi.
Bantuan peribadi hanya utk orang miskin sahaja.

Baitul mal hanya bagi orang miskin:
Orang tua yang da uzur
Biasiswa utk anak sekolah (SD till high school)
Kak Menni yang tahu; jaga bahagian financial Pande Village

Abu Bakar and Pak Rasyid orang yg berilmu tinggi, org yang asli tinggal di Pande

Adat orang Aceh: to treat guest till the very end. Till they are satisfy

Tambak yang berfungsi: 15 hectare
Yang lain x pakai da

Cara aquaculture: Ternak is intensive style; new way, Usually are alami style and the balance

The department in pande yang being in-charged by different PIC

Bantuan2 yang di terima/diberi:
*ada byk bantuan yang masuk pande Village, Kebijakan by pak geuchik. Recommended by the pak geuchik
→Zakat, bantuan modal/usaha: duit; kiosk, kuih, jahit, beras RASKIN

Berupa barang atau duit. Byk diberikan berupa barang because to reduce the penyelewengan duit, dulu beri duit tapi buat belanja lain. Way to curb the spending
Raw material: kuih, tepung, 1 org 2 juta IDR, beli alatnya/machine. How to: BaitulMal came to conduct survey and assemenet first. Targeted people who already own a business. How is the business doing? Both ibu2 and bapak. Pembibitan for bapak2. Ada juga bantuan utk nelayan: jarring. Kalau jahit: mesin
Diberikan vocational training. So that that person can bukak businesess sendiri. Capacity increased. Sustainability. Ada bukak usaha sendiri.
Ada juga yang tak berhasil. Ada competition.
Ada follow-up and evaluation, 1 tahun 2x.
Kelompok buat kuih, but tak menjadi sebab kelompok usually fail as people ada yang ambil duitnya, perkelompok usually x bersahil, too many opinions and asyik rapat2 but no outcome.
→bantuan di berikan every 3 months once

Orang kaya: pegawai, orang yang mampu,
Ada car, ada motocycle, luas rumah; ukuran, besar, lebih cantik, lebih mewah, ada tambak, tanah nya banyak, halaman rumah besar, people's appearance, ada jualan (mampu utk sumbang kepada orang)

Ada peringkat:
Categorykan through dusun
List orang2 yang dibantu oleh BaitulMal:
Orphan: 9 people (average age is 6-15 years old)
Janda/Duda: 19 people (6, duda, 13 janda)
Fakir Miskin: 101 KK
Rumah tidak layak huni, the condition is not good: 9 unit (these houses are not ADB built, house was developed by people themselves, outsiders, newly married→new KK, renter)
Fakir and Uzur: 5 people (62, 63, 64,87 years old) lansia; lanjut usia
Not that they are living alone,
*apa yang di category kan as miskin
Who determine that they are miskin? Pemerintah?

Tak tinggal di pande during tsunami, but during ADB siap rumah, dia dapat rumah di Pande→usually org2 mcm ini lah yang jual rumah dia, or sewa kan rumah nya

Tempat2 pengajian di Pande: 6 unit
Religious study: learn to learn Kitab (not quran but more to Islamic Subject: Ibadah, sirah, tauhid) for women and men and also children.

KESRA- Kemiskinan Kesejahteraan Masyarakat yang datang membantu orang2 miskin ini

Recovery factors/indicators:
Usaha sustained
-mendapat rumah/ahli waris-->jadi kaya
-ada dapat pekerjaan
-saving, dunno they have it or not or they use it or not; because personal matters
-the social relationship among the villagers. Relatives are living either same village or different, these relatives will help the disaster affected person. Jiran tetangga will give food etc
-after tsunami, ada jualan, ada yang buat kerja construction
*ada juga yang kaya and jadi miskin
*special thing about Pande is that the village became the land subur after the tsunami.
Dulu tanah nya tandus/gersang/keras→ now better. More trees and greeny

Expenses division:
From PNS, 1.5juta IDR
Education: free but there are other education payment that need to be paid such as mengaji for religious,

Priorty of spending:
1. Spending for children
2. Spending food for daily (do not cook, buy it outside, do not know how to cook, probably lack of kitchen?KIV) food content of santan, kuah thicker
3. Electric

→Hence, need extra income to support house spending like baking kuih

Spend about:
-IDR400,000-500,000 for anak-anak
-IDR 250,000-300,000 for electric

Kalau earn banyak, then ada simpanan
But kalau earn, cukup2, wont have do saving. Money is just enough for daily expenses/spending. 100,000IDR spending daily.

Reality: Acehnese people are boros2.

Pak Geuchik: tukang potong daun nipah before tsunami
Kak Meni: she knows how to kopek daun nipah, learn from her grandmother because her grandmother was doing that work
Why don't you continue making/producing the traditional cigarette: don't have modal, need money to buy the medicine for the nipah leaves, to make the nipah leaves soft, then perlu di asap kan, nipah leaves owned by someone else.. she cut by herself and pay for what she has taken, or buy from the male
Male: potong daun nipah and jual
Women: production
Dijemur>di asap> beli the tabacco> di jual the daun yang ready kering> di hantar utk di jual (ada supply chain)
After daun da ready, kena beli the tabacco if want to smoke. Women don't make the tabacco.
Harga dijual pada customer: 20-30 batang for IDR5,000
Before 2004, 20 batang IDR50,000-70,000 (this price is already expensive) cost nya tinggi untuk buat rokok traditional

Modal – cost = untung
Bahan mentah: IDR25,000
Profit nya 3x ganda IDR100,000
Lelaki potong kerja and earn lesser < wanita production can earn more

Duit utk buat rumah2 are usually use duit daripada ibu2 because women were jimat-cermat.

All photographs were lost due to the tsunami disaster.

Pande Village: Production of tambak udang/kepiting, daun nipah and ikan dendeng, jaga/buat tambak orang
Ada Kelompok ikan keumamah

Mata pencaharian orang dulu: pekerja tambak, IRT buat nipah seharian (dari dulu since tsunami 2004, turun temurun), Anyaman was only conducted for perlumbaan desa, just activity sampingan by the outsiders. Because these people don't have the tambak land, they will conduct different type of jobs: They are also jualan, tukang bangunan, tukang becak.

Renters: came in, bought land and will stay here in Pande
Mengikut tradisi lama: pemuliaan jamee (adat org Aceh)
Asal orang tamu senang, duit habis, gak apa2
Orang gampong Pande: sambutan bagus, peramah

But org baru, have lain kind of atmosphere. Org yang pande, semuanya keluar. Those are left are those who are uneducated.

Things of Pande that was brought out:
Mata pencaharian from those activities→Musical instrument: Seruling Kalae daripada Pande, dance, singing songs→teach others, earn income
But not anymore, tiada penerusnya: meninggal

Ibu Fitri has side income of jualan: jualan baju, jilbab, baju bayi, accessory (she import from Bali, ordered online, most young generation of mothers below 40s are good with internet and knows about online business)
Jual also di rumah and postage through all over Aceh; Biruen, Pidies, Melauboh, Sigli. She advertises from Whatapps or through SMS.

Outsiders buy barang from Aceh: Malaysian, They buy telekung

Abg Kak Menni tinggal di Malaysia, she have social help or remittance, Gampong Pande hanya terkenal setelah they found the gold coins>then baru jumpa pedang

All the data in GP Pande will be sent to Kecamatan after every month.
Don't have digital archives for Pande.
They don't SAVE AS, but instead replced the document every month.
*data are not available at the Village Head Office. Some are brought/kept at home.
*many people are in-charge but seems like no one knows about whole communication about the village
*ada gap of communication between PIC
*orang aceh: after cakap2 and hang out with them, baru dia jadi terbuka. Baru cakap ini itu. Kena korek2, baru dapat jawapan.
*ganti geuchik, data ikut hilang. No records. Pindah kantor, put in boxes in gudang, don't know where located

Ada orang Pande yang keluar, for education purposes. Pak Irdus punya anak belajar luar negara.
Pande: orang Tambak, pancing kepiting
90% was orang tambak before tsunami
Tambak di Pande masih di pakai. Ada sikit je yang terpakai.
Ada juga owner tambak yang mati akibat tsunami, hence tambak nya terbengkalai. Anaknya tak berminat atau anak kecil.
Talk to Pak Dusun to get more info on how many people living in his dusun area and their occupation.
Dalam data, nelayan is defined as nelayan laut and petani tambak. Because too little amount of tambak and nelayan, they combined the number.
Orang pande yang bekerja ini: kegiatan ekonomi tak tetap, buat kerja tergantung keadaan. Kerja orang itu berubah2@they have many jobs per person.
Lain-lain column defined as Cth kerja yang tak tetap: kerja tukang bangunan, jual ikan, buat jualan, Tarik becak, pemancing kepiting, jual kuih,
Dulu rokok production rokok, now nothing. Habis musnah semua.
Isteri pak Geuchik is ketua PKK

Kak Menni, Ibu FItri and Pak Rasyid with Mutia-assistant, Nafesa-surveyor → FGD

Content:
Orang luar yang jumpa pedang. The person was cari2 kepiting. And then, found the sword.
How they find the gold coin: Old lady original from Keudah cari kerang di dalam air tambak, then masuk kawasan tambak Pande, then found the box of gold coins. She got about IDR120 juta from selling the gold coin. Others people got 70jutaIDR. Then, many others came. Police was on guard. Was on TV news.

Pak Rasyid:
Orang yang menambak since he was in elementary school till now
>40 years in aquaculture
Before tsunami, 50 hectare of ponds was functional but after tsunami only 17 hectares are functioning
He is currently working on people's pond (1.5 hectare)
Panen is 2.5 to 3 months time
Ikan bandeng
Pendapatan sekdar cukup2. He is not working other job because of the limited skill he has. He only knows how to do ponds work.
At the same time, taking care of livestock of cows of other people.
His children received school support
The distance to the sea from the tambak was 2km but has decreased after the tsunami to 1km.
Ssuring panen season, there will be more people employed in the ponds to help out with the panen. Hasil hantar ke pasar and also someone from the market will come and collect.

In the beginning, He refused because afraid he doesn't understand, takut tak faham
Asli orang sini, his mother was original
Female: daun nipah utk daun rokok
Male: only go tambak, no officers

When the livelihood started to change:
Tambak da hancur
Orang kopek daun mati da, now, is new people
Ibu2 don't transfer the knowled because they died due to the tsunami. Hanya tinggal male.

20% je yang tinggal orang Pande. And they are now about 30s or 40s of age. They are not interested. They do other things mengikut kemampuan sendiri.

He is working at Tambak. Kerja sampingan: pelihara kambing

Isteri not working. no kuih selling
Cukup2 je utk makan2 je lah
Anak sekolah boleh2 aja.
Pemerintah ada bagi education support but not for books.
Cukup utk makan

Before tsunami, most houses in Pande are doing the nipah production.
Process: male just cut the leaves and bring home
Women: kopek and jemur and di potong and di bawa ke pasar
Leaves get from buying from other and cari sendiri.
1 hari potong siap. Kopek 2 hari utk jemur. Kena hari panas. So that daun kering.
Work is daily. Hari2 keluar cari nipah and then, wait to dry and langsung terus dipasarkan.
1 minggu 3x dijualkan. 3 hari potong, 4 hari kopek. Pagi ke tambak, petang ke nipah.

Ramadhan→tidak kerja di tambak. Buat pembersihan tambak.
From 1965, no one was officer. Everyone was working as tambak people. The income from tambak was good.
Houses before tsunami was bigger than after tsunami.
Comparison, penghasilan was much more before.
Dulu, 200,000IDR can buy 10 biji egg but now cannot buy anything.

2,000IDR can buy ice but now cannot.

He worked on tambak belonged to some Pande people.
Ibu Menni's dad and her grandfather has a few tambak in pande. Pak Rasyid was hired to work on the pond since long time ago till now. Win win situation. They trust the people like Pak Rasyid who can manage well the tambak. She called the tambak as 'empang'.
The owner will give out modal for the workers and they work on it.
Kak Menni has big house before tsunami. Inherited from the parents. Her family was doing both tambak and nipah work. But tsunami washed away and she has to start from zero.
Those who work as officers also doesnt earn enough.

Pak rasyid sedang potong utk umpan kambing. Kangkung.
Dulu, kambing makan daun bengka. Sekarang, makan kangkung. Pakan utk kambing→dapat gratis. He can get the pakan from the nearby tambak.

In the future, if he dies, the tambak wont be taken care by his children. Tambak work will be taken care by those who want to work in Tambak. But if the tambak is own by the family and work is also done by the family, the tambak work will be inherited.
Pak rasyid already work since elemtary school 1974.
Luas lahan tambak ada perbezaan. Dulu tambak land was luas. Sekitar 50 hectare. now only left 17 hectare left. Dulu pakai tangan utk menambak. Ada dana, pakai cangkul, tool for tambak. Also ada pakai mesin.
Now basically pakai manual. Hand.

Quality perbedaan pakai mesin and manual→no difference.
But if pakai mesin, faster work can be done. complete in 1 or 2 days.
Bersihkan lahan with hands>korek aja yang dirty elements and throw it out, no change of water>he is using alami style
If Bibit alam, just need to jaga air. In and out water. Buang and letak air.
If Bibit ternak, harus beli bibit

There are two types of tambak: ternak and alami.
Pak rasyid has tambak alami.
Alami: Udang kecil@udang putih
Ternak: Pakai udang wot

Tambak di Pande, banyak pakai Udang and Ikan bandeng
Ikan and udang live together in his tambak.
Satu petak ada both ikan and udang.
Kalau alami: no pakan
Kalau ternak: baru pakai pakan

How to check the tambak hidup atau mati,
Wait for a week and then only check.
If put 20,000 ekor in the pond, do not know how many will live and grow. RISK, high risk high return
For alami: if put 20,000 ekor, atleast need to have 5,000 ekor yang hidup. So that can get minimum untung. Boleh lepas kos belanja.
Panen→2.5 months to 3 months
After panen>he will send to pasar to be sold
*if banyak yang hidup, dapat lah extra.
But if tambak tak menjadi, he has to do other side work. Mencari udang yang alami di sungai instead to have money to buy for bibit utk buat again tambak.
Air dalam tambak is air sungai
Tambak udah ada pakai tanggul, ada use pintu air
Tak ada sungai, mana ada tambak
Jarak dari laut ke tambak when he was small 2km. now, 1km aje from laut. He knows about abrasion (that lahan now is hilang ke laut). He mentioned that because of tsunami that why laut udah makin naik ke darat.

Tiap hari ke tambak. He just go jalan ke tambak despite nothing to do.
1 hectare setengah, 2 petak. Pak rasyid yang jaga.
Only during panen time, there will be more workers. Otherwise, he works alone.
Time panen, air tinggal ¼. From 1m jadi 40cm aja air nya. Cetek. Senang nak tangkap.
In a tambak, cannot have mangrove within.
Can have only little mangrove. But sometimes, mangrove have to be cut to make way to use the pond.
Previously, many mangrove. But need the lahan to work.
But there are mangrove being planted again to prevent from kejadian air laut, ada penahan utk pecahkan gelombang.
*if there is no mangrove in the tambak, tambak is functional.

Color of tambak: lagi sedang dibersihkan

Ibu Menni punya ialah ikan bandeng. Yang ada pompa is for udang.

Ada tambak yang owned by orang luar, orang pande but tinggal di luar Pande. That person has warung kopi also.
Ada juga orang pande yang jual tambak mereka. Or ada juga yang hobi menambak and bought tambak in Pande.
17 hectare yang tambak functional.

Dulu, lahan utk tambak so much bigger than lahan settlement. Now settlement and tambak same size. Tambak diambil laut, rosak, kena pembebasan lahan; utk buat drainage atau jalan.

Dulu till before tsunami, pakai sinkship, big ship for tambak. Lebih maju and keren. Hanya putar air. Pakai sebab lahan tambak besar. Modal tinggi.
If modal alami 5%, pakai sinkship pakai 90%. Electric aja jutaan per bulan. Therefore, the Pak Zul nya mesin is just 'small toy'.

Pak Imam was tambak, and now became penternak, Pak Tengku.
Even after udah rehab, empang still cannot be use. Need modal banyak utk tambak. Sekali upah utk 1m is 15,000IDR.
Depending on the size of the lahan yang dikerjakan, kali lah.

Ibu Menni:
She rented her tambak out to people for 5 tahun 16juta IDR
Or
1 tahun, 1 petak 3.5juta IDR
Can get at least: IDR 5juta for 1 petak

Pak Surya (Red Cross Banda Aceh)→ Interview NGOs

Content:
Went to Markas PMI
Built from contenna in 2006
Posco pengendalian bencana (kinda musuem)
Ada first assessement after disaster, 30 volunteers conducted assessment and >100 trained local Acehnese volunteers came to help with other work
PMI dibantu beberapa negara di dunia. Utk penangananga tsunami.
Inside the pocket, found the identity. Those with GAM, wont have the identity card. Card was introduced a few years before tsunami.
Merah putih (identity card for local civilian are protected by the government)
Also found foreign workers working at Lok Ngah. Working at cement company.
Psychological Support Program; trauma healing was given to the survivors.
A month after evacuation, start cleaning.
3-4 hari after tsunami, kubur masal dibuka. Mana jumpa, masuk dulu dlm kubur, keep in body bag and masuk dlm kubur. Jumpa later, masuk tempat lain.
Nothing on GP Pande.
LV support: pembersihan lahan, CFW,seluruh masyarakat akan terlibat utk kerja2 pembersihan di gampong. PMI berikan peralatan pembersihana. Ada coordinator at each village. Kerjasama dengan kepala desa. How much pay 50,000IDR per day. 8 hours of work.
PMI wont be doing physical development. More to cleaning, trauma healing. E.g Pidie Jaya: Cash Transfer Program→X, di data, luka berat, rumah damaged heavy, beri org itu assistance in form of ATM card, use that card to assigned vendor to purchase materials. This is done so that no direct cash transaction: 1. Mengurangi tingkat corruption 2. Kurangkan tingkat logistic.
1500KK is Pidie Jaya received this. 1juta IDR in each card. Can use within the first 3 months.
Pande terima penanaman mangrove. Near to meuraxa. Near Pande.
PMI 1945 existed in Indonesia. Was already in work during the conflict.
Warehouse 35m x 65m
Ada hygienic kit. One year supply. Received from HQ. always in stock.
1 KK one shelter box tent, plate, cups, kompor, sudu, for 5 people
Life jacket
Livelihood: peralatan kebersihan. E.g. Cangkul. Tools are just given away to people.
Based on data of assessment, will then send what is required.
PMI will be at the disaster affected area 6 hours after the event. a rapid assessment will take place, kebutuhan dasar, makan, place. This is emergency phase. After 3 days to a week, detailed assessment will take place. Different phase, follow different work. Rehabilitation phase.
Always keep stock. To keep at least about 1000 units of assistance.
But condition of the office which was made from contenna, already showing signs of deteriorating, rusts.

FGD ICAIOS for artefacts: Tuha Peut, Women, ICAIOS officers

Content:
2006, air laut masuk tambak and rosakkan tambak
After tsunami ada assessment, tambak was found to have citus. And xbisa dipakai utk tambak.
Harga diri utk gampong, apa yang dibanggakan di Pande: sebab ada sejarah kerajaan aceh, ada citus, ada tambak2,
Kalau x jaga citus, x jaga maruah gampong. Jaga citus, turun-temurun

Local knowledge of Pande:
Local event→which is about 3rd February annually. Kenduri utk potong sapi. Choose sapi sbb besar and ramai can get. Ada tanggalnya, ulang tahun kedatangan syiekh dari Baghdad pada 1300masihi. Tradisi turun-temurun. Dulu ada event ini before tsunami. After tsunami, none. About 2013 or 2014 baru start again this tradition. Ada warga yang mengusulkan kembali.
Ada orang luar yang dating ke Pande utk lihat pedang2. Visitors/tourists.

Banyak yang gak tahu the location of Pande. But they know Jawa village. Only popular after the gold coin was found. Boleh jadikan Pande as village kebudayaan.
Seharusnya orang yang tinggal perlu tahu about Pande, because its kerajaan Aceh pertama
Bila cerita Pande, is actually cerita Aceh.
Why pande is important for banda Aceh

Agama islam ke Pande.orang dari bangdad datang ke Aceh utk sebarkan islam.

Dr Safuan, He has project in Pande; kuburan2, warisan → Interview

Content:

Peninggalan bekas kota lama di Pande. Pemerintah cannot help to improve the wisata as no budget.
Tambak was planned to be bought over; tambak yang ada citus. So that the tambak can be preserved and jadi attraction.
Yang mengikat orang itu masih dalam miskin:
-tiada modal kerja--> need modal utk memulakan usaha. E.g. nelayan yang nak ke laut, need money to fuel, labour, etc
Harga ikan ditetapkan oleh taukey. Nelayan hanya untung sikit. Hence, government have to play a role. Harus give support to the nelayan. No simpanan sbb xckup.
Income tak tetap but rumah is equipped with TV, parabola. Because can do credit system; payment monthly. Motorcycle also gun acara eceran@cicil@credit.
Income 1 juta sebulan can pay for many credits but this person doesn't have enough for simpanan
Livelihood support/program; e.g bagi ikan instead of pancing. Permintaan ikan tuna, jual di Medan and export ke Jepon. 1kg 42,000IDR-50,000IDR. Kalau jual ke jepon, 1juta IDR per kg
Tokey bangku; jaga ikan and tetapkan harga ikan, beri modal utk nelayan pergi pancing
Cannot minta from jiran2, sbb semua org also is having same cycle. Same situation.
Nelayan kecil ada lah buat jualan ikan.

-money management
Local governemet should give/offer Money management training and skill for the people. To teach the people on how to sustain the money.

-not good public transport system
If ada good system for transport, people can focus more on their livelihood. Indirect impact towards the people's livelihood as they need to focus on also other priorities such as sending anak to school. Therefore, need motorcycyle. For the wife to send the child. Then, son big, need another motorcycle.

-child support, child carecenter
kahwin→buat KK baru. Isteri have to be at home to care for child. When, wife can actually work. Government have to provide support for mom

-softskill program for the society. e.g. buat kuih bagi ibu2→homeindustry. Fish chips

He worked with Muslim Aid
Pande punya location was not jelas as he claimed that Rumah Panggung was built in pande, padahal maybe it was the neighbouring village: peulangghan or Jawa

Perubahan design ruangan rumah dan kebutuhan rumah tangga & livelihood masyarakat.

1. Konsep rumah panggung: atas rumah, bawah utk tempat kedai runcit, tempat betulkan jala, tempat hang out with neighbours
2. Rumah susun (low cost house, flat hijau) layak for pasangan muda yang pendapatan rendah

*rumah yang dulu kayu, now are jadi batu. Means ada perubahan ekonomi. Can see the perubahan material usage on the extension of the house.

Muslim Aid buat Rumah panggung pertama after tsunami di Jawa Village
Maybe da tukar rumah panggung to become rumah batu, income better. He was the first designed the rumah panggung. Because harus segera bangun rumah. Barrack was dari batang kelapa. The issues was to make green house. Batang kelapa was used to make house. Bawah rumah panggung guna for kiosk, duduk utk rehat, jadi family space to hang out.
Muslim changed concept to make house for Pidie jaya. Not rumah Panggung lagi. Build permanent house. But di Sabang buat rumah panggung from batang kelapa. Masih digunakan utk attract tourist. Helped for those pendapatan rendah. Jadi rumah homestay. 50,000-100,000IDR per malam.
Pande is located in the city. Near to city. Kegiatan ekonomi Pande is easier and better because assimilation of the interaction with the city. Not only nelayan but at the same time ada pelbagai other kerja yang lain.
House becoming better with better earning. Can afford to make better house, buy more material to make house bigger etc
Muslim Aid also ada di Pidie.
Rumah after tsunami was 36m2. But now can see big difference of the extension. Can use this to see the changes. Why? Pendapatan bertambah, anak makin byk, need more rooms, nak buat rumah baru and need more land (to look at the kebesaran rumah dipengaruhi oleh apa, cth: 2004 tsunami, 2006 dpat rumah. from 2006-2017, sejauh mana rumah berkembang/ bertambah ruang..apa penyebab ruang bertambah, anak makin ramai, added new ahli keluarga, butuh extra space; WHY WHY) impactnya apa?

APPENDIX 10: Summary of Interviews (Gampong Lambung)

Location: Lambung, Banda Aceh Date: Sept 14th, 2017 (Monday)

House number: 62 Respondent: Maskur (45 years old), ex-kelompok leader

Summary:

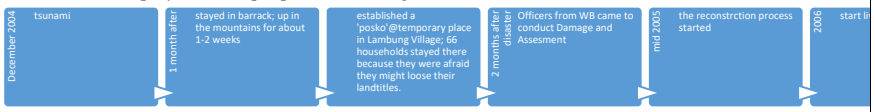
Wife is selling snacks/cakes. Husband is fisherman + construction casual labour.

	Before the tsunami	After the tsunami
Personal	Building contractor (tukang bangunan)	Same *the busiest month are Oct, Jan and May
	Shore fisherman (nelayan pesisir)	
	Wife: not working	Make and sell cakes/snacks for breakfast
Community	Government officer Traditional cake maker (women)	Fisherman (outsider who came in, most of them do not have fishing skill, do not have skill, works in group of 3-5 people)

Received livelihood aid: From the Ministry of Trade and Industry: electric saw, craft knife, drill, tools for furniture-making.

His financial status was better before the tsunami disaster. Thanks to his carpentry skills he can still manage his financial till now.

House number 63 is owned by his brother who is living out of Aceh currently. Hence, the house is rented out.
Stayed at the barrack located at Mata Ie, with 33 others of Lambung residents. He took the initiative to gather all of the remaining Lambung residents.
He joined some France donor organisation and was elected as the Manager. His role was to find out the people's need during that relief period.
Before the disaster, WB was already working in Aceh during the conflict period. After the tsunami disaster, some of WB's employees were people of Lambung.



The respondent went back to check his house after 5 days after the tsunami disaster. He was there every day to guard his land, collected remaining usable items and assets.
When the people moved to Posko in Lambung, they built a temporary shelter there in the village. Aids were also channelled there: food, medicines, tents etc
The village head was alive, and he gathered all the names of the survivors for data purposes. The Village head then was approached by WB for housing reconstruction assistance.
A meeting among the remaining residents (those who participated in the meetings were the residents who own the land) were held to determine the land size and land area→Land consolidation. After the land consolidation, house plot was plotted by using lottery-style.
Then, village head announced the available assistance and the total funds that they will receive.
Cash-for-Work (CFW) was implemented by OXFAM: clean up the village area; those who participated in the CFW were a mixture of Lambung residents and also outsiders from Lang Baru (other evacuees were wanted to make some money).
Meetings were held in between for land allocation for public infrastructure; road, mosque, meunasah (space for the community to gather). About 5%-10% (depending on the land size: minimum land size 150m², 200m², 300m²) of the total land is donated by each of the household for public infrastructures.
Officer from BPN came to take photo of the land owner and to hand the Letter of Agreement (regarding the land area and land size).

P2KP was assigned to build the houses in Lambung; options were given to the community:

1. Self-build (cash of IDR 58 million)
2. Using contractor

- P2KP provided the tools and trainings (how to read the pictures in the guidebook, cement mixture, steel bar sizes)
- Reconstruction works were controlled and monitored by P2KP officers & Village Head (about 4 P2KP officers came almost every day to inspect the work)

*checking conducted found that there were contractors who didn't use the right size for the steel bar and construction was re-do.
P2KP had appointed a supplier for the materials. Supplier opens a shop within the village (easy access for the people to get their materials). P2KP will proposed the type of material (wood, steel bar etc).
4 stages of housing reconstruction:
Stage I (2 weeks): pillar, floor (about IDR 16.8 million)
Stage II (2 weeks): masonry brick, beam (about IDR 16.8 million)
Stage III (2 weeks): plaster, beam frame/trestle
Stage IV (2 weeks): painting, door→finishing touch
The amount given was more than enough. They even have enough for consumption.
There was a few Kelompok@Groups (10 houses = 1 kelompok). This respondent was the Kelompok Leader.
There was a period of hold where nothing moved. The funds was already disbursed from WB but P2KP didn't released the funds.

In-depth interview

Location: Lambung, Banda Aceh Date: Sept 14th, 2017 (Monday)

House number: 50 Respondent: Juwami (wife: Juraida), resident

Summary:

The grandma was a traditional cake maker. Wealthy. Relatives and family members were living very close to each other before the tsunami.

	Before the tsunami	After the tsunami
Community of Lambung	Teacher *Bank officer *Government officer Traditional cake maker (women); dodol, marsekat *wealthy people, houses before the tsunami was very big	Government officer Traditional cake makers Fisherman (outsider who came in, most of them don't have fishing skill, do not have skill, works in group of 3-5 people)

In-depth interview

Location: Lambung, Banda Aceh Date: Sept 14th, 2017 (Thursday)

House number: 27 Respondent: Haslian, widow, resident

Summary:

Native Lambung resident. She and 3 of her older children were saved from the tsunami disaster. Lost her husband and 2 other children. Cake-maker.

Cash-for-Work (CFW) was conducted by OXFAM. Payment was given daily for cleaning the village area and also preparing food for the workers. Her financial status was better before the tsunami.

Received livelihood assistance in form of: Bakery: cakes, snacks, tools: pan, stove; Sewing; Fishing: tools and boat. *the aid was frequent after disaster (during reconstruction period). After moving into new house (2007 onwards), NGOs also provided livelihood assistance→ trainings: cake-making: bahulu, wajik, dodol, meuseukat

	Before the tsunami	After the tsunami
Personal	Traditional cake maker	Traditional cake maker

People from UNSYIAH (local university in Banda Aceh) came to conduct checking during the reconstruction period.

In-depth interview

Location: Lambung, Banda Aceh Date: Sept 16th, 2017 (Saturday)

House number: 7 Respondent: Emy Irmayanie, 51 years old

Summary:

Native Lambung resident. Professional tailor. Went out of Lambung after high school and lived in Jakarta for 17 years. The house was rented out to a carpenter. Came back and lived in Lambung in 2011.

Land in Lambung owned by her parents. The old house was big. 8 people were living in it; 6 children. Land was therefore divided into 6 pieces after the disaster. 250m² for each children. However, during the damage assessment, because she and 4 other siblings were not living in Lambung, the village head only wrote her brother's and father's name (Father died from the tsunami disaster). The rest did not received any house assistance.

	Before the tsunami	After the tsunami
Personal	Tailor	
Community	Traditional cake maker; dodol Government officer (her parents was working at the government office) Grocery shop *1970s Lambung was an agricultural land, paddy field	*renters/outsiders came in from Sigli to look for work opportunity in Banda Aceh.

The roads before tsunami were small. About 1.5m² – 2m² wide.

*during the interview, there were people who came and asked about lands which were put up for sale.

Lands near the cemetery are valued at IDR100,000/m², areas of piled land are valued at IDR400,000/m².

In-depth interview

Location: Lambung, Banda Aceh Date: Sept 16th, 2017 (Saturday)

House number: Respondent: Zulkadri (37 years old), native residents

Summary:

Stayed in Jakarta. Came back to Lambung after 5 days. Lambung was totally flat. The remaining residents tried to gauge their house area and put up sticks/marks for indication. Evacuated at Mata Ie and stayed there for about 2 months, then moved to temporary barrack; barrack was built from usable ruins and self-built. There were about 30 Lambung residents at the evacuation centre. Stayed in temporary barrack from early 2005 till moved into new house. House reconstruction (house foundation) started in 2006. Entered new house in 2007.

There were many aquaculture land in Lambung. But after the tsunami, the government piled/increased land to about 1m and make recreation area. Hence, no more aquaculture land.

	Before the tsunami	Immediately after	After the tsunami
Personal	Repairman	Not working	Government staff (part-time, day) Village staff (part-time, day) Security (part-time, night) Repairman (side-job)
Community	Fisherman; aquaculture Contactor Government officer	N/A	Fisherman

(Majority are from within Aceh) Outsider: contract work→ government, study, marriage, traders (food/beverage). There are also from Medan/Jawa.

When living in barrack:

→Women: There were livelihood aid trainings (cake-making: dodol) for the women: raw materials, tools, funds.

→Men: livelihood aid→dodol cake (this type of cake is more challenging; from NGO)

Now, livelihood aid is seldom→traditional cake-making

In-depth interview

Location: Lambung, Banda Aceh Date: Sept 17th, 2017 (Sunday)

Respondent: Yushar (29 years old), treasurer during reconstruction period

Summary:

Native resident. Working in a private gas company as LPG distributor.

	Before the tsunami	Immediately after	After the tsunami
Personal	N/A	N/A	Work with other→fuel; LPG distributor. Side work: part-time at village admin work
Community	Entrepreneur Government officer Aquaculture (shrimp, fish); freshwater Majority (women): Traditional cake-making; meurakat, dodol	People were involved in monitoring their house, money from the 58 million was sufficient for building house and support for food World Vision: cake-making training, raw materials, tools (quality of the cakes were not as good)	Master died and hence, the new generation are unable to produce as good as before.

Cake-maker: From 5am to 6pm, cooking needs a lot of time, hand-made, wood fire

Traditional cakes of Lambung→Famous in Nusantara; export to outside of Aceh.

There were livelihood assistance in the form of trainings for cake-makings: tools, raw material from Aceh Provincial Government. Groups were formed but the cake-quality were not as good as before as lacks of expert knowledge/local expertise involved in the training.

No rehabilitation for the aquaculture land for Lambung; probably they ran out of funds (size of aquaculture was too small, probably). Tsunami changed the demographic features of the land in Lambung.

Outsiders who came in are mostly from within Aceh Province; Bireun, Pidie or Langsar. The people usually came to stay in Lambung to improve their livelihood, increased their economy; living in the city→more opportunities/business. They are mostly traders; grilled corns etc

Cake-making groups did not sustained long because the capacity of the participants were not as good as before, lack of expertise→tips and tricks of making sellable product

No more funds available to help the traditional cake-makers to sustain/develop.

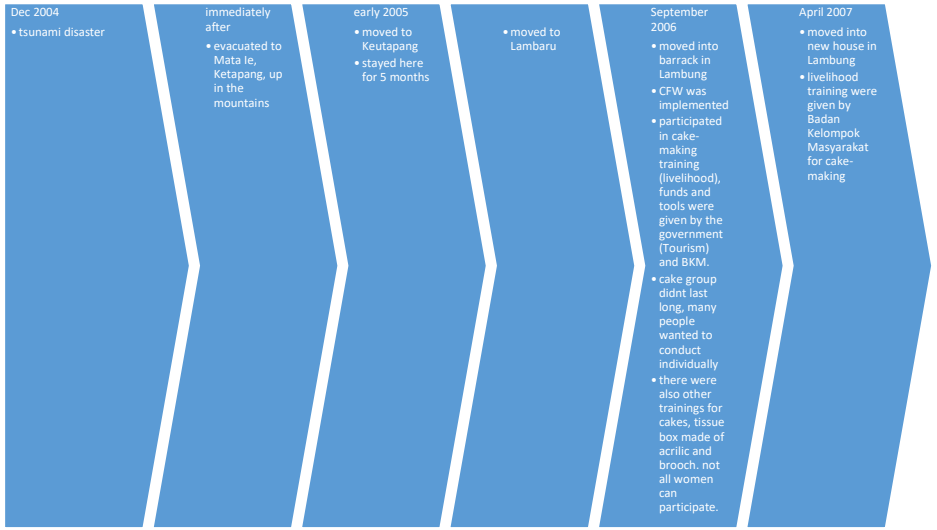
In-depth interview

Location: Lambung, Banda Aceh Date: Sept 17th, 2017 (Sunday)

House number: Respondent: Fera (37 years old), divorced, native resident

Summary:

Stayed in Labung even before the 2004 disaster. House ownership; two people (herself and her father). Occupation: oyster collector at shore. There are 7 people living in the house currently (grandfather's brother, 1 male cousin, 4 children and herself). 3 households. Grandfather's brother (works at cleaning service at the school, 54 years old) and male cousin (deep-sea fisherman; tuna, 29 years old) also contribute money for house expenses. The grandfather's brother and the cousin watches the children when she goes to work. Financial status was better before the tsunami as husband was still around. Too many dependents now, have to work extra hard. 13 people died from the disaster. Extended family living together (19 people in total) under one big house before the disaster. 3800m² was the size of the land.



	Before the tsunami	Immediately after	After the tsunami
Personal	Oyster collector (husband and wife)	Make cake→dodol	Divorced, she→oyster collector Side job: Mend children's scoop game every evening near the village called Taman Kuliner; working hours 1630 – 1900
Community	Government officer Traditional cake-maker (women): dodol, wajik, meurakat, keurah Some were fisherman Housewife	N/A	Government officer Women works too Traditional cake-maker→ inherited by the child

Start working at 11am onwards, depending on the water level. High-tide cannot work. Used to just walk behind the village to collect oyster. The tsunami has changed some of the geographical features of the village: more

salt water now. Affecting the quality of the oyster. Previously, the oyster was big. After tsunami, the oyster quality at the same place reduced. Hence, she look at a new place, about 4km away from her house called Lamteh. Works for about 4 -5 hours per day, works every day. Same amount of hours spent for work (before and after tsunami). No change in terms of total oyster collection of before and after the tsunami disaster.

She can get about 1 sack for a day's work. Receiving IDR50,000 to IDR70,000 per bag for the opened oyster. Selling in the village gets her higher price while if she sells to the middle man, the price is lower.

Current aid: Various lessons (e.g. English classes) for her children (elementary) at an orphanage located outside of the village by university students.

Oyster collecting tools: knife, gloves, bucket. Challenges: injuries while looking for oyster as hands need to scoop the oyster underneath rocks.

There is oyster training for the Lambung people from Japan. But only men were selected to attend the training. No livelihood tools for oyster collector immediately after disaster. Those who were listed when they were in the barrack, especially those cake-makers were given priority for cake-livelihood aid; one time aid. Funds were given to individuals. However, when moved into new house, only selected households were invited for the cake-making training. Funds were given for the in groups. Other households were selected for different types of livelihood trainings; sewing, handicrafts etc

Receives aid from BaitulMal for the children. Receives scholarship from the Fishermen group but only for one child (because the cousin is fisherman).

Outsiders (within Aceh/Medan/Bandung) came into Lambung: peaceful life, people are close with each other, space for children to play [They came to Lambung because they work at Micheline, contractor, traders, PT (limited company)]

World Vision, UNICEF→ food aid; IRLANDIA→medicine, health check-up (*received too much instant noodle during the relief period)

*Taman Kuliner that support the livelihood of people of Lambung.

*Additional note: a local radio station in Meuraxa district also helped by airing and publicised Gampong Lambung's effort in revitalizing the traditional Acehnese cakes. Gampong Lambung was known to be the hub for home-industry for the traditional cakes.

In-depth interview

Location: Lambung, Banda Aceh Date: Sept 18th, 2017 (Monday)

House number: 80 Respondent: Fitra Zulman, resident

Summary:

Old house size was 3800m². Before tsunami 19 people living in the house, after tsunami only left 6 (parents, siblings and in-law died). Husband: fisherman, wife: housewife. Receives BaitulMal→ zakat. Receives education assistance from fisherman group but only for 1 child.

	Before the tsunami	After the tsunami
Community	Government officer (majority) Traditional cake maker; women: dodol, meurakat, wajik, keukarah	Government officer Women started working too but no longer in cake-industry Renters/outsiders: cooking gas contractor, building contractor, government officer, PT (perseoan terbatas; limited liability company)

Many outsiders (from Banda Aceh and also outside of Aceh: Medan, Bandung) came into Lambung:

- The environment is peaceful and safe
- People in Lambung are close-knitted
- Children can play freely

Aid came from World Visionand UNICEF→daily necessities: food, instant noodles, medicines. No boat-related livelihood aid were provided. CFW was implemented in Lambung.

In-depth interview

Location: Lambung, Banda Aceh Date: Sept 19th, 2017 (Tuesday)

House number: 27 Respondent: Cut Defriyani, wife of current secretary of Lambung

Summary:

There are 20 women who joined the stich work group; only 3 (one of the 3 is the respondent) passed the professional stich-work exam. These 3 stich works are exported to Japan. Received training for stitch work after tsunami. Meetings were held twice a week. Products (phone casing, sweater, shawl, table cover) are sold to Japan (collaboration between BAPPEDA and JICA→donated escape building). Small piece is JPY500 and phone case goes up to JPY5000. However, she do not take up stitch work as her job as she has other jobs to do (involved in women's group as secretary). Livelihood training for the women, given by BKM: cake-making trainings, handicrafts: acrylic craft→tissue box, basket. Livelihood trainings were spread by mouth-to-mouth. Incentive (daily allowance) were provided to encourage participation from the women. CFW was implemented in 2005 after the tsunami. Livelihood training were plenty, provided by NGOs, UKM (Usaha Kesejahteraan Masyarakat)/BKM, Ministries. Renters came from within Aceh or outside of Aceh, Medan. They work as traders: food, clothing. They chose Lambung due to the pleasant living environment.

	Before the tsunami	After the tsunami
Community	Teens: sewing, cake-making Men: repair work; car, motorcycle; aquaculture→prawn and fish Women: Traditional cake maker	Some women→cake-maker Fisherman

In-depth interview

Location: Lambung, Banda Aceh Date: Sept 19th, 2017 (Tuesday)

House number: Respondent: Hardiyanshah, current Lambung's Secretary

Summary:

There is credit system/Simpan Pinjam Bergulir in the village (formal) but it is ineffective due to trust problems among the members.

There is the 'arisan' for the women. Women are more active with their 'arisan' for expenses for children and also for those who are interested in producing the traditional cakes.

Tambak rehabilitation was conducted by both government and NGO.

The salary of the population in Lambung is generally above the minimum salary.

	Before the tsunami	Immediately after	After the tsunami
Personal	Village secretary Entrepreneur	CFW work (3 months); World Vision, Mercy Corp, Islamic Relief [8am to 5pm working hours, paid IDR15,000/day] Village secretary Work for an NGO (1 year)	Village secretary Side job: small catfish farm surveyor for the government;
Community	Men: Entrepreneurs Women: Traditional cake maker; dodol, mesrakat, wajik, bhoy, badal letak, housewives *traditional cake-makers caters for demands such as for wedding gifts, selling at the market, souvenir shop *had small home-industry factory' that employs the local women to make the cakes	*World Vision provided seedling for the catfish; but failed because it was not sustainable→no continuous funds and people cannot afford the expensive raw materials	Some women cake-maker Fisherman (rely on natural resources): shore fishing (sell in the village or for own consumption) and sea fishing (medium/large size boats; tuna fish, sell at the market) [about 2 -3 households are involved in fishing]

Mango trees seedlings were donated to Lambung houses for local fruit production and greenery purposes.

Relationship between native residents and new comers are generally good. Outsiders also takes part in the village activities.

In-depth interview

Location: Lambung, Banda Aceh Date: Sept 20th, 2017 (Wednesday)

House number: Respondent: Hazairin (50 years old), worked with World Vision

Summary:

Small trader. Native resident. Wife is not working←illiterate, has three children aged 12 years old, 8 years old and 2 years old. Used to have livestock (chicken, goats and cows); sold everything in early 2017 and open a grocery shop.

	Before the tsunami	Immediately after	After the tsunami
Personal	Small trading (petrol for motorcycle/becak) & Had a coffee shop Handyman (side job) Wife: opens a kiosk	Not working CFW (IDR15,000/day) from OXFAM and World Vision: IDR15,000/day (clean up village, 30 – 40 people, about 15 household, 3 months)	2008-2015: Livestock (chicken, goats, cows), Handyman 2017: (sold his goats, open grocery shop) Small trading→grocery, cakes, snacks Chicken livestock
Community	Women: Traditional cake maker Men: Government officer, traders; fish/meat Teens: sewing, cake-making Men: repair work; car, motorcycle; aquaculture→prawn and fish	OXFAM gave IDR 1 million→improve the livelihood of the people, gave barrack for temporary shelter World Vision: gave women sewing trainings	Very little women involved in traditional cake-making; dodol, bhoy/bahulu, teukarah 90% are new comers from within Aceh or Medan/Java. New comers are involved in food business. -came as renters and bought a house there and settled down Occasionally: sewing training for the women

Currently, do not have enough to save. Earns less than IDR 1 million/month now. Did not use credit system due to age factor and his illness. He used his own money and savings to buy new livestock and open grocery shop. His financial status was way better before the tsunami. Wife is not involved in the 'arisan' (regular social gathering). Open up his own kiosk because he wanted to have own business. There was an elementary and junior high school in Lambung before the tsunami disaster. TOGA-like program was introduced in the village: onion, chilli, daily vegetables. Expenses: Grocery shop items, food for family, house bills: electric, water.

Additional information about lambung and the livelihood activities: http://www.comuproject.org/2017/09/23/2017-09-23-fgd-fisheries-di-lambung/

http://www.comuproject.org/2017/09/20/2017-09-20-rangkaian-kunjungan-tim-dari-kota-higashimatsushima-ke-banda-aceh/