



UNIVERSITETET I AGDER

# **Social and economic consequences of natural hazards: The case of the Lapindo Mudflow in Indonesia**

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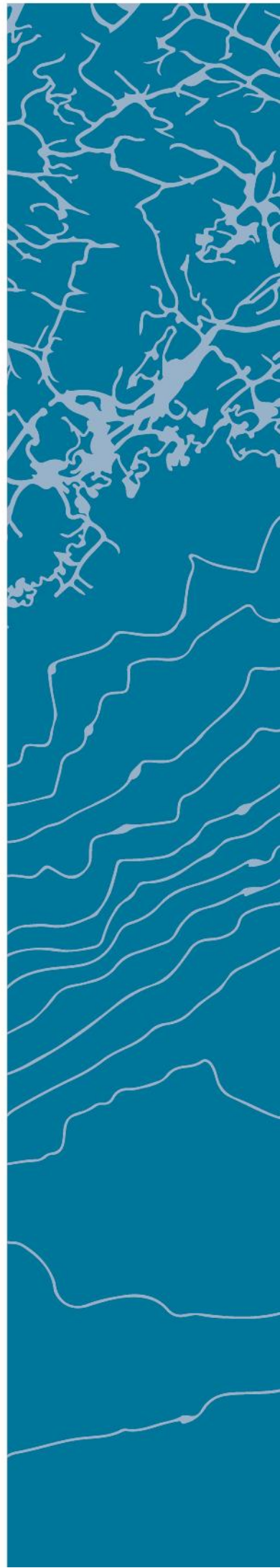
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## **Abstract**

In the end of May 2006, a quite special volcano erupted in the Sidoarjo regency on East Java, namely the Lapindo mudflow. The consist of hot mud, gases and water at about 100 degrees Celsius. In 2008, the mudflow covered 816 hectares of land, covering both villages and agriculture. Experts are still discussing if the eruption was caused by an earthquake that had its epicentre 200 km west from where the eruption took place, or if it was caused by the drilling that Lapindo Brantas was doing in the area.

The Lapindo mudflow triggered a social and environmental crisis where 12 villages were covered by mud and 40,000 people had to be evacuated. This research has explored the social and economic consequences the Lapindo mudflow have had for the local communities that have been affected by this disaster.

In March 2007, the government released the map they had drawn that determined which regions that would be included and not in the disaster zone of the mudflow. The victims can be categorised the into three groups, and these are: in-map victims, out-map victims and the non-victims. The in-map got their compensation from Lapindo Brantas, the out-map victims got their compensation from the government, and the non-victims that do not have legal status as victims. I consider them as victims because they are living in an environment that is degraded from gases and environmental damages like loss of clean water, falling dirt and gases that contains the air.

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## **Abbreviations and acronyms**

AEC – ASEAN Economic Community

AJB – Sale and Purchase Act

ASEAN – Association of Southeast Asian Nations

BNBP – National Disaster Management Agency

BPBD – Regional Disaster Management Agency

BPLS – Sidoarjo Mudflow Agency

DRR – Disaster Risk Reduction

EM-DAT – The International Disaster Database

FTA – Free Trade Agreement

IDR – Indonesian Ruphia

IMF – International Monetary Fund

KNV – Kahuripan Nirvana Village

MLJ – Minarak Lapindo Jaya

NGOs – Non-Governmental Organizations

PKI – Partai Kommunis Indonesia

SBY – Susilo Bambang Yudhoyono

SMEs – Small and Medium- Size Enterprises

TIMAS – National Sidoarjo Mudflow Mitigation Task Force

TPP – Trans- Pasific Partnership

UN – United Nations

UNISDR – United Nations Office for Disaster Risk Reduction

USD – US Dollar

WB – World Bank

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# Chapter 1: Introduction

## 1.1. Introduction

More and more people in the world are exposed to hazards because of population growth (Smith, 2013).

Hazard can be defined as a *“potential damaging physical event, phenomenon or human activity which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation”* (Usman et al., 2013, p261-262).

An event can be classified as a hazard when it threatens human life, property infrastructure or the environment. Hazards can be divided into three categories. These are natural hazards, technological hazards and environmental degradation. The first one, is triggered by climate and geographical variability. Second, is *“technological or industrial accidents, dangerous procedures, infrastructure failures or certain human activities, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation”* (Usman et al., 2013, p.264). The last one, environmental degradation, are processes that are caused by human behaviour and activities. These human behaviours and activities are damaging the natural processes and ecosystems (Usman et al., 2013).

*“Hazard impacts often are difficult to characterize because a given hazard agent may initiate a number of different threats”* (Lindell and Prater, 2003, p.176).

From 1994 to 2013 natural disaster claimed 1.35 million lives and affected 218 million people, and the total economic loss was US Dollar (USD) 2,600 billion. Most of these disasters happened in the Asian and Pacific areas with 50 per cent of the biggest disasters. From 1994 to 2013, 3.6 billion people was affected and 841,000 was killed. Many of the countries in these areas are disaster-prone and it challenge the development in these countries (CRED, 2015, Kreimer, 2001 & Douglass, 2016).

Indonesia are one of the most vulnerable countries to natural hazards. This is because the country is located on the Pacific, Eurasian and Australian tectonic plates also known as the “ring of fire”. Indonesia are prone to volcanoes and earthquakes. The 2004, earthquake and tsunami in the Indian Ocean killed hundreds of thousand people. In 2006, the earthquake in Yogyakarta killed 6,000 people and in 2010, Mount Merapi outside Yogyakarta had its biggest eruption in hundreds of years. When Mount Kelud erupted in 2007 and 2014, 15,000 people was evacuated and dozens of people was killed (Drake, 2017).

One of these disasters was the Lapindo mudflow. In the end of May 2006, in the Sidoarjo district on East Java, the Lapindo mudflow erupted. Mudflows are common in the world and comes in various sizes and shapes. There have been mudflows in Azerbaijan that have been the size of a small mountain down to a few meters in range. Mudflows are found at tectonic plate boundaries and at river deltas where sediments are buried. Mudflows usually grow slowly, but the Lapindo mudflow in Indonesia is the fastest growing mudflow in the world. Indonesia have had an history of mudflow volcanos, these had been smaller than the Lapindo mudflow, and occurred in West Timor, Central Java and Flores. The eruption of Lapindo mudflow consists of hot mud, gasses and water at about 100 degrees Celsius. It is named after Lapindo Brantas, a gas company who at the time of eruption was drilling for gasses in the area (Mazzini et al., 2009 & Drake, 2015 & 2017, Davies & Manga, 2017).

The Lapindo eruption triggered a social and environmental crisis where a dozen locals and workers were killed, 12 villages and 40 000 people had to be relocated. It has also led to destruction of biodiversity, roads, watercourses and the economic activity (Drake, 2013).

My study is a research-case about the economic and social consequences that the Lapindo mudflow have had for the surrounding communities, how the household have adapted to this disaster and how the communities have been built up again.

## 1.2. Main objective and research questions

### *1.2.1. Main objective*

The main objective of the study is to understand the social and economic consequences of the Lapindo mudflow for local communities surrounding the mudflow.

### *1.2.2. Research questions*

- What were the social and economic consequences of the mudflow for the local households and communities?
- How has the local households adapted to this disaster?
- To which extent have the communities managed to build up new infrastructure, houses, schools, businesses etc. and come back to a normal life.

## 1.3. Background: The eruption of Lapindo Mudflow

In the end of May 2006, a quite special volcano erupted in the sub district Porong in the Sidoarjo regency on East Java, namely the Lapindo mudflow (Lumpur Lapindo). This is the

biggest mudflow volcano in the world and it is still erupting. The eruption consists of hot mud, gasses and water at about 100 degrees Celsius. It is named after Lapindo Brantas, a gas company who at the time of eruption was drilling for gasses in the area (Mazzini et al., 2009 & Drake, 2015 & 2017). It is exactly this mudflow that is the focus of this study.



Figure 1: The area before the Lapindo Mudflow erupted, August 28, 2004 (Source: NASA, 2008).



Figure 2: The area after the Lapindo Mudflow erupted, November 11, 2008 (Source: NASA, 2008).



*Figure 3: The area after the Lapindo Mudflow erupted, October 20, 2009 (Source: NASA, 2010)*

In 2008, the eruption covered 816 hectares of land consisting of villages and agriculture (Mazzini et al., 2009 & Schiller et al., 2008). Since its beginning, the eruption has released 180 000 cubic meters of mud into the Porong district. In November 2015, the mud was still flowing, although declining. The rate of mudflow was 10 000 cubic meters per day. The mud level is 33 meters high and is covering homes, mosques, schools, industries and farms. There has been built levees that contains the mud in pools that is about 10 kilometres in diameter. Much of the mud is being pumped into the Porong River, which runs into the Java Sea, so that the levees do not overflow (Drake, 2015).

Experts are discussing if the eruption of the Lapindo mudflow is an anthropogenic or a nature-made disaster. Some of the experts believe the eruption was caused by the work of Lapindo Brantas, whereas others believe that the eruption was caused by an earthquake that had its epicentre about 200km west (outside Yogyakarta) of where the eruption took place. It has been known for generations that drilling for oil and gases in the Sidoarjo area is dangerous. Both archives from the Dutch in 1910 and American oil companies in 1950s were aware that the area around was of an unstable geological nature (Drake, 2013 & McMichael, 2009).

The sub districts Porong, Jabon and Tanggulangin in the south section of the Sidoarjo regency have been impacted by the mudflow. There is about 200,000 people who live in these sub



districts and 2,000,000 in all of Sidoarjo. Sidoarjo and especially the sub districts are famous for the shrimp farms and the Porong area was economic vibrant with rice fields, fishponds and factories (Drake, 2017).

Aside from the local economy, also the regional and national economy have been influenced by the mudflow. One reason for this is that the regional infrastructure has been damaged and destroyed, and this has interfered with the travel and transportation of goods from East Java to the rest of the island. For an individual manufacturer, the cost of transportation has increased by 30 percent (Drake, 2017 & McMichael, 2009). *“The local economy is in ruins due to lost jobs, the destruction of businesses and factories, and reductions in agricultural and aquacultural production”* (Drake, 2017, p.3).

Muhtada (2008) used the method that is developed by UN Economic Commission for Latin America (ECLA) and The National Development Planning Board to estimate the total economic loss of the mudflow. In April 2007, the economic losses were Indonesian Ruphia (IDR) 27.4 trillion, 2299 enterprises in Sidoarjo were bankrupted where 80 percent of them was micro-scale enterprises. *“It declined the production of 2745 industries in the neighbouring town by 40%. It also declined infestation in East Java by 15% and endangered 30% if the regional economy”* (Muhtada, 2008, p.186).

### *1.3.1. The Sidoarjo Mudflow Agency*

*Badan Penanggulangan Lumpur Sidoarjo* (Sidoarjo Mudflow Agency, BPLS) was founded by the government in April 2007, as a Disaster Management Agency for the Lapindo mudflow to replace the *Tim Nasional Penanggulangan Semburan Lumpur di Sidoarjo* (National Sidiarjo Mudflow Mitigation Task Force, TIMNAS). TIMNAS was established to stop the mudflow and handling the social problems connected to it. One of TIMNAS problems was that they were better equipped for stopping the mudflow, contain it, dispose of it and steer it away from the villages, rather than handling the social problems connected to it. BPLS is working full time to tackling the mudflow, TIMNAS did not as it only worked part time. The tasks BPLS have are to stop and handle the mudflow, the social problems, rehabilitation and infrastructure (Muhtada, 2008, Padawangi, 2016 & Schiller et al., 2008). Muhtada writes that BPLS have several weaknesses. The first one is that the complexity of the problems do not get handled by the organizational structures. BPLS structure is not sufficient to cope with problems that is complicated. BPLS is divided into three divisions:

*“(1) operational division, which is responsible to tackling the eruption; (2) social division, which is responsible for tackling social impacts and (3) infrastructure division, which is responsible for rehabilitating the affected infrastructure”* (Muhtada, 2008, pp.187-188). The second is that they do not have a clear framework. In the decree to establishing BPLS, the President’s Decree No. 14/2007, states that each division are responsible for having a strategic plan on their duties, but it is explained how they will deal with complicated problems, work across organizational boundaries and reach objectivities. The last one is that the involvement of mudflow victims and third parties as private sector and non-governmental organizations (NGOs) are not assured (Muhtada, 2008).

### *1.3.2. Lapindo Brantas*

Lapindo Brantas is the daughter company of the Bakrie Group that is owned by the Bakrie family, one of the richest families in Indonesia. They also own companies in telecommunication, energy, real estate, media and agriculture. The head of Bakrie is Aburizal Bakrie, who has ties to the national government. Aburizal is also the head of the Golkar political party and in 2014 he ran for presidency. He was also the Coordination Minister of Economy for President Susilo Bambang Yudhoyono (SBY) in 2004, and in 2005 the Welfare Minister until he became the leader of Golkar in 2009 (Drake, 2015 & 2017). The Bakrie Group have a history of almost running itself to financial collapse and then having the Indonesian government step in to save them. During both the Asian financial crisis in the end of 1990 and the global economic crisis in 2008, the government helped them from collapsing (Drake, 2017).

The Bakrie Group have tried to distance themselves from the Lapindo mudflow by trying to sell Lapindo Brantas, they also tried to manipulate the media to change stories about the Lapindo mudflow (Drake, 2017).

### *1.3.3. Categories of the Lapindo mudflow victims*

The Lapindo eruption triggered a social and environmental crisis where a dozen locals and workers were killed. 12 villages and 40 000 people had to be relocated. The damage that the mudflow has had to the environment, has changed the social, economic and cultural aspects for the victims. Thousands of victims of the mudflow were forced to live in refugee camps and in January 2007, 14,768 people were living in Pasar Baru Porong (the market in Porong). In the refugee camps, adultery, social tension and emotional instability was common. The

children in the refugee camps faced educational problems. The government had to open emergency schools that was near the refugee-camps because over 30 schools were closed by the mudflow (Drake, 2013, Farida, 2014 & Muhtada, 2008).



*Figure 4: Mudflow. This was the closest I could get to the main eruption of the Lapindo Mudflow. The small smoke is where the epi-centre is. Source: Author.*

Novenanto have categorized the victims of Lapindo mudflow into three groups: “in-map” (*korban dalam peta*), “out-map” (*korban luar peta*) and “non-victims”. The “in-map” victims are people who had houses and land that are included in the map of the impact area. This group received compensation from Lapindo Brantas and the amount each victim received was calculated based on possession of buildings and land that each individual possessed. To pay out the compensations, Lapindo Brantas had to establish a new company called *Minarak Lapindo Jaya* (MLJ), because they are registered as an American company and foreign companies cannot buy land in Indonesia. MLJ offered the victims new houses in *Kahuripan Nirvana Village* (KNV) when the deadline of payment in cash was due. The “in-map” victims can be divided into two subgroups, “cash and carry” and “cash and resettlement”. In the “cash and carry” group, MLJ was not able to pay the remaining compensation at once and they decided to pay it monthly. This started in December of 2008, and in February 2009 this suddenly changed when the company said they could not pay the amount at all because of the global financial crisis. Since MLJ could not pay the compensation the government also stopped their payments. This was because if some victims received compensation, then others would get jealous (Drake, 2017 & Novenanto, 2015). For the “cash and resettlement” group, they got a new house from MLJ instead of money. This was because many of the victims did not want to through complicated and bureaucratic paperwork with either the government or

MLJ. A problem this group have had is getting the certification for the houses and another problem is that they had to sign an agreement with MLJ saying that they could not sell their house before one year later, preventing them to re-sell to a third party. This was because MLJ rather wanted the victims to sell their houses back to them, so they could buy it for a lower price. The “out-map” victims are the victims who received their compensation from the government. They are called the “out-map victims” because their land and houses is not included in the impact area map. The payment from the government purchased land and buildings for the victims. This is done without questioning the legal status and the payment is steadier than the payment from MLJ. The last group is the “non-victims”. These are people who live around the mudflow and they do not have the legal status as victims of the mudflow. They have no rights for compensation from Lapindo Brantas or the government. These victims are living in an environment that is degraded (Novenanto, 2015).



*Figure 5: Dried mud. Parts of the mudflow is dried up (Source: Author).*

## **Chapter 2: Indonesia**

Indonesia consists of almost 18,000 islands, with only 6,670 islands that are inhabited. Indonesia is located between the Indian and Pacific Ocean. In July 2016, the population of Indonesia was 258,316,051, with a total land and water area of 1,904,569 square km, making it the 16th largest country in the world. Indonesians call their country “*Tanah Air Kita*”, which mean “*Our (Nation of) Land and Water*”, as 80 percent of Indonesia consist of water. Indonesia’s five main island are Java, Sumatra, Sulawesi, Irian Jaya and Kalimantan. The most spoken language is Bahasa Indonesia, but there are also 700 different local languages



being spoken on the different islands. The most spoken local language is Javanese, where 40 percent of the Indonesian population are living. Indonesia also has a diversity of religions, with 87.2 percent being Muslims and the other religions are Christianity, Hinduism, Buddhism and Confucianism (CIA-factbook, 2017, Mirpuri et al., 2012., Vltchek & Chomssky, 2012).

### 2.1. The history of Indonesia

India's culture, religion and philosophy have a big influence in Indonesia (Mirpuri et al., 2012). Hinduism and Buddhism were two important religions in Java and Sumatra that arrived from India. In the eight century there was three big kingdoms in Indonesia. These was the Hindu-Buddhist Mataram and Sailendra Kingdom of central Java and the Buddhist Srivijaya Kingdom in Sumatra. After a turbulent 300 years, a new Hindu kingdom emerged in Java. This empire was called Majapahit and united the whole of Indonesia and parts of the Malaya Peninsula. In the 14th century, the empire of Majapahit was invaded by a new state called Demak and the Hindu-Javanese aristocracy fled to Bali (Mirpuri et al., 2012).

Islam spread to Indonesia through Muslim traders that came to the islands west in Indonesia, but it took several centuries before it was established in the local communities. Historians say it may be two processes that could have occurred, that led to the establishment of Islam in Indonesia. The first one is that indigenous Indonesians converted after they encountered Islam. The second one is that foreign Asian Muslims who came to Indonesia ended up settling permanently, married other Indonesians and that the local lifestyle was adopted so they became Malay or Javanese over time. But the process of Islamisation in Indonesia has continued to present day (Ricklefs, 2008).

In 1512, the Portuguese arrived first on the islands of Maluku, because they were attracted by the spices and a trading post was established. Other European traders were also attracted to come because of the Portuguese profit. The Europeans fought each other for trade routes, lucrative ports and the different rich islands. The English and Dutch was fighting over the control of the spice trade and by the end of the 17th century, the Dutch controlled the spice trade and they also monopolized production of other commodities on other islands. They continued to expand their control and at the end, they controlled all of Indonesia which became known as the Dutch East Indies. The profit that the Dutch East India Company made of trade was big. The European capitalism took advantage of this part of the world and the

people who came under European control were looked upon as a “production tool” (Mirpuri et al., 2012, Vltchek & Chomsky, 2012).

Under Dutch colonial rule, 90 percent of Indonesians did not have a higher education. Today the expected years of schooling is 12.9 years in Indonesia. In 1999, it was 14.9 per cent and in 2012 it was 31.5. per cent who had higher education. 47.3 per cent of the population over 25 years old have some secondary education (Mirpuri et al., 2012, UNDP, 2018 & UNESCAP, 2015). In the 1920s, a small number of colleges were opened and some students were sent to Holland to get a higher education. When these students returned to Indonesia, they started to fight for their freedom and one of the parties that was established was *Partai Nasional Indonesia* (Indonesian National Party) in 1929 and its leader was Sukarno. The party demanded independence from the Dutch, leading to Sukarno being arrested and sent to exile because he got too powerful (Mirpuri et al., 2012).

During the second world war, Japanese forces invaded the Dutch territory and the Dutch capitulated on the 8<sup>th</sup> of March 1942. This invasion happened two months after the 7<sup>th</sup> of December, 1941, attack on Pearl Harbor. Japan did this because of their needs of the Indonesian oil to sustain the war they had with China. The invasion from the Japanese was welcomed by many indigenous people as they viewed them as liberators from the Dutch, but this view ended quickly. The Japanese used millions of indigenous people as forced labourers, resulting in the people starving (Colombijn, 2013).

On August 17<sup>th</sup>, 1945, the nationalist leaders Sukarno and Hatta declared Indonesia as independent and after four years, on the 27<sup>th</sup> of December, 1945, the Dutch recognized Indonesia’s independence. Indonesia got their independence after pressure from the international community. The United States halted the Marshall Plan to the Netherlands and the UN Security Council ordered the Dutch to negotiate an agreement and withdraw their troops in Indonesia. The following years, 169 different parties were fighting to get into power. In 1945, Sukarno became the first post-independence leader in Indonesia and he was president until 1967. He established martial law and “*Guided Democracy*”. In the end of September 1965, there was an attempt of a coup to get President Sukarno away from power. Seven high ranked officers, including six generals, was kidnapped and murdered by a group from the military. Major General Suharto put the coup attempt down and the capital was under his control after a few hours. The official explanation from the government was that the communist party, *Partai Komunis Indonesia* (PKI), was behind the coup attempt. But in reality, it was the US government, religious cadres, right-wing economists and the military who were behind it (Colombijn, 2013, Mirpuri et al., 2012, Vltchek & Chomsky, 2012). After

the coup attempt, the media was shut down and propaganda about the communists was sent out. From 1965 to 1966, between 1 and 3 million people were killed by the state, religious leaders and the military. Suharto put Sukarno in house arrest after the coup attempt. In March of 1968, Suharto was made acting president and he was re-elected six times as president by the People's Consultative Assembly (Majelis Permusyawaratan Rakyat). When Suharto took over after Sukarno, Indonesia was bankrupt and the people was starving. Suharto imposed martial law (when a country or a city is under military control), banned PKI, broke all contact with the Soviet Union and China and instead he got friendlier to Western interests. The civil service in Indonesia was reorganized and the army got closer to the administration of the economic and local government. The economy was growing. Foreign investments were controlled through policies, a growing export of oil, food production increased and the population growth was increasing. Multinational organizations like International Monetary Fund (IMF) and the World Bank (WB) were allowed in the country. The economic "New Order" was starting, and companies and resources in Indonesia became privatized (Mirupi et al., 2012, Cambridge Dictionary, 2017, Vatikiotis, 1998, Vltchek & Chomsky, 2012).

In 1997, the Asian financial crisis hit Indonesia. The country was on the edge of bankruptcy and prices was rising. In the beginning of 1998, Suharto was re-elected and people started to demonstrate and he ended his presidency two months later on May 21'st, 1998, after demonstrations where 1,200 people died. He had then been in power for over three decades. After Suharto's end of presidency, his vice-president Habibie took over. He did not manage to end the violence that had spread to other islands. After East Timor had voted for independence on the 30'th of August, 1999 (2002, Timor became independent), Indonesia had to find a new head of state that could emerge the diverse elements in Indonesia. In October 1999, Wahid was elected as Indonesia's fourth president. He was a respected Muslim and chairman of the biggest Muslim Organization in Indonesia. Sukarnoputri, a nationalist and daughter of former President Sukarno, became Vice President under President Wahid. This was done to please the conservative Muslim population in the province of Aceh. Though, it did not help and the violence continued. Sukarnoputri took over the presidency after Wahid was implicated in two financial scandals and accusations of corruption. In 2004, Susilo Bambang Yudhoyono, also called SBY, was elected president and in 2009 he was re-elected for a second term. Since the 20'th of October, 2014, the fifth and current President is Widodo and the next election will be held in 2019 (CIA-factbook, 2017, Mirupi et al., 2012, Vatikiotis, 1998).

## 2.2. Indonesian economy

Indonesia is one of the largest economies in South Asia. Since the financial crisis in 1990 they have had a strong economic growth. From 2008 to 2010, during the worldwide economic and financial crisis, Indonesia had an economic growth that gave them a strong position in the world economy (CIA-factbook, 2017 & World Bank, 2017). Indonesia exports and produces e.g. coffee, tobacco, tea, natural gases, oil, petroleum and palm oil (CIA-factbook, 2017).

*“Almost all economists agree that the Indonesian economy essentially relies on exploitation of the country’s natural resources by both foreign multinationals and local companies. That is where the economic growth comes from, and that is where investments goes”* (Vltchek & Chomsky, 2012, p.54). In 2015, Indonesia exported goods and products for 149.1 billion USD and in 2010 for 144.4 billion USD. 47 percent of the labour force in 2016 was working in the service sector, 32 percent in agriculture and 21 percent in industries. Indonesia joined China and India, and outperformed their neighbour countries as the only G20 member who was posting growth (CIA-Factbook, 2017, Vltchek & Chomsky, 2012 & World Bank, 2017). Indonesia is also a member of the Association of Southeast Asian Nation (ASEAN), that consists of ten countries. The main purpose of ASEAN is to improve the cultural development, social progress and economic growth in the region; promote stability and peace in the region; promote assistance and collaboration on interests that is common in administrative, technical, scientific, social, cultural and economic fields; provide each other assistance in forms of research facilities and training in the spheres of technical, administrative, professional and education; more efficient cooperation for better exploitation of industries and agriculture, improve the facilities of communication and transportation, expanding their trade and raising the standard of living; promote studies of Southeast Asia; and last, to maintain the existing cooperation with regional and international organisations that have similar purposes and aims (ASEAN, 2018).

By the end of 2015 the ASEAN Economic Community (AEC) was established. AECs goals is a more economic integration for the members countries. This includes that a single market is launched, the flow of investments, services and goods are tariff-free and it has lower restrictions to promote small and medium-size enterprises (SMEs) (OECD, 2016).

President Widodo announced in 2015 that he wanted Indonesia to sign up for the Trans-Pacific Partnership (TPP). This agreement consists of twelve Pacific Rim countries who consists of 800 million consumers and 40 per cent of the GDP in the world. The goal of the

TPP is to rise standards of living; poverty reduction; promote economic growth; create and preserve jobs; and to promote good governance, transparency, protect the environment, improve labour and they are also a strong supporter of SMEs. Indonesia has a free trade agreement (FTA) with seven of the twelve TPP countries. Indonesia may miss out on access to the market for its export and therefore may not be as attractive for foreign investors. This is because Viet Nam and Malaysia, who are Indonesia's regional competitors, also have signed up for the FTA (OECD, 2016).

Indonesia's social development, businesses and economy has been constrained by the lack of infrastructure like water treatment, transportation and logistics. International trade and foreign investments is being hindered by poor infrastructure, domestic trade is also being affected by this. Sea transport is also weakly developed, contributing to large differences in prices in the country. Indonesian Chamber of Commerce and Industry (KADIN), have published data that shows that Indonesian companies use around 17 percent of their expenditures on logistics, compared with 10 percent in other economies in the region (OECD, 2016).

Social outcomes like education and health have never been better in Indonesia than it is today. For fifteen-year olds, the academic performance is in line with the development of Indonesia. For adults aged 25 to 60, less than a third have secondary education, and the skills of workers are weak (OECD, 2016). Indonesia is still struggling with unemployment and poverty. In 2015 and 2016 the unemployment rate was 6.2 and 5.6 percent. In 2016, 10.9 percent of the population lived below the poverty line and around 40 percent are vulnerable to fall into poverty. Indonesia have managed to cut the poverty rate more than half since 1999, and more Indonesians are able to enjoy higher standards of living. But in Indonesia only a small portion of the population is recognized as poor. This is because Jakarta has its own definition of poverty (CIA-factbook, 2017, Vltchek & Chomsky, 2012, World Bank, 2017).

### 2.3. Natural disasters in Indonesia

*“Between December 2004 and December 2006 alone, Indonesia lost around 300,000 people in various calamities. This is more than Iraq lost in the same period of time, more than Sri Lanka or Peru lost during their long civil war”* (Vltchek & Chomsky, 2012, p.155).

Indonesia is located on the Pacific, Eurasian and Australian tectonic plates that is known as the “ring of fire”. This makes the country one of the most vulnerable countries to natural

hazards. The country is prone to earthquakes and volcanic eruptions. It is also prone to slope failure, landslide and debris flows because of the topography of steep hills (Djalante et al., 2012, Siagian et al., 2012 & UNISDR, 2010). There have been more than 400 natural disasters since 1990, more than 24.4 million people have been affected and more than 263,000 people have died. The costs of all these disasters has been estimated to around 29 billion USD. These natural disasters have both been geo-physical-related and hydro-meteorological. The economic and social circumstances in Indonesia have contributed to people's vulnerability. In the Human Development Index, Indonesia was ranked as number 113 out of 188 countries in 2014. The population that live on less than \$1.25 per day is 1.3% (CIA-factbook, 2017, UNDP, 2018, Djalantet et al, 2012).

Since 1947, when the country became independent, the disaster risk reduction (DRR) has improved (Djalante et al., 2012).

Indonesia has in the past years experienced major natural hazards. Among these are the Indian Ocean tsunami in 2004 that hit Aceh and Nias, the 2006 earthquake that caused a tsunami that hit the southern parts of Java, the 2009 earthquake in Padang and the 2010 volcanic eruption of Mount Merapi (Siagian et al., 2014).

### **Chapter 3: Literature review and theoretical framework**

In this chapter I will review existing literature that is relevant for natural hazards, and the social and economic consequences that disasters may have on a community and people.

#### 3.1. Natural hazards

EM-Dat (The International Disasters Database) recorded from 1994 to 2013, 6,873 natural disasters in the world. These natural disasters claimed 1.35 million lives and affected 218 million people. The total economic loss was US\$ 2,600 billion. Most of these disasters happened in emerging economies and in communities that are vulnerable and not able to cope with the economic and social devastations that these disasters bring (CRED, 2015 & Kreimer, 2001).

Asia is the most disaster-prone and populated area in the world, home to 53 percent of the global population. 26 percent of the land area in the world is in the Asian and Pacific regions and 50 percent of the biggest natural disasters happens in these areas. From 1994 to 2013, environmental disasters in Asia affected around 3.6 billion people and around 841,000 deaths.

Many of the countries in these areas are disaster-prone. Disasters in these regions challenges the development in the different countries (CRED, 2015, Kreimer, 2001, Miller & Douglass, 2016).

More and more people in the world are exposed to hazards because of population growth. (Smith, 2013). Hazards can be defined as a *“potential damaging physical event, phenomenon or human activity which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation”* (Usman et al., 2013, pp.261-262). *“Natural hazard only become a natural disaster when human lives are lost and livelihoods damaged or destroyed”* (CRED, 2015, p.12).

In the last 50 years there have been an increase in evidence that some natural disasters are a direct consequence of human behaviours/activities (CRED, 2004).

An event can be classified as a hazard when it threatens human life, property infrastructures or the environment. Hazards can be divided into three categories. These are natural hazards, technological hazards and environmental degradation. The first one, is triggered by climate and geographical variability. The second is, loss of life or injuries, damage to property, social and economic disruption or environmental degradation, that may all be caused by both technological or industrial accidents, dangerous procedures, failures in infrastructure and certain human activities (Usman et al., 2013,). The last one, environmental degradation, are processes that is caused by human behaviour and activities. These human behaviours and activities is damaging the natural processes and ecosystems (Usman et al., 2013).

Scholars of disasters have classified impacts of disasters into two categories: direct and indirect impacts. Direct impacts are the direct losses from disasters and indirect are the consequences after the disaster. Direct impacts of a disaster are e.g. damages to homes, firm's capital, infrastructure, mortality, injury, environmental degradation and emergency respond. The indirect impacts are e.g. business interruption, mortality, injury and environmental degradation (Kousky, 2014 & Kreimer, 2001). It is still being discussed if the eruption from the Lapindo mudflow was a natural disaster or a human made disaster. The focus of this study is the victims of the Lapindo mudflow and not the question of who is to blame for this disaster.

Events of hazards can have different effects on poverty and people. It depends on each society and country it occurs in. What makes a natural hazard a disaster is connected to why some people are more vulnerable compared to others, why some technology and topics that is

regarded as research is introduced in some parts of the world but not others. The political and economic system needs to be analysed, as well as how the society is structured. This because a similar hazard in one society can create a disaster in another but can be a small interruption in a different society (Cannon, 1994).

### 3.2. Social consequences of hazards

People in less developed countries, experience insecurity in their life's and livelihoods. This is because of poverty, weak governance and that they are more vulnerable to natural hazards. Poverty makes people most likely to suffer from malnourishment, they live in low quality houses, do not have the economy to buy emergency supplies and have a harder time to recover compared to wealthier people (Saigian et al., 2014 & Smith, 2013).

EM-Data defines disaster and the number of people who is affected by it as people who need immediate assistance like e.g. food, water, sanitation, shelter and medical assistance under a period of emergency (CRED, 2004).

#### *3.2.1. Vulnerability of natural hazard*

UN/ISDR defines vulnerability as: *"The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards"* (UNSIDR, 2005, p.1).

Bankoff writes that people who are vulnerable are so because of social systems, since the state measures risk differently from citizens and society and have different demands for the physical environment. A factor to increase disaster vulnerability is poverty. This because most disasters happen in poor countries and the people who usually suffer the most are the ones that are poor (World Bank's WDR, 2000/2001 & Bankoff, 2001).

A hazard becomes a disaster when people in a society are suffering from the damages from a hazard. Vulnerability depends on numerous factors, both geographical, socio-economical and political. Geographically, since the victims are often living in marginal and hazard-prone areas. Socio-economical, since the victims are often poor. Political, since the victims are often marginal to power, and their voices are often disregarded. In many societies, poorer people do not participate because they are politically marginalized, so their interests are being minimized or overlooked. In some cases, powerful contractors have bribed the government to e.g. overlook building code violations, and the people who is poor do not have enough power



to protest and they do not have so many choices to decide where to live because the house can be the only thing they can afford (World Bank's WDR, 2000/2001 & Gaillard, 2007).

Indonesia is located in the "*ring of fire*" and is therefore very prone to natural disasters. Both definitions of vulnerability say that a factor of when one is more receptive of being vulnerable from natural hazards is when one is poor, and it is the ones that are poor who is suffering instead of the richer.

### 3.2.2. *Social vulnerability*

Social vulnerability includes characteristics like self-protection, well-being, social protection, livelihood and resilience, institutions, and social and political networks. One of the major social vulnerabilities in a country is the number of people that is killed in a disaster (UNISDR, 2010). Scholars define social vulnerability differently. Agder (1999) define it "*as the exposure of groups or individuals to unexpected changes and disruption to livelihoods. Social vulnerability can be considered as a result of social inequality and place inequality*" (in Siagian et al., 2014, p.1605). While Cutter and Emrich (2006) define it as "*the limitation of a community to the impact of natural disaster that influence its ability or resilience in the effort to recover from the impact. Social vulnerability is a pre-existing condition of existing communities, irrespective of type of hazard*" (in Siagian et al., 2014, p.1605).

### 3.2.3. *Displacement and resettlements*

People who are displaced and must resettle after disasters can end up poorer than they were before the disaster. They do not only lose their man-made and natural capital. Man-made capital is machinery, factories, infrastructure and technology. Natural capital is defined as any environment and natural resources like e.g. ecosystems and atmosphere that provides a flow of services and goods in the future and now. Both these types of capital contribute to human welfare. They also lose their social and human capital (Cerna, 2003, De Groot et al., 2003 & Pearce, 1988). Social capital is defined as networks who shares the same understandings, values and norms that are facilitating cooperation among or within groups. This capital is a product of norms of behaviour and culture that are inherited. This type of capital allows communities, groups and individuals to resolve collective problems more easily (OECD, 2001) Human capital is defined as "*the knowledge, skills, competence and attributes in individuals that facilitates the creations of personal, social and economic well-being*" (OECD, 2001, p. 18). Human capital is developed through: learning that is done through early

childhood and family; through e.g. formal education, early childhood, tertiary education, labour market or adult education; through work, informed learning and participation through different professional networks; through informal learning in participation in the civil and daily life. The loss of income is not only the income in cash, but income that also is psychologically in nature, like identity, cultural benefits and status (Cernea, 2003, OECD, 2001). Factories was drowned by the Lapindo mudflow and moved to other parts of Java. Also, infrastructure was destroyed (man-made capital). Many people who live in rural areas have farming as their livelihood or simply farm to obtain food for their family (natural capital). The people in the villages affected by the mudflow have had their social capital affected, this being their own culture.

It can be a long process for a household to recover after a disaster. Quarantelli (1989) writes that people go through four stages of housing recovery after a disaster for some population segments. The transition from one stage to another can take some time. The first stage is emergency shelters. Here the shelters are unplanned and are built in spontaneous locations to protect people from the elements. The second is temporary shelters. These are shelters with food preparation- and sleeping facilities. The third is temporary housing. Here the victims of a disaster are allowed to re-establish households in locations that are not preferred. The last step is permanent housing. Here the households will be re-established in locations that is preferred (in Lindell & Prater, 2003).

Cernea (1997) developed a model for impoverishment in displacement. There are eight general sub-processes (Cernea, 1997 & 2003). The first one is landlessness; displaced people lose both natural and man-made capital. Their productive systems, commercial activities and livelihoods are built upon a basis that is removed with expropriation of land. This is the principle form of decapitalization and pauperization of displaced people. The second is joblessness; loss of employment and wage occurs both in rural and urban displacement. The people who lose their work includes enterprise or service workers, craftsmen, landless labourers and small business owners. It is difficult to create new jobs because it needs investments. Underemployment and unemployment can last for a while for resettlers, and it can have psychological and economics affects. The third is homelessness; for many people, the loss of housing and shelter will only be temporary but for some people this is a “chronic” condition. The loss of a family home is linked to a groups culture that can result in deprivation and alienation. This is also called place attachment. The fourth is marginalization;

this happens when a family lose their economic power and their social status is dropped. At the new location, many people cannot use their skills and their human capital is lost. The fifth is increased morbidity and mortality; displacement can cause a decline in people's health e.g. cause insecurity, stress, outbreak of illnesses and psychological trauma. The sixth is food insecurity; sudden drop of availability of food crop and income is one of the effects on relocation. A long-term effect is hunger and undernourishment. The seventh is loss of access to common property; for poor people, and particularly for the landless and assetless, a significant deterioration in income and livelihood is a result of their loss of access to common (non-individual) property assets, e.g. forested land, water bodies, grazing lands, burial grounds, etc, that belong to relocated communities. The loss of common assets of property are usually not compensated by the government, also the loss of public services often occurs. The last is social disarticulation; when displacement is forced the communities are spread (Cernea, 1997).

For people places can have a symbolic meaning, experience and narrative. Places is also a social relation, social practice, materiality, cultural value and economic activity for people (Aure et.al, S.A). Agnew (1987) identified three conceptions of place. First is location, this is a physical area on the map. The second is sense of place, that is about people's feeling about a place and the role that the place have for people's group identity and individual identity. It is about the attachment people have to a place they e.g. grew up. Place attachment gives a fundamental feeling of security and safety. This is an important part of the foundation of self-identity. The last one is locale, this is the setting for people's social interactions and social practice. Social practice is the daily routines e.g. home, school and work (in Berge & Dale, S.A).

Some of the stages from both Quarantelli and Cerna are more important than others in this study. Quarantelli goes deeper than Cerna on how a household recovers from a disaster. But Cerna addresses an important topic about place attachment, where Agnew's three conception of places goes more in detail on how places are important for people, how people identify themselves with places and the social interaction. Places have different meanings for people and it can make them feel safe. Often people identify themselves by places. Often the place you are from (e.g. home town) make you feel safe and when a victim is displaced by a disaster, the victims can feel unsafe.

### 3.3. Economic consequences

Estimating the economic costs caused by a natural hazard can be difficult. Between 2000 and 2012 the estimated cost of natural disaster in the world was between USD 94 billion and USD 130 billion. Hazards can have negative long-term economic consequences on a community and some people can experience more devastating losses than others. One way to estimate economic costs is to estimate property damage, loss of employment, and the repair and reconstruction costs (Alexander, 1997 & Kousky, 2014). Victims after the Lapindo mudflow disaster lost their houses, jobs and had to build new houses.

The costs of disasters can be categorised into three groups. The first one is direct costs, that is loss of inventories and capital stock. The second is indirect costs, here the loss is employment, income and services that is a result of damaged productive capacity, and the last one is secondary costs. The economic growth and development is decreasing because of e.g. price change, inflation or increased debt (World Bank's WDR, 2000/2001). Here the two first of the three groups is important. Direct costs are that the victims lost their houses and inventories, and indirect costs are that the victims lost their jobs and their incomes.

The damage to property can cause a direct loss in asset value. To measure this, you can look at the cost of repairs and replacement. The economic impacts after a disaster depends on the damage of assets. When these assets are not replaceable, it can cause loss on consumption and investment. Financial recovery can e.g. come from loans, insurance payoffs, selling assets or migration to an area where there is employment or housing (Lindell & Prater, 2003).

Skoufias writes that an economic crisis from e.g. natural disaster can affect the welfare of a household through a variety of different channels. (1) it can have a slowdown in economic activity like decrease in employment, labour service, income for people who already have jobs and an increase in unemployment. (2) Prices change for staple food like wheat and rice and this can lead to reduction on real income for poor landless households in rural and urban areas. They use a larger share of their budget to buy food. (3) public transfer is being cut, and (4) "changes in the value of and returns to assets" (Skoufias, 2003, p.1089). These perspectives tell about the economic costs the households have after a natural disaster. This can be anything from food prices increasing and victims having to use more of their money to buy food, loose their income through investment loss and loss in employment.

### 3.3.1. Compensation

People who are poor often live on land that is marginal and exposed to e.g. drought and flooding. Often, they cannot afford insurance and they have few or no savings, so they cannot protect themselves financially. Victims after a natural hazard often go to the government to receive a form of compensation. It is more likely that a victim receives financial compensation from the government if there are many victims that are affected (World Bank's WDR, 2000/2001, Faure, 2007). Insurance on e.g. houses and assets can be expensive for people who are poor, and therefore it is more likely that they will be compensated by the government.

The most common forms of under-compensation and costs of vulnerability are:

*“Undercounting of condemned assets for which compensation is due, but thus not paid; market-defying subjectivity in the valuation of assets, and consequent partial or non-replacement of lost assets; difficulty in measuring non-physical losses and failure to account for non-market income and costs; under-compensation resulting from the late disbursement of compensation to those who are left assetless for an unacceptable time period; subtraction by corrupt officials of part of the compensation money before it reaches those rightfully entitled; under-compensation because of lost consumer surplus from existing assets; assets appreciation occurring after the determination of compensation, which diminished the purchasing power of compensation recipient; and misdirection of compensation money by recipients unaccustomed to handling cash, who tend as a result to be quickly left both assetless and cashless”* (Cernea, 2003, pp.40-41).

### 3.4. Disaster risk

To build a more resilient and sustainable world the disaster risk must be reduced. To reduce disaster risk is two sided. The first one is to reduce community vulnerability to hazards through development gains. The second is that investments in disaster risk reduction can lead to a reduction in fatalities that is related to disaster. To get disaster risk governance that is successful it is important to have institutions that are accountable, a judicial system that functions, local governance that have good resources, and low levels of social inequality and poverty (UNISDR, 2016-2019 & 2016-2021).

Sendai Framework for Disaster Risk Reduction have four priorities that states the global, national, regional and local levels that need to be focused on. These are: (1) *Understanding disaster risk*. Disaster risk management policies and practices should be based on the

understandings of all dimensions of disaster risk. These dimensions are the environment, hazard characteristics, persons and assets exposure, vulnerability and capacity. The knowledge of these can have an advantage on the preparedness and the effectivity of response on a disaster, mitigation and prevention, and for the assessment for pre-disaster risk. (2) *Strengthening disaster risk governance to manage disaster*. Global, national and regional level of disaster risk governance is important to have an efficient and effective disaster risk management. Across and within sectors it is important to have coordination, guidance, plans and competence. (3) *Investing in disaster risk reduction for resilience*. Private and public investments in reduction and prevention for disaster risk is important to improve health, economic, social and cultural resilience for the environment, countries, communities and people. (4) *Enhancing disaster preparedness for effective response and to “Build Back Better” recovery, rehabilitation and reconstruction*. The growth in disaster risk, assets and people exposure and the lessons that is learned from previous disasters indicates the need to strengthen the response, preparedness and recovery. The phase after a disaster (rehabilitation, reconstruction and recovery) is an opportunity to “Build Back Better” (UNISDR, 2015).

#### *3.4.1. Disaster risk in Indonesia*

After the tsunami in Aceh Province in 2004 and the earthquake in Java in 2006 the disaster management in Indonesia was changed. Before these disasters Indonesia’s disaster management was focusing on emergency response and recovery: Today, they are focusing more on risk reduction and disaster prevention. In 2007, Indonesia got their first disaster management law and established *Badan Nasional Penanggulangan Bencana* (National Disaster Management Agency, (BNBP), that is a non-governmental institution but whose status is equal to the national ministries. Some of the tasks BNBP have is to provide guidelines and directions on disaster management, prepare guidelines for the Regional Disaster Management Agency (BPBD), give information to communities and to control that disaster management standardization and requirements is followed by Legislation. In the Law 24/2007 the regions must have a BPBD that are coordinated with BNBP. BPBD consists of members from the district and city level and are structured like the national level with the same function and tasks. By 2010, only 22 of 497 districts had BPBD (CFE-DMHA, 2015 & Siagian et al., 2014).

## **Chapter 4: Methodology**

In this chapter I will present the strategies, methods and techniques that I used when I collected and analysed the data from my fieldwork.

Social research is about humans and their opinions and perceptions about themselves, about others and natural events e.g. disasters. Social research methods is about how a researcher should go forward regarding gathering information about the social reality, how this information will be analysed, and how it tells us about social issues and processes (Johannessen et al., 2010).

### 4.1. Quantitative and qualitative research

In social research methods, there are two main approaches to collecting data. These are quantitative method and qualitative method. Quantitative research is a strategy that emphasizes quantification when collecting data and analysis of data. Quantitative research relates with data in the form of categorized phenomenon and emphasizes on counting and prevalence of the phenomenon.

Qualitative research is a strategy that is emphasizing words when collecting and analysing data. The data relates on texts, sounds, photos and emphasizes on the interpretation of the data. The research data that are used can come from various sources, some of the data exists because the researcher collects them through a specific research. These data's can be the e.g. researcher's notes from observations or interviews, output from interviews or sound and video recordings, books, diaries, documents or photos. There are two different methods to collect data. The first one, is observation where data is collected through observation, builds on the researcher's sensation of actions and interactions in concrete situations. In interviews, the data builds on what the informants tells during conversations with the researcher. The second one, are interviews and conversations between the researcher and informant that can be a part of the observation (Bryman, 2016 & Johannessen et al., 2010). In this type of research, the purpose is to come closer on people who are in the target group that the researcher wants to learn more about (Johannessen et al., 2010).

I used qualitative method because I thought it was the best way for the informants to express their thoughts on how they had adapted to the Lapindo mudflow, more so than using a survey that are used in quantitative research. To interview the victims can make it easier for them to

express their thoughts and opinions. Using a survey, the victims cannot express themselves the way that they would do when interviewing them. Interviewing the victims would make it easier for me to use follow up question if there was something I wanted them to explain more in detail.

#### 4.2. Case study design

A case study is an intensive and detailed analysis of one single case and is commonly associated with location. This can be an organization or a community. Case studies are recognised by the researcher gathering information from a few units or cases over a shorter or a longer period of time through detailed and comprehensive data collection. A case study research is according to Stake, concerned with its complexity and particular nature (Bryman, 2016 & Johannessen et al., 2010). Robert K. Yin defines a case study as an empirical research that study a relevant phenomenon in its real context because the limits between the phenomenon and context is not clear (Johannessen et al., 2010). In this study I wanted to learn more about the victims from the Lapindo mudflow, and how they had been affected both socially and economically.

There can be different purposes for a case study. One of them can be to develop a holistic understanding when a unit is being studied. These units are considered as unique and scientifically interesting, without it necessarily being considered as a part of a larger universe. Another purpose is to develop concepts, hypotheses and theories (Grønmo, 2010).

The case in a case study is an object of interest and the researcher is aiming for an in-depth clarification of it. Idiographic approach is when the researcher is concerned about clarifying the features in the case that are unique in a case study (Bryman, 2016).

Theoretical generalization is especially usual in connection with comparative case studies that are based on systematic comparison of two or several units within a larger analysis program. The question of issue expresses who the researcher wants to know something about, this is called units. The units are often persons, either individuals or a group of people, it can also be objects like articles in newspapers or journals from hospitals. Units can also be referred to as observations. The selection of units is based on strategic consideration of which comparisons that are interesting and prolific for the studies in regard to a conceptual and theoretical question (Grønmo, 2010 & Johannessen et al., 2010).



### 4.3. Data collection methods

Collection of data is the key in a research project and can have different sorts of approaches depending on how structured and open the use of methods are (Bryman, 2016).

#### *4.3.1. Semi-structured interviews*

Interviews are used to establish a relatively free conversation around some specific topics that the researcher had decided on in advance. By creating a calm atmosphere and a spatial timeframe, the purpose is to get the informant to reflect over own experiences and opinions related to the research topic. Open questions give the informant the opportunity to go in depth if he/she have a lot to tell (Tjora, 2011). Tjora writes that it is easier to use a survey if the researcher has a lot of knowledge about the phenomenon being studied. But in situations where the researcher does not have a lot of knowledge about a phenomenon, it is suitable to do interviews (Tjora, 2011).

Semi-structure interviews refer to a series of question that the researcher has in an interview guide. The questions can be asked in a different order than it is written in the interview guide and the researcher can ask follow-up questions if there are something the researcher wants to have more information about from the informant (Bryman, 2016).

Interviews is the most used method in qualitative research. It is a method that can be used almost everywhere and makes it possible to get rich and detailed descriptions. Most informants will feel more comfortable during an interview if it is not sensitive and gnarly (Johannessen et al., 2010).

In this study I will use a semi-structured interview. Here I will use an interview guide with a list of questions that I wanted to be covered. With a semi-structured interview, the questions in the interview guide do not have to be followed punctually meaning that the questions, themes and the order can vary so that new or follow-up questions can be asked during the interviews (Bryman, 2016 & Johannessen et al., 2010).

Since I did not have a lot of knowledge about the victims in the Lapindo mudflow case, I decided to use a semi-structured interview to learn more about the struggles that the victim is facing.

Thirty-one (31) respondents volunteered to be interviewed from an interview guide that consisted of both open and closed questions that I had made in advance. There was ten (10)

and eleven (11) respondents from each group. These groups were: in-map victims (10), out-map victims (11) and non-victims (10).

The in-map victims are the victims that got their compensation from Lapindo Brantas, the out-map is the victims that got their compensation from the government and the non-victims do not get any compensation from Lapindo Brantas or the government but are living in a deteriorating environment (Novenanto, 2015).

To make the victims comfortable, me and my interpreter interviewed the victims at the house of one of my contact persons who also was a victim of the Lapindo mudflow. The house of my contact person was a place where victims often gathered. We had a quiet room that we used and the victims that we interviewed could take their time to answer my questions. If it was something me or my interpreter was wondering about that the victim told us, we asked follow-up questions to get a more detailed answer.

#### *4.3.2. Sampling techniques*

Purposive sampling is when the researcher samples informants who are relevant for the research questions and that the informant can express themselves in a reflective way about the topic in question. The researcher samples informants with the goals of the research in mind (Bryman, 2016 & Tjora, 2011).

In qualitative research, the purpose is to gain the most knowledge possible of the phenomenon and not make static generalizations. Purposive sampling means the researcher samples informants who are relevant for the research questions, to be able to collect enough data. It is difficult to decide in advance how many interviews will be enough. The researcher can end the interviews when he/she has a saturation point. In theory there are no upper or lower limit for the number of interviews. The informants are recruited by the researcher (Bryman, 2016, Johannessen et al., 2010).

In snowball sampling the researcher recruits a small group of informants who are relevant for the research topic. The sampled informants then propose other informants that are relevant for the research (Bryman, 2016).

First, I used purposive sampling where I came in contact with two victims, one from the in-map group and one from the out-map group through the self-supporting newsroom non-profit, Korban Lumpur, that I had contacted some weeks beforehand. The two victims who became my contact persons, introduced me to other victims that I could interview. The other victims then suggested other victims from the three groups of victims (snowball sampling).

### *4.3.3. Document analysis*

Document studies, documents that are produced for other purposes than research are being used. Document studies is being perceived as unobtrusive methods where the researcher generate empirical data without research participants being involved. By analysing different existing documents, the researcher can obtain information about subjects that is written down at certain times and places with different purposes (Tjora, 2011).

Documents are often being used as additional data in addition to e.g. interviews and observations. These documents can be case specific (e.g. annual statements from companies or information from webpages about a municipality that are being studied) or they can be more general (e.g. political documents, the documents can be from medias like newspaper articles or webpages, or they can be research documents like articles, reports or books) (Bryman, 2016 & Tjora, 2011).

In most research project there will exist relevant documents that can be used to provide relevant information beyond that of own data generation (Tjora, 2011).

I used the doctor thesis of Novenanto, 2015, *Discoursing Disaster: Power and Actor of the Lapindo case in Indonesia*, a book that Drake wrote, 2017, *Indonesia and the Politics of Disaster: Power and representation in Indonesia's mud volcano* and some news articles to obtain information about the mudflow victims that I used in the chapter: empirical findings.

## 4.4. Data analysis

Usually, the data material in qualitative studies are both comprehensive, complex and disorganized. To discover general and typical patterns it is necessary to simplify and summarize the content in the texts to make it easier to get an overview over the central and tendencies in the material (Grønmo, 2010).

### *4.4.1. Coding, category and concepts*

Coding of the material is an important procedure to create an overview through simplification and summary of the content of the texts. This involves finding one or a few keywords that can describe or characterize a larger section of the text. The keywords are called codes. The meaning with codes is an abbreviation or symbols that can be used on a segment of words, e.g. sentences or paragraphs, to classify the words. A code for a specific paragraph can e.g.

specify a theme that the paragraph is about or that is mentioned in the paragraph. This can be an actor, an event or a relation (Grønmo, 2010).

The first step in coding is called open coding. Here the codes appear as the first characterization and classification of the important content elements of the data material. That the codes are open, implies that it is the empirical data that determines which codes the researcher choose. The questions in issue will simultaneously be a guideline for the researcher's first assessment of how the content in the data material will be initiated and characterized. By the first coding, however, are openness in relation to empiricism more important than the completion of the question in issue. After open coding, categories and concepts will build on the text itself and the codes that are developed during the open coding. A category is a collection or a group of phenomena with specific common characteristics. It is the definition of the common characteristics that decides which phenomena that belongs to the particular category and which phenomena that is not included in this category. Concepts are the term of a particular type of phenomena. Concepts can be a term on those phenomena that is included in the category, this can be the name of the category (Grønmo, 2010).

To analyse the data from my interviews that I had transcribed, I used coding. After I coded them, I categorized them after the research questions and gave the categories names. I considered the text I would use as document analysis and the theoretical framework so it would give a meaningful analysis.

#### 4.5. Research ethics

Research ethics is about a set of norms that should secure that the scientific activities are morally justifiable (Grønmo, 2010). *"Discussion about the ethics of social research bring us into a realm in which the role of values in the research process becomes a topic of concern. They revolve around such issues as: How should we treat the people on whom we conduct research? Are there activities in which we should or should not engage in our relations with them?"* (Bryman, 2012, p.130).

Professional associations have a role in ethical questions in social research. Many of the values of research ethics are written down in formal regulations and partly in the public regulation. One of the important regulations is about personal information, researchers who are going to use people in their research must send an application to the Norwegian Centre for Research Data (NSD). NSD will consider if the interest of privacy is being satisfyingly taken care of in the planned research project (Bryman, 2012 & Grønmo, 2010).

The informants asked to participate and the ones who are participating, has the right to decide to first, if they want to participate, and second, the level of participation. It is important that informants are well informed about the interview process and are aware that participation is fully voluntarily. The informant can resign from the process whenever he or she wants. It is important that the informant decides what information he or she wants to share. This because some of the information can be sensitive and therefore anonymization is important, to prevent participants from being identified (Johannessen et al., 2010).

The informants were informed what the purpose of the research was and the information they gave me was going to be anonymized. The informant was informed that I wanted to record our conversation and if they did not want this they could say no. All the informant approved that the conversation was recorded. The informants were informed that they could end the interview when they wanted to and that the recording would be deleted when the transcription of the interviews was done.

#### 4.6. Challenges in the field

When I arrived in Yogyakarta, Indonesia, in the beginning of January 2017, I met with my local supervisor, professor Sudibjakto at the Faculty of Geography, Graduate School and Research Centre for Disaster at Gadjah Mada University, to discuss how to do my research. He had a lot of knowledge about the cause of the mudflow. After I met with him I used a couple of weeks to find an organisation that could introduce me to victims of the mudflow. I came in contact with the Managing editor/researcher, Anton Novenant who worked for the self-supporting newsroom non-profit called Korban Lumpur. The newsrooms aim is to:

- “1. Disseminate information about the Lapindo mudflow case.*
- 2. Voicing restoration of the rights of the victims of Lapindo.*
- 3. Expand and strengthen the network of solidarity organization/individuals for the recovery of the rights of victims of Lapindo”* (Korban Lumpur, 2017).

I had a meeting with Novenanto in Malang and he gave some tips on how I could conduct my research. He talked about the mudflow victims and that he had divided them into three groups (in-map victims, out-map victims and non-victims), and it would be easier for me to interview people from each group. He also had two contact persons from two different mudflow communities he could talk to and after about a week I received an e-mail from him saying that they could help me to find people that I could interview.

My next challenge was to find a local interpreter that was from region where the mudflow is located and who also spoke Javanese. I used some time to find an interpreter, and I had to go through friends of friends. At one point, it looked “dark” and I had to make a backup plan if I in a worst-case scenario did not find a local interpreter. My backup plan was that I had to do my interviews every weekend with a friend from Yogyakarta or another friend who was only available for the weekends. The problem if I were to use my last friend, is that she is not from Java and do not speak Javanese. Many of the elderly people in Indonesia do not speak Bahasa Indonesia that well and it is easier for them to express themselves in the local language (Javanese).

When I started my research, it was easy to find people for the two first groups (in-map victims and out-map victims) but it took a few days for my local contact persons to find people from the non-victim group that wanted to be interviewed. When I almost was finished with my field work, one of my local contact persons told me and my interpreter that the people I interviewed expected money for the interviews I did with them. This was because the informants thought I was getting payed by the Norwegian government, even though we explained that I was doing this for my master thesis and that I funded everything myself. My informants expected around IDR 50,000 <sup>1</sup>each. International Labour Organization (ILO) writes that a regular employees average wage in August 2014 was IDR 1,952, 589 <sup>2</sup>and the median wage was IDR 1,425,000 <sup>3</sup>(ILO, 2015). This shows that IDR 50,000 <sup>4</sup>per interview that lasted from 15 min to 1 hour is quite expensive, many of the women I interviewed were homemakers.

What I experienced during the different interviews was that it was harder to get in-depth answers from some of the informants, especially from the female informants.

One of my local contact persons explained to me that it was still important that researchers came to do research about the mudflow, because then the disaster would not be forgotten. It was also important that the research was written in English so that people around the world could learn about the mudflow and that is was easy to translate it into Bahasa Indonesian, so that the locals could get the conclusion that the researcher had come to and learn from this.

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<sup>1</sup> USD 3.59

<sup>2</sup> USD 140.26

<sup>3</sup> USD 102.36

<sup>4</sup> USD 3.59

## **Chapter 5: Empirical findings**

In this chapter, I will present the findings from the fieldwork. The findings in this chapter are based on thirty-one respondents. First, I will present the respondents' age, education, occupation from the three different groups of victims; the in-map victims, the out-map victims and non-victims, and tell about their experiences from the mudflow. At the end, I will present what the victims from all three groups think the government and Lapindo Brantas could had done better and differently.

The victims of the mudflow have identified themselves as disaster victims and that they are unique compared to other disaster victims. The victims of the mudflow feel that they have suffered more than the victims after the tsunami in Aceh in 2006 and the earthquake in Yogyakarta in 2006, even though no one died from the mudflow. The suffering of the mudflow victims has increased because they are facing uncertainty and their safety is decreasing. They are witnesses to their ancestors' land being destroyed, and this makes them suffer from psycho-social effects (Drake, 2017).

The government drew a map that determined which regions would be included and not included in the disaster zone of the mudflow. I have categorized the victims into the same three groups as Novenanto 2015. These are: in-map victims (korban dalam peta), out-map victims (korban luar peta) and non-victims. The in-map victims are the victims that received their compensation from Lapindo Brantas, the out-map victims are the victims that received their compensation from the government, and the non-victims are not included in the map but I included them because they live in degraded environments and live close to the disaster zone. Novenanto writes that maps can be used a tool of victimization. This because when a region is included in a disaster zone then the citizens will be attributed with new identities and will be bounded to specific regulations and rules that will concern the compensation that the citizens would receive as "disaster victims". Drawing a map over which regions that would be included and not included in the disaster zone can be problematic as an instrument of victimization. These two variables of who to distribute compensation to are homelessness and landlessness (Novenanto, 2015).

### 5.1. About the informants

Thirty-one respondents participated in the interviews. In each of the groups of in-map victims and non-victims there was ten respondents. In the group of out-map victims there was eleven

respondents. I used snowball sampling, where two of my contact persons who was from the group of in-map victims and out-map victims talked to people that they knew and could be my informants. These informants then suggested other people who could be my informants.

The variation in age among the respondents are from seventeen to fifty-three years of age, and the number of household members varies from one to eight people. The most common was four or five members in the household. Most of the respondents had education from junior and senior high school, but four of respondents only had education only from elementary school, whereas three had university degrees. The most common occupation of the respondents was housewife and ojek drivers (motorbike drivers).

#### *5.1.1. Age of victims from the Lapindo Mudflow*

In my study, the majority of victims from all three groups was from the age of 23 to the age of 53. Most of these victims was married, had children, and had lost the houses they owned. The age group who had the least victims that participated in the study was from the age 17 to 22. These findings can be seen in Table 1.

Table 1: Age of victims from the Lapindo Mudflow

Age	Frequency	Percentage
17-22	2	6.1
23-28	6	19.4
29-34	5	16.1
35-40	4	12.9
41-45	4	12.9
46-53	10	32.3
Total	31	100.0

#### *5.1.2. Gender of Lapindo Mudflow victims*

Of the participants in the study, 51.6 percent that was male victims and 48.4 per cent was female victims (table 2). The almost equal participation from each group of gender may be because the different interviews was conducted on various times of the day. Some was made mid-day when most of the women was home and some at the evening when the males were home from work.



Table 2. Gender of the Lapindo Mudflow victims

Gender	Frequency	Percentage
Male	16	51.6
Female	15	48.4
Total	31	100.0

### 5.1.3. Marital status of Lapindo Mudflow victims

As can be seen from the table below, the majority of respondents from the three groups were married.

Table 3. Victims: Marital status.

Marital status	Frequency	Percentage
Married	21	67.7
Divorced	3	9.7
Widow	1	3.2
Single	6	19.4
Total	31	100.0

### 5.1.4. Level of education among Lapindo Mudflow victims

The expectancy in school life for both for male and female in Indonesia is 13 years (CIA-factbook, 2017). For the three groups of victims, most of them had education from junior high school (29.0 per cent) and senior high school (38.7 per cent). Few had either lower or higher education than junior and senior high school. See table 4 for complete numbers.

Table 4. Victims: Education.

Education	Frequency	Percentage
Elementary	4	12.9
Junior High school	9	29.0
Senior High school	12	38.7
High school	2	6.5
University	3	9.7
No education	1	3.2
Total	31	100.0

### 5.1.5. Number of members from households that were victims of the Lapindo Mudflow

The majority of household members for all three groups are four with 32.3 per cent and then five with 22.6 per cent, that can be seen in table 5.

Table 5. Victims: Members of the household.

Members of the household	Frequency	Percentage
3	6	19.4
4	10	32.3
5	7	22.6
6	3	9.7
8	2	6.5
Live alone	2	6.5
No answer	1	3.2
Total	31	100.0

### 5.2. In-map victims

The “in-map” victims are the people whose houses and land were included in the map of the area that was impacted (*peta area terdampak*) by the mudflow that the government released in March 2007. This group received their compensation from Lapindo Brantas, and the amount each victim received was calculated based on possession of buildings and land that each victim owned. The presidential regulation says that Lapindo Brantas should pay the compensation in two periods. The first one was 20 per cent and the second was 80 per cent within two years after the first payment. To pay out the compensations, Lapindo Brantas had to establish a new company called *Minarak Lapindo Jaya* (MLJ). This was because Lapindo Brantas is registered as an American company and foreign companies cannot buy or own land in Indonesia. MLJ offered the victims new houses in *Kahuripan Nirvana Village* (KNV) instead of paying the compensation in money. The houses that MLJ offered were priced between IDR 30 million<sup>5</sup> and IDR 70 million<sup>6</sup>. Many victims accepted this offer even though some victims rejected it and demanded Lapindo Brantas to pay the remaining compensation immediately (Drake, 2017 & Novenanto, 2015).

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<sup>5</sup> USD 2,155.3

<sup>6</sup> USD 5,028.4

The “in-map” victims can be divided into two subgroups, “cash and carry” and “cash and resettlement”. In the “cash and carry” group, MLJ was not able to pay the remaining compensation at once and they decided to pay it monthly. This amount was IDR 30 million per certification for the houses. This started in December of 2008, and in February 2009 this suddenly changed when the company said they could not pay the amount and reduced it to IDR 25 million<sup>7</sup> because of the global financial crisis. Since MLJ could not pay the compensation the government also stopped their payments. This was because if some victims received compensation then others would get jealous (Drake, 2017 & Novenanto, 2015). For the “cash and resettlement” group, they got new houses in KNV from MLJ instead of money. This was because many of the victims did not want to go through complicated and bureaucratic paperwork with either the government or MLJ. A problem this group have had is getting the certification for the houses from MLJ because the victims could not sell their houses to a third party without the certification. Another problem was that they had to sign an agreement with MLJ saying that they could not sell their house before one year later, preventing them to re-sell to a third party. This was because MLJ rather wanted the victims to sell their houses back to them, so they could buy it for a lower price. Some of the victims had planned to sell their houses because they thought it was too modern and they would rather have a house where they could do farming and raise livestock like e.g. cows, goats or chickens. Traditional houses in Indonesia has some certain rules depending on the local tradition. Traditional Indonesian houses are known for their thermal performance, the houses are developed in response to the region lifestyle, the climate, techniques and the material availability that are in the region. Since Indonesia has a humid and hot climate, the thermal comfort in the houses depends on the breeze and has a natural ventilation. Modern Indonesian houses rely on modern technology like air condition to cool down the houses (Novenanto, 2015, Suhendri & Koerniawan, 2017).

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<sup>7</sup> USD 1,795.86



*Figure 6: Village. This is one of the new villages that the victims of the Lapindo mudflow have moved to (Source: Author).*

#### *5.2.1. Before and during the mudflow*

Many of the in-map victims had lived in the old village their whole life before the mudflow started. There were some exceptions where some of the victims that came from other areas had gotten married to others from the villages that was hit by the mudflow. Most of the victims' families had lived in the village for generations, and they owned the houses they were living in and some had their own rice fields. A few victims only owned the house and not the land that the house was built on.

When the mudflow volcano erupted, it took the victims by surprise and they did not know what it was. One victim said: *“Suddenly, people started to gather and saw something like boiling water with smoke and bubbles. It had a strong smell”*. The in-map victims lived close to the epi-centre and they did not get any warning from Lapindo Brantas. Only few of the victims got a warning from the local government. The victims only managed to save their

most important belongings, like clothes and important documents before the mud started to flow towards their homes. They were evacuated to the market in Porong in Sidoarjo. While some stayed there for a couple of months, others stayed for up to a year. The victims who stayed in the market in Porong experienced bad sanitation and it was over-crowded by people. After a couple of months, Lapindo Brantas started to give the victims money so they could rent a house for two years. Some of the victims used their own money to pay for the house rent before Lapindo Brantas paid out IDR 5 million<sup>8</sup> for two-year house rent months later.

A refugee camp was established in Porong market and the refugees came from the villages Renokenongo, Kedungbendo, Jatirejo and Siring. By October 2006 there was 11,456 people who lived in the refugee camp. This was the first wave of refugees. The second wave came between November 2006 and April 2007, with another 16,525 refugees. These refugees were from the villages of Glagaharum, Kalitengah, Ketapangkeres and Kedungbendo. Between April and June 2008, a third wave of 2,924 refugees came from the village of Renokenongo. The refugees came in successive waves because the Lapindo mudflow kept expanding, and more and more villages was being drowned by the mud. The refugees faced problems at the refugee camp. They were packed into wooden shelters, annexed tents and cement stalls at the market in Porong and they often had to sleep shoulder to shoulder with other refugee families. Since the refugees lived so close to each other they were encouraged not to cook because of safety issues. The refugees received meals that was prepared by officials who worked at the refugee camp. The refugee camp did not give any privacy and comfort. The sanitation facilities were poor and had a shortage of food that made the refugees vulnerable to illnesses. There were also long lines to the baths. This interfered not only with sanitation but also with the daily prayers (Drake, 2017).

Lapindo Brantas began to give payments to refugees in November 2006, so they could find stable and long term living arrangements. Lapindo Brantas gave IDR 500,000<sup>9</sup> as relocation costs for families, IDR 300,000<sup>10</sup> a month for nine months for victims, and up to IDR 5 million<sup>11</sup> for a two-year rental contract for families. By 2007, Lapindo Brantas had given 25,695 individuals and 6,816 families this type of aid (Drake, 2017).

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<sup>8</sup> USD 359.17

<sup>9</sup> USD 35.92

<sup>10</sup> USD 21.55

<sup>11</sup> USD 359.17

### 5.2.2. *Work before and after the mudflow*

Before the mudflow all the in-map victims had stable jobs at factories, or they had food stalls in front of their houses, worked as farmers, or they were working as tailors. But when the mudflow erupted their work places was drowned by the mud. Many of the factories ended up moving to other areas on Java.

Many of the in-map victims are now working as ojek drivers (motorbike driver), driving tourists on the levee that surrounds the mudflow, many of their family members are also working as ojek drivers. It is difficult for the in-map victims to get a proper job that pay more because no one wants to hire them. This is because many lost their school certificate when the mudflow erupted.

### 5.2.3. *Economy before and after the mudflow*

For all the in-map victims the income and expenditure have dramatically changed after the mudflow. Many of the victims work as ojek drivers and the costumers have declined, so many are struggling to get enough income to for their pay their needs. The informants had a more stable income before the mudflow started, but as an ojek driver the income some days are none. One victim said: *“The income before the mudflow have changed drastically. This is because as an ojek driver the income is unstable. Sometimes, it can be zero a day. Usually, the costumers pay IDR 30,000<sup>12</sup> to get a ride into the centre of the mudflow but if they want to go all around the levee they must pay the double (IDR 60,000<sup>13</sup>)”*.

### 5.2.4. *Compensation and resettlement*

The in-map victims received their compensation from Lapindo Brantas. First, they got 20 per cent and then 80 per cent over the next years. The compensation that were paid out was different for each victim, depending on what type of properties they owned. Some of the in-map victims had a tough time even receiving the compensation. One victim said: *“At first, I only received the compensation for my house and not my rice field. This was because I only had the certification that I owned a house and not the rice field. Therefore, it was harder to receive the compensation for the rice field because I had to get the head of the village to ensure Lapindo Brantas that I owned one”*. Some of the victims only received their

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<sup>12</sup> USD 2.16

<sup>13</sup> USD 4.31

compensation because they started a protest and it ended up with a new regulation that was formed, saying that the compensation would be paid annually. For some of the victims in the in-map group, the compensation only covered renting a house and not building a new one, and for some victims the compensation covered the building of a new house. Many of the victims had difficulty to find a property they could build their new house on. Either Lapindo Brantas or the government did not help them at all. Some of the victims wanted to buy land in a new village but they were faced by different problems. One informant said: *“The land that we wanted to buy had to be cut down by six meters. We were being threatened that other people would buy it if we did not buy the land. From that moment, we had to pay an annual payment of IDR 10 million<sup>14</sup>. We used IDR 75 million<sup>15</sup> to build the new house”*.

Novenanto (2015) writes that in a gender perspective, it has become increasingly more problematic to decide who receives compensation and how much. Further, Novenanto writes that in the Javanese culture the buildings and land are most likely to be inherited by a man rather than a woman. One female informant from the village of Siring told Novenanto that her house was one of four houses that was on a family land (*tanah Keluarga*), and that it was her eldest brother, who did not live there, who received the compensation. This was because the house was not listed in hers but in her brother's name. After the first payment there was a conflict between the family members of how much compensation each should get. Most of the compensation went to her oldest brother even though the family had an internal agreement before they submitted the file to Lapindo Brantas. Novenanto also writes that couples who were married had similar situations where the house and land went to the husband rather than the wife. A female informant from Jatirejo village that Novenanto had talked to told that her father was not from Porong. The house and land was listed in his name even though the land was her mother's parent's legacy. The compensation went to her father and not her mother. When the down payment of the compensation had started her father left her mother for another woman, and he took almost all the compensation they had received. Novenanto writes that these examples show the marginalization of the female victims with a combination of the Javanese culture and compensation reduction of land transaction (Novenanto, 2015).

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<sup>14</sup> USD 718.34

<sup>15</sup> USD 5,387.57

### 5.2.5. After the mudflow

Many of the in-map victims are missing their old village and find it hard to adapt to the new villages they have moved to. The reason for this is that many of them do not get along with their new neighbours. One victim said: *“I felt that the new neighbours isolated me when I moved to the new area. They think that the refugees from the mudflow area must have a lot of money after they received their compensation. We also had a different culture in the old village compared with the new one. The new place has many meeting traditions e.g. when it is a wedding, new born baby. We did not know about these traditions so they always said we were stingy”*.

Most of the in-map victims has not recovered from their experiences from the mudflow and some of the victims have just started to move on from the disaster.

### 5.3. Out-map victims

The “out-map” victims are the victims whose houses and land are included in the area that was defined as uninhabitable (*area tidak layak huni*) after the mudflow. These victims received compensation from the government but not from Lapindo Brantas. The way that the government payed the compensation was that they purchased land and buildings from the victims. This was done without questioning the legal status of ownership of land and buildings. The payment was steadier than the payment from MLJ (Novenanto, 2015). The different treatment the government have given the out-map victims compared to the in-map victims has made some in-map victims envious. Novenanto witnessed in 2013 two victims (one from the in-map group and one out-map group) who was arguing about who was the real victim of the mudflow. The in-map victim who was from Renokenongo was waiting for MLJ to finish the remaining compensation, where the out-map victims who was from Besuki had received all the compensation from the government. The victims from Renokenongo thought the victim from Besuki could not be considered as a real victim by saying that he lost his belongings and encourage Lapindo to pay the compensation. The victim from Besuki confronted the victim from Renokenongo by saying that he had been living six years in uncertainty to get the status as a victim, so he could receive compensation for what he had lost. The argument ended up with the two victims agreeing that they were both victims in how Lapindo Brantas and the government had dealt with the mudflow. They concluded the whole argument that they were not victims of an environmental disaster, but of human politics (Novenanto, 2015).



### *5.3.1. Before and during the mudflow*

The out-map victims have the same story's as the in-map victims before the mudflow erupted. They have lived in their old village all their life, owned a house and some of them had also rice fields.

Many out-map victims did not know that it was a mudflow in the area, and they did not get any warning from neither the government or Lapindo Brantas about the mudflow that was erupting. The victims did not know that Lapindo Brantas had been there for several years to look for oil and gases before the mudflow started. One says: *"I think Lapindo Brantas at that time did not have time to warn the people around the mudflow because they needed to figure out how to stop this disaster"*. Many of the victims stayed at their houses until the mudflow got bigger, they could not use the water because it was contaminated and the food that they planted died. Many of the victims ended up jobless because the rice fields were flooded by the mud.

### *5.3.2. Work before and after the mudflow*

Many of the out- map victims had their own shops, worked as farmers and at the factories that was near their village. When the mudflow started these workplaces ended up being covered by the mud. After the mudflow many of the victims ended up as construction workers, working in the home industry or as housewife's.



*Figure 7: Factory. This is one of the factories that was two stores high, that have been drowned by the Lapindo mudflow (Source: Author).*

### 5.3.3. Economy before and after the mudflow

The income for the out-map victims have changed. Many of them are struggling to pay for the daily needs of their families and the living costs in their new villages are higher than in the old ones. Some victims said that they must spend around IDR 70,000<sup>16</sup> a day, to make ends meet, which is more than they spent a day before the Lapindo mudflow. Some of the out-map victims cannot cover their daily needs and says it was easier before because the rest of their families lived in the same village and could help each other. Now the families are living far away from each other.

A victim said: *“My mother gets around IDR 70,000 a day (IDR 2.1 million<sup>17</sup> a month) while the living expenses are around IDR 2.8 million<sup>18</sup> so I need to help cover the rest. Before the mudflow my mother could get up to IDR 200,000<sup>19</sup> a day”*.

### 5.3.4. Compensation and resettlement

The out-map victims received their compensation from the government in two instalments, the first one was 20 per cent and the second was 80 per cent. The government bought the victims' houses and the compensation depended on how big the houses and lands they owned were.

One victim said: *“For other areas, the process of the compensation was different. Most of them was given the compensation in five phases of payment. However, I can say that we are in loss because the price of land is not going lower even though the second payment was given in a different time. The compensation is the same as the previous year. Although, the price of the land is getting higher, and the price of the materials to build a new house is also getting higher as well. Some people say that this phenomenon is caused by the mudflow”*.

For some victims they could not build a house because they used up their compensation money. One victim said: *“For me, I managed to organize my money so I could build a house. Some of my neighbours who had more assets than me could not build a house because they could not organize their money. I learned from their experiences, and I also reminded the people in my new village to manage their money and be careful to use it. If I do not supervise the people in my village, they would not be able to build a new house”*.

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<sup>16</sup> USD 5.03

<sup>17</sup> USD 150.85

<sup>18</sup> USD 201.14

<sup>19</sup> USD 14.37

Some of the out-map victims did not get any help from the government. This was because the government thought some parts of the village was more affected than other parts. The victims thought they were equally bad off as the rest of the village and it ended up with many of them having to fight with the government to get their compensation. One said: *“The reason that we got the compensation was because we fought for it. We made an alliance between Besuki, Timur, Pamotan, Ketapang and Gempol Sari to fight for our rights. In 2013, we received the first down payment, and this was 20 per cent”*.

Some of the victims felt that the government did not care about them and the conditions that they lived under after the compensation was paid out. They wanted the government to help them to find new and better places they could move to, and help them to get proper jobs.

One victim had a problem when he met a property developer. He said: *“A developer tricked me. I had bought five pieces of land where I wanted to build my new house. The developer told me that I had no right to the land and that I had to pay more if I wanted to use the land. It ended up with me having to find a new place and live in a different community than I wanted. The developer payed back the money but it took some time and the developer did not give it in one payment”*.

Another victim says: *“Many people think that we got a lot of compensation but what they do not think about is that we are deep down, that we are suffering because we lost our social life and we cannot recover the social structure in our society. We have to start over from zero again because we are living in a new place with new people”*.

Two residents from Siring and Glagan Arum village, Tjarwadi and Sadawi, had not received their full compensation in 2014 that the government had promised. Tjarwadi told the Jakarta Post that President SBY had promised the victims that the government would compensate the victims by February 2010 but this had not happened. Tjarwadi and his wife had only received IDR 247 million<sup>20</sup> out of IDR 635<sup>21</sup> million for their 135-square house and 235-square plot. The payment was first 20 per cent and then IDR 15 million<sup>22</sup> per month. This payment only happened for eight months but they had not received more of the compensation from the last year. The same had happened to Sadawi who lived in Glagan Arum. He should have received

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<sup>20</sup> USD 17,743.05

<sup>21</sup> USD 45,614.73

<sup>22</sup> USD 1,077.51

IDR 1.1 billion<sup>23</sup> for his 165-square house and 887-square plot, and he had only received IDR 320 million<sup>24</sup> (Boediwardhana, 2014).

The government determined the size of the compensation according material factors like e.g. building possessions and land, but excluded the social-cultural aspects. The government did not consider the cultural, social and economic values for each building and land. The exchange value for houses are the same as commercial buildings and warehouses and stores; fertile land has the same price as infertile land; an old house and a new house had the same price. This regardless of the quality and historical value that each building had. A house yard was priced as IDR 1 million<sup>25</sup> and productive wet paddies (sawah basan) was priced as IDR 120,000<sup>26</sup> per square meter for compensation (Novenanto, 2015).

#### 5.3.5. After the mudflow

*“The effect on the social and cultural aspects are the worst. We lost our culture and we need to rebuild it from zero”.*

Many of the out-map victims are still struggling to adapt to the new environment they had to move to, like the in-map victims. *“All of us need time to adapt to this new village because we cannot forget our previous village. Some of us even visit our old village once a week although we cannot see our houses anymore”.*

Many of the victims are happy to have new houses because they are better than their old ones. Many did not have electricity and toilets in their old house, but they have it in their new ones. They are also happy that the water and air is not dangerous in their new villages, like it was in their old villages.

#### 5.4. Difference between the compensation from Lapindo Brantas and the government

The in-map victims and out-map victims have had different treatments. This is a result of the combined (shared) compensation from Lapindo Brantas and from the government. The 2007 regulation says that Lapindo Brantas are responsible for paying compensation to the in-map victims and that the government is responsible for paying compensation to the out-map victims. Data from BPLS in the end of 2013, says that Lapindo Brantas had payed nearly

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<sup>23</sup> USD 79,017,650

<sup>24</sup> USD 22,986.95

<sup>25</sup> USD 71.83

<sup>26</sup> USD 8.62

eighty percent of the compensation. In the 2007 regulation, it says that Lapindo Brantas had to complete the compensation to the victims that have signed the contract within two years. Lapindo Brantas have been postponing the compensation in the “cash and carry” group. The government have been ignoring the problems that the in-map victims had problems to get the compensation that Lapindo Brantas was responsible for (Novenanto, 2015).

#### 5.5. Non-victims

The last group are the “non-victims” that live close to the Lapindo mudflow and who live in a degraded environment. These victims have no rights for compensation from either Lapindo Brantas or the government. They are people who live around the mudflow and do not have the legal status as victims of the mudflow. This because their homes were not inundated by the mud, but they are vulnerable to environmental hazards from the mudflow. These victims are living in an environment that is degraded from gases and environmental damages, falling dirt, loss of clean water and they are breathing air that contains gasses. Novenanto writes that not all the non-victims want to be included as victims. One of the reasons for this is that they do not want to leave their village, some of the non-victims said that they would rather die in their village than die in a new house. Novenanto discovered that this reason was because many victims that had moved had difficulties integrating into their new communities (Drake, 2017 & Novenanto, 2015).



*Figure 8: Village. This is one of the new villages that the victims of the Lapindo mudflow have moved to (Source: Author).*

#### *5.5.1. Before and after the mudflow*

The non-victims have lived in their village all their life and are still living there. Many of the non-victims' villages are located near the levees of the mudflow. The victims did not know about the eruption of the mudflow. They only heard it from other people who had seen it and victims that had to be evacuated. The non-victims were affected by the air being dangerous to breathe and water being contaminated. The help they got from the government under the mudflow was that they only got fresh water to use for drinking and cooking.

#### *5.5.2. Work before and after the mudflow*

Many of the non-victims was farmers but lost their jobs because the soil is not fertile and productive anymore. Some of the victims are trying to start a business together but it is hard.

Many residents in the villages near the mudflow became unemployed because three factories were drowned by the mud where they worked. SMEs was also affected by the mudflow, where many of the victims had small food stalls surrounding the factories that was hit by the mudflow. It was the SMEs that was hit hardest economically because the factories had a better distribution network (Padawang, 2016).

#### *5.5.3. Economic, compensation and resettlement before and after the mudflow*

The income for the non-victims have decreased because they do not have the extra income as farmers, like they used to. Also, they have to buy fresh water from the mountain and many uses 40 per cent of their income just to buy fresh water.

The non-victims have not received any compensation from Lapindo Brantas or the government since they are not in the map. One victim says: *“The government do not care about the victims and non-victims. They only care about business. We have complained about sanitation, economic problems and social problems but they do nothing about it”*.

Many of the victims do not understand how the government have drawn the map for the affected areas. This because many of the non-victims live close to the levees.

#### *5.5.4. After the mudflow*

Many of the non-victims are afraid especially in the rainy season, that the levees will start to leak as they have once before. One victim says: *“I can see that the people from the affected villages do not have a better life. Most of them are longing for their homes”*.

#### 5.6. What the victims think can been done better by the government and Lapindo Brantas

*“The government should protect the people when these kinds of disasters happen. I can say that the way the government have handled it is a total mess. The government should help the people to recover. The effects on the social and cultural aspects are the worst. We lost our culture, and we need to rebuild it from zero”*.

The victims from all three groups wish that the government helps them to find new jobs because many of the victims lost their school certification during the mudflow, give them education and help them find new houses so they can move with the people from the old village. The victims feel that the government and Lapindo Brantas only cared about giving them compensation and not caring about the living conditions of the victims. One victim said:

*“Most of the victims are looking for new places by themselves. We need a solution from the government because we are groups of people that was living together at the same place and we want to be together again. After the government gave us the compensation, they did not care about us anymore. Our social life and social structure have been disrupted. The government should have given us information that they could not find a place for us. That would had helped, so that the society would not have been that confused”.*

## **Chapter 6: Analysis**

This chapter I will discuss the findings of this study. The discussion is presented in relation to the research questions up to the theoretical framework presented in Chapter 3.

### 6.1. Natural hazards

Natural hazards are defined as events were people lose their life or are injured, livelihoods are damaged or destroyed, in addition to environmental degradation and economic and social disruption (Usman et al., 2013 & CRED, 2015). Usman (2013) writes that there are three categories of hazards; natural hazards, technological hazards and environmental degradation (Usman et al., 2013). Since there is still a discussion about the cause of the eruption of the Lapindo mudflow, it is difficult to place this type of hazard into one of these categories. Some experts believe that it was Lapindo Brantas drilling that caused it, while other believe it was the earthquake outside Yogyakarta that caused it (Drake, 2013 & McMichael, 2009).

### 6.2. Social consequences of the Lapindo Mudflow victims

UN/ISDR defines vulnerability as: *“The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards”* (UNSIDR, 2005, p.1). Vulnerability depends on numerous factors, both geographical, socio-economic and political. Geographical, since the victims are often living in marginal and hazard-prone areas. In general, Indonesia is prone to natural hazards like e.g. earthquakes and volcanoes and there have been more than 400 natural disasters since 1990 (Djalante et al., 2012). Socio-economic, since the victims often are poor. Indonesia is vulnerable to natural hazards, meaning that the Indonesian people also are vulnerable since 10.9 per cent of the population lives below the poverty line and 40 per cent are vulnerable to fall into poverty. Political, since the victims are often marginal to power, and their voices often is disregarded. In many societies, poorer people do not participate because they are



politically marginalized, so their interests are being minimized or overlooked. In some cases, powerful contractors have bribed the government to e.g. overlook building code violations, and the people who are poor do not have enough power to protest and they do not have many choices to decide where to live, because their house can be the only thing they can afford. The Bakrie family who owns Lapindo Brantas the gas company who was drilling for gases where the mudflow erupted, is one of the richest and most powerful families in Indonesia. The head of the family is the leader of the political party Golkar and have tight ties to the government. The victims after the Lapindo mudflow have felt that the government or Lapindo Brantas do not care about them. They feel that they have been forgotten and left for themselves (Drake, 2015 & 2017, World Bank's WDR, 2000/2001 & Gaillard, 2007).

Scholars define social vulnerability differently. Agder (1999) defines it *“as the exposure of groups or individuals to unexpected changes and disruption to livelihoods. Social vulnerability can be considered as a result of social inequality and place inequality”* (in Siagian et al., 2014, p.1605). Meaning groups and individuals who has their lives changed, which they did not expect. Social vulnerability is that some people and places easier adapt to the new situation after an e.g. hazard and others do not. While Cutter and Emrich (2006) defines it as *“the limitation of a community to the impact of natural disaster that influence its ability or resilience in the effort to recover from the impact. Social vulnerability is a pre-existing condition of existing communities, irrespective of type of hazard”* (in Siagian et al., 2014, p.1605). How a society is affected by a natural disaster and how the society adapts afterwards. Social vulnerability is an existing condition, regardless of which type of hazard it is. Agder, Cutter and Emrich' definitions of social vulnerability are the same, that everyone is vulnerable, this meaning people and places. The victims have had a drastically change in their lives. Their homes and rice fields have been flooded by the mudflow, and many of their jobs that also was in the surrounding area of their villages have been flooded by the mudflow. Many of the victims said that they were still struggling with adapting to their new life and had a tough time moving on with their life. They found it hard to forget their old villages and they missed their old neighbours. The victims must start their life all over again.

### *6.2.1. Social consequences for the Lapindo mudflow victims: displacement and resettlement*

All the three groups of victims, in-map victims, out-map victims and non-victims, had lived in the old villages their entire life. What was common of all three victim groups was that none of them knew that it was a potential mudflow in the area. Some of them did not know that

Lapindo Brantas had been drilling there for years and it took them by surprise when the Lapindo mudflow started to erupt.

Since the in-map victims lived near the epi-centre of the Lapindo mudflow they only managed to save their most important belongings before they were evacuated to the refugee camp in the Porong market. The conditions in the refugee camp was bad. Sanitation was not good, it was overcrowded, and they had to sleep shoulder to shoulder with other refugee families. Some of the in-map victims stayed in the refugee camp from a couple of months up to a year. During this time, Lapindo Brantas began to give payment to the refugees so they could find a more stable and long term living arrangement. But some of the refugees used their own money. The payments were IDR 500,000<sup>27</sup> for families per month, IDR 300,000<sup>28</sup> a month for victims, and up to IDR 5 million<sup>29</sup> for two-year rental for families (Drake, 2017).

Many of the out-map victims stayed in their homes until the mudflow got bigger.

The only help that the non-victims received during the worst eruption from the Lapindo mudflow was fresh water for drinking and cooking from the government since their own was contaminated.

Both the in-map and out-map victims had a difficult time to find a property where they could build a new house. They felt that the government and Lapindo Brantas did not care about them after the compensation was paid out. The victims wished that the government would help them find land where they could build their new houses. Many of the victims from both groups faced different problems. One of the victims was tricked by a property developer, by claiming that the victim did not have any rights on the land that the victim had paid for. If the victim wanted to use the land the victim had to pay more. The victim ended up buying a house in a different community than he wanted and after some time he got the money back from the property developer.

Both the in-map and out-map victims are missing their old villages and their old neighbours, since they do not live together in the new villages. They are struggling to adapt to the conditions in the new communities, because the new villages have different traditions and cultures that they are not used to and did not know about. Some of the victims felt that the new neighbours isolated them because they thought the victims had a lot of money after they

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<sup>27</sup> USD 35.92

<sup>28</sup> USD 21.55

<sup>29</sup> USD 359.17

received the compensation. One victim said: “*The effect on the social and cultural aspects are the worst. We felt we lost our culture and we need to rebuild it from zero*”.

As Quarantelli (1989) writes, people after a disaster goes through four stages of housing (see p.18 above). This was also the case for some of the mudflow victims. The in-map victims were first placed in the Porong market in emergency shelters when the mudflow started to erupt. The shelters in Porong market became temporary shelters since the mudflow expanded and covered entire villages. After some months and up to a year later, the victims received payments from Lapindo Brantas, so they could find more temporary homes (temporary housing). This was meant until Lapindo Brantas started to pay out the compensation, so the victims could find a permanent house where they could start their new lives (Lindell & Prater, 2003). Quarantelli's four stages of housing are more relevant for the in-map victims than it is for the out-map victims, since the out-map victims lived in their houses until the mudflow got bigger. Some of the out-map victims moved to family members or friends that lived in other areas in Sidoarjo.

According to Cernea's (1997) eight general sub-processes for displacement (see pp.18-19 above) that are relevant for the in-map and out-map victims. While some of these sub-processes are most relevant under displacement and resettlement, for instance others are more relevant under the heading, economic consequences. Cernea (1997), *Homelessness*; for many people, the loss of housing and shelter will only be temporary but for some people this is a “chronic” condition. Here Quarantelli is also connected with his stages of emergency shelter and temporary shelter. For both the in-map and out-map victims they lost their houses and for the in-map victims who lived in emergency/temporary shelters. The loss of a family home is linked to a group's culture that can result in deprivation and alienation (place attachment). *Social disarticulation*; when displacement is forced, the communities are spread. Both the in-map and out-map victims lost their houses and many of them ended up moving to new villages where they did not know the new neighbours. Many of the victims had a tough time adapting to the new villages' cultures and traditions and were missing their old villages. Some of them travel to the Lapindo mudflow to visit their old village, even though they cannot see or actually visit it anymore. The victims' old village has a symbolic meaning for them and are important to their culture since many of the victims' families have lived there for generations. Here Agnew (1987) (see p.19) three conceptions of places can be of analytical importance: Location, is the place (village) that the victims came from. It is a physical area on the map e.g. village of Siring mentioned in empirical findings (see p.37 above) or e.g. Odda in Norway. Sense of place, is about the feelings and role a place has for people's group identity

and individual identity. The villages victims lived in before has an important role in their life, they are attached to this village. It is here they have their identity and where they grew up. Place attachment, as Cerna (1997) mentions falls under this, it gives a feeling of security and safety. The victims' feelings for their old villages are security and safety. Many of the victims do not have that feeling in their new villages. Their identity is not connected to the new villages, and they also feel that new neighbours are isolating them. To give another example, my individual identity is the city I come from, Bergen in Norway. It is where I grew up and the place that is most important to me even though I do not live there anymore. It is the place I most relate to and where my family is. The last, local, are the victims' social interaction and practices, for instance daily routines like e.g. home and work. The victims lost their homes, so they cannot socially interact with their old neighbours like they used to and since they do not get along with their new neighbours, as they do not understand their traditions and culture and therefore, they feel more isolated than they did in their old village (Aure, et al., S.A, Cernea, 1997 & Berg & Dale, S.A).

### 6.3. Economic consequences for the Lapindo mudflow victims

The three groups of victims lost their income after the eruption of the mudflow. The in-map and out-map victims worked e.g. at the factories that surrounded their villages, had food stalls in front of their houses etc. All three groups had farming as an occupation. The difference between them was that the in-map and out-map victims farming land was drowned by the mud, while for the non-victims the soil was not fertile and productive anymore because of the Lapindo mudflow. Now all of the three group of victims work as e.g. ojek divers (motorbike drivers), housewife's or construction workers.

The economic conditions for all three groups of victims have drastically changed after the Lapindo mudflow erupted. Their income, that used to be stable, has decreased and the expenditures have increased. The majority if the in-map victims now has the majority of ojek drivers (motorbike drives). They have to struggle hard to get enough income from their costumers. Some days their income is zero. For the out-map victims, the living costs are higher in the new villages than they were in the old ones. Many are struggling to cover just their daily needs, and one victim said they spend around IDR 70,000<sup>30</sup> a day. One victim said that that his/her mother gets IDR 2.1 million<sup>31</sup> a month, while the living expenses are around

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<sup>30</sup> USD 5.03

<sup>31</sup> USD 150.85

IDR 2.8 million<sup>32</sup> a month and he/she had to help covering the rest of the amount. The non-victims had lost their extra income as farmers and their expenditures had increased because they had to buy fresh water from the mountain because their own water had been contaminated by the Lapindo mudflow. The victims use around 40 per cent of their income to buy fresh water. One of the victims expressed that the government did not care about the victims and non-victims even though they had complained about the social problems, economic problems and sanitation. Many of the non-victims did not understand how the government had drawn the map of who are victims and who are not. This was because many of the non-victims live close to the levees and they are afraid that the levees will start leaking again, as it has before.

One way to estimate economic costs after a disaster is to estimate property damage, loss of employment, and the repair and reconstruction costs (Alexander, 1997 & Kousky, 2014). World Bank's WDR (2000/2001) (see p.20 above) writes that the cost of a disaster can be categorised into three groups, direct-, indirect- and secondary costs. In this analysis only one is relevant, indirect costs that are loss of employment, income and services as a result of damaged productive capacity (World Bank's WDR, 2000/2001). The victims for all three groups lost e.g. houses, property, income and employment. Many of the victims still have a tough time making enough money to cover their daily basic needs. Cerna's (1997) (see pp.18-19 above) sub-processes and Skoufias (2003) (see pp.20 above) channels of economic crisis after a disaster can be used together. I will use Cerna as a basis and pull Skoufias in. *Landlessness*; displaced people lose both their man-made capital that are e.g. factories and infrastructure, and human capital are e.g. persons knowledge, economic and social well-being and competence (see pp.17-18 above). Their productive systems, commercial activities and livelihoods are built upon a basis that is removed with expropriation of land. Many of the victims lost their jobs in the factories that was near their villages when the mudflow started to erupt. These factories have moved to other parts on Java (man-made capital). For human capital, the victims lost their incomes from their jobs in e.g. the factories and from the rice fields that they owned. They have also lost the psychological capital like e.g. identity. But also for human capital, learning is something we do all our life. This happens trough e.g. work and participation in the daily life. So, the victims also learn from their new lives in their new villages e.g. traditions, and new jobs e.g. construction. *Joblessness*; loss of employment and

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<sup>32</sup> USD 201.14

wage occurs both in rural and urban displacement. The people who lost their work includes enterprise or service workers, craftsmen, landless labourers and small business owners. Skoufias writes that income also decreases when there is a decrease in employment. All three groups of victims have had a decrease of income because they lost their jobs, and the new income is not the same even though they found new ones. Many of the victims also lost their rice fields that was an extra income for them.

*Food insecurity;* sudden drop of availability of food crops and income is one of the effects of relocation. Here Skoufias claims that people use a large share of their budget to buy food. As earlier stated, the non-victims use 40 per cent of their income to buy fresh water from the mountain since the water they used before the mudflow erupted have been contaminated.

*Loss of access to common property;* for poor people, and particularly for the landless and assetless, a significant deterioration in income and livelihood came as a result of their loss of access to common (non-individual) property assets, e.g. forested land, water bodies, grazing lands, burial grounds, etc, that belong to relocated communities. The loss of common property assets is usually not compensated by the government. In addition, the loss of public services often occurs after disasters. Here the non-victims come in, they have not received any compensation from the government for the water they lost since they are not included in the map. The only help they received from the government was some money to buy fresh water for a period (Cernea, 1997 & Skoufias, 2003).

### *6.3.1. Economic consequences for the Lapindo mudflow victims: Compensation*

There was a difference between the in-map victims and the out-map victims regarding where they received their financial compensation from. The in-map victims, as earlier argued, received their compensation from Lapindo Brantas gas company. They were first payed 20 per cent of the compensation and for the next years the remaining 80 per cent were paid out. The out-map victims received their compensation from the government. They were also first paid 20 per cent and the remaining 80 per cent was paid in a second instalment. There was also differences between both groups of how much compensation they would get. Some of the victims were able to build a new house while others only got enough to rent a house. Both groups of victims had a hard time to get the compensation that they were entitled to. They had to prove what they owned their houses and land, but this was difficult since many of the victims had lost their certificates when the mudflow erupted.

Victims after a natural disaster often receive financial compensation from the government, and it is more likely that they get the financial compensation if they are many (World Bank's WDR, 2000/2001 & Faure, 2007). Insurance can also be expensive to people who are poor and this makes it more likely that the victims receive their compensation from the government (Cerna, 2003). The Lapindo mudflow victims received their compensation from both Lapindo Brantas and the government depending on whether they were inside or outside of the map that the government had drawn up. Cerna (2003) writes about the common forms of under-compensation and costs of vulnerability (see p.21 above). Some of these are late payment of compensation, difficulty in measuring what the victims owned of properties and assets. It was harder for the in-map victims to get their compensation than the out-map victims. This was because Lapindo Brantas wanted the certification that they owned land and houses. For some of the victims it took some time before they received their compensation since they had to prove that they owned land and houses, and others didn't. It was easier for the out-map victims to receive their compensation since the government did not ask any questions about the legal status of owning land and houses. For each victim from both groups the process for the payment of compensation was different. The recipient that receive the compensation are not used to handle cash and as a result the recipient ends up cashless and assetless. For some of the victims it was hard to handle the compensation they received. This was because they were not used to have so much money and they ended up using it on things they never had before, rather than building a house they could live in. One victim said he/she needed to remind the neighbours of to manage their money, so they could build a new house. Some victims had a hard time managing their money and ended up not able to build a new house (Cerna, 2003).

## **7. Conclusion**

The Lapindo mudflow is the world largest and fastest growing mudflow. It is still discussed why the eruption started, was this a man-made disaster caused by the gas company Lapindo Brantas or a natural disaster caused by an earthquake outside Yogyakarta. By 2008, it covered 816 hectares of land and drowned agriculture and dozens of villages. 40 000 people had to be relocated and thousands of victims had to live in refugee camps in the Porong market. The victims are suffering because they are facing uncertainty, they have also witnessed that their ancestors' lands have been destroyed making them suffer from psycho-social effects.

By March 2007, the government released the map of the regions that was included and not included in the disaster zone of the mudflow. Novenanto (2015) categorized the victims as in-map victims, out-map victims and non-victims. The in-map victims were the victims that received their compensation from Lapindo Brantas, the out-map victims received their compensation from the government, and the non-victim did not get any compensation. These victims are not categorized as victims by the government, but they are victims because they live close to the disaster zone and their environment is degraded.

### 7.1. Social consequences for the Lapindo mudflow victims

Indonesia is vulnerable to natural hazard meaning that the Indonesian people also are vulnerable since 10.9 per cent of the population lives below the poverty line and 40 per cent are vulnerable to fall into poverty.

Agder, and Cutter and Emrich definition of social vulnerability is that everything is vulnerable, both people and places. The victims have had a drastically change in their lives. Their homes and rice fields have been flooded by the mudflow, and many of their jobs that also was in the surrounding of their villages have also been flooded by the mudflow.

#### *7.1.1. Social consequences for the Lapindo mudflow victims: displacement and resettlement*

The in-map victims went through Quarantelli's (1989) four stages of housing. They lived in emergency/temporary shelters in Porong market before they received their compensation from Lapindo Brantas.

In Cerne's (1997) sub-processes for displacement, also Quarantelli (1989) and Agnew (1987) comes in. Agnew's three conception of places are important and it explain why the victims from the in-map and out-map group are still struggling to move on from this disaster. Places like your home town are important to people no matter where in the world you are from. It is here your identity is, even though you do not think about it daily you will feel a sadness if something happened to the place you are from (place attachment). The in-map and out-map victims are missing their old villages after the mudflow covered them. It is at their old village their identity and place attachment belong and not the new village. A problem that the victims are experiencing is that they do not get along and feel isolated by their new neighbours because they do not understand the new villages traditions and culture.



## 7.2. Economic consequences for the Lapindo mudflow victims

Both the in-map and out-map victims lost their houses, rice fields, income and work. The non-victims lost their rice fields and income.

Cerna (1997) sub-processes for displacement also come in here with Skoufias (2003). Many of the victims from the three groups lost their jobs at e.g. the factories that was near their old villages (man-made capital). Human capital, the victims lost their income from e.g. the factories and their rice fields, they also lost their psychologically identity. What is good with human capital is that people learn through all their life. The victims learn when they find new jobs e.g. construction, and they will learn the new traditions of their new villages. They keep learning in their daily life and participation.

All the three groups of victims have had a decrease in their income when they lost their jobs and the extra income from the rice fields. Even though they found new jobs it does not match the same income they had before the mudflow started to erupt. One victim said his/her family used IDR 70,000<sup>33</sup> a day that is much more than they used to use before the mudflow.

Another victim said his/her mother got IDR 2.1 million<sup>34</sup> a month, the living expensive was IDR 2.8 million<sup>35</sup> so the victim had to help to cover the rest of the amount.

For the non-victims they got a new expense since they have to buy fresh water from the mountain, since their water have been contaminated by the mudflow. In general, they use 40 per cent of their compensation income to buy fresh water.

### *7.2.1. Economic consequences for the Lapindo mudflow victims: Compensation*

Both the in-map and out-map victims received compensation from either the government or Lapindo Brantas. Cerna (2003) writes about e.g. the commons forms of under-compensation and late payment of compensation. The in-map victims had a harder time than the out-map victims with receiving their compensation since they had to prove that they owned land and houses. The out-map victims did not have this problem since they received their compensation from the government. The in-map victims also experienced that their compensation was late because Lapindo Brantas had difficulties to pay out.

The recipients that receive compensation are not used to handle cash and as a result the recipient ends up cashless and assetless. For some of the victims it was hard to handle the compensation they received. This was because they were not used to having so much money,

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<sup>33</sup> USD 5.03

<sup>34</sup> USD 150.85

<sup>35</sup> USD 201.14

that they ended up using it on things they never had before rather than building a house they could live in. One victim said he/she needed to remind the neighbours of how to manage their money, so they could build a new house. Some victims had a hard time to manage their money and ended up unable to build a new house

### 7.3. Ending remarks

The victims of the Lapindo mudflow feel that the government and Lapindo Brantas has forgotten them. They wish that the government could help them to find new jobs because many lost their school certificates during the mudflow and also provide them with education. The victims feel that the government and Lapindo Brantas only cared about paying the compensation and nothing more.

I will like to end my research with something that one victim said to me and it has been stuck in my mind ever since. It is quite a strong statement, but it shows how affected and how much pain the victim is in after this disaster: *“If I could, I would kill the CEO of Lapindo Brantas that caused this disaster. He ruined my life and other victim’s life, and the government kept silent about it. The only thing the government did was buying the victims houses. Nothing else more, just forgot about us”*.



*Figure 9: Monument Lapindo mudflow tragedy. Lapindo mudflow have buried our homes. Lapindo Brantas only said fake promises. The government forget to restore our life. But our voices will never die. So this nation will never forget (Source: Author).*

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## Appendix I

Permission letter for Fieldwork from Gadjah Mada University

 <b>ITC</b>	<b>Double Degree MSc Programme GEO-INFORMATION FOR SPATIAL PLANNING AND DISASTER RISK MANAGEMENT</b> Graduate School Gadjah Mada University, Yogyakarta Phone/Fax. (0274) 564239 Website <a href="http://www.geo.ugm.ac.id">http://www.geo.ugm.ac.id</a> , <a href="http://www.geoinfopasca.ugm.ac.id">www.geoinfopasca.ugm.ac.id</a> and <a href="http://www.itc.nl/pub/study/programmes/joint-educations">http://www.itc.nl/pub/study/programmes/joint-educations</a>	 <b>UGM</b>
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Ref: UGM/GEO-INFO/1001/II/17

7 February 2017

**Subject: Permission Letter for Fieldwork**

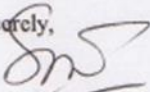
Dear Sir/Madam,

The Faculty of Geography, Graduate School and Research Center for Disasters are currently hosting a student named **Gina Hauge** from University of Agder in Norway. Ms. Hauge are doing her fieldwork for her master thesis. Ms. Hauge is writing a thesis on: **Lapindo Mudflow**.

This thesis aims at understanding the social and economic consequences that the mudflow have had for the surrounding communities. Ms. Hauge aims to interview victims from the mudflow. **Any data collected will be anonymous and will strictly be used for her thesis purpose only.**

This study will be conducted for approximately for two weeks from 13 January – 27 January 2017.

For attention and permission given, we extend our heartfelt gratitude.



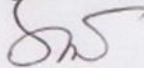
Yours sincerely,  
  
Prof. Dr. H.A. Sudibyakto, M.S.  
Programme Manager

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The course is conducted by Graduate Programme - Faculty of Geography and Research Center for Disasters  
Gadjah Mada University, Yogyakarta, Indonesia and Faculty of Geo-Information Science and Earth Observation (ITC),  
University of Twente, The Netherlands

## Appendix II

Permission letter for Fieldwork from Gadjah Mada University in Indonesian

	<b>Double Degree MSc Programme GEO-INFORMATION FOR SPATIAL PLANNING AND DISASTER RISK MANAGEMENT</b>	
<small>Graduate School Gadjah Mada University, Yogyakarta Phone/Fax. (0274) 564239 Website <a href="http://www.geo.ugm.ac.id">http://www.geo.ugm.ac.id</a>, <a href="http://www.geoinfopasca.ugm.ac.id">www.geoinfopasca.ugm.ac.id</a> and <a href="http://www.itc.nl/pub/study/programmes/joint-educations">http://www.itc.nl/pub/study/programmes/joint-educations</a></small>		
Nomor	: UGM/GEO-INFO/1002/II/17	7 Februari 2017
Lamp.	: -	
Hal	: Permohonan Ijin Kegiatan Lapangan	
Kepada Yth. :		
<p>Dengan hormat,</p> <p>Bersama ini kami informasikan bahwa Fakultas Geografi, Sekolah Pascasarjana dan Pusat Studi Bencana UGM sedang menerima mahasiswa asing atas Gina Hauge dari Universitas Agder, Norwegia. Mahasiswa tersebut sedang melakukan kegiatan lapangan untuk menyelesaikan tesis yang berkaitan dengan bahaya lumpur Lapindo.</p> <p>Sehubungan untuk mendukung penyelesaian tesis mahasiswa asing tersebut, bersama ini kami mengajukan permohonan ijin mahasiswa tersebut untuk melakukan kegiatan lapangan (fieldwork). Kegiatan lapangan dilakukan dengan mewawancarai korban terkena dampak lumpur Lapindo.</p> <p>Semua data yang dikumpulkan akan dirahasiakan dan hanya digunakan untuk penelitian tesis saja. Penelitian ini akan dilakukan selama kurang lebih 2 minggu dari tanggal 13 – 27 Januari 2017.</p> <p>Demikian surat permohonan ini disampaikan. Atas perhatian dan bantuan Saudara kami sampaikan ucapan terima kasih.</p>		
<p>Ketua Program</p>  <p>Prof. Dr. H.A. Sudibyakto, M.S. NIP. 19560805 198303 1 004</p>		
<small>The course is conducted by Graduate Programme - Faculty of Geography and Research Center for Disasters Gadjah Mada University, Yogyakarta, Indonesia and Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, The Netherlands</small>		

## Appendix III

### Interview guide for the in map-victims & out map-victims

1. Gender
2. Age
3. Education/occupation
4. Relationship status
5. How many family members are in your household?
6. What are the age and gender of the household members?

### Social

7. Did you have an own a house before the mudflow and where was this? Did you own other properties and land?
8. How long did you live in the area before the mudflow started?
9. How did you end up living there (born there, married with one that are from the area)?
10. What happened to you and your family when the mudflow started?
11. Did you get any help during the mudflow (e.g. friends, family, neighbours)? If so, what help did you get.
12. Did you lose all of your belongings under the mudflow or did you manage to save something?
13. Where you warned by the municipality or Lapindo Barantas about the mudflow?
14. Where did you live when you waited for the new house and how long did you live there?
15. Could you decide where you could build your new home or were you assign a property?
16. If you could decide where to build the new house. How did you find out where to build?
17. How was the house you got from Lapindo, and did it covered your needs?
18. Are you still living the same house that Lapindo gave to you?
19. What are you feelings about the new area you are living in compared with the old one?
20. Do you know what happened to the people in your village? Are they living in the same area as you or have they moved far away?
21. How did you and your family cope after the mudflow?

22. How long did it take before you and your family to recover from the mudflow?
23. How many of the members of the household goes to school?
24. How have the mudflow effected the schooling for the children and are the school close to home? If not, how long do it takes for the children travel to school?
25. If the schools are fare away. Are the government planning to build new schools that are closer?
26. How has the children been affected by the mudflow and how have they rejected to what happened?
27. Are shops, medical clinics, schools easy available for you and was they easy available where you lived before the mudflow?

#### Economic

28. What did you work as before the mudflow and what do you do now?
29. Are there other persons in the family that work? If yes, what do they work as?
30. Do you and the other members in the household work as the same thing before the mudflow? If not, what happened?
31. What is the average income for the household per month now and before the mudflow?
32. What is the average expenditures for the household per month before and after the mudflow?
33. Are the place of work easy available or do the members that work have to use transport? If this is the case, which transport do they have to use?
34. Are the roads to you work good? Infrastructure, means of communication (buses, roads, traird)?
35. Did you have your own business before the mudflow and what happened to it? If you did, did it go well?
36. Did you receive any financial assistance from the government or Lapindo Barantas?
37. If yes. Is this a monthly payment or was it an one-time payment?
38. What else do you think the government and Lapindo Barantas should do for the mudflow victims?

## Appendix IV

Interview guide for the non-victims.

1. Gender
2. Age
3. Education/occupation
4. Relationship status
5. How many family members are in your household?
6. What are the age and gender of the household members?

### Social

7. How long did you live in the area before the mudflow started?
8. How did you end up living there (born there, married with one that are from the area)?
9. Did you own properties or land in the where the mudflow is now?
10. Where you warned by the municipality or Lapindo Barantas about the mudflow?
11. How has the mudflow affected your living condition?

### Economic

12. What did you work as before the mudflow and what do you do now?
13. Are there other persons in the family that work? If yes, what do they work as?
14. Do you and the other members in the household work as the same thing before the mudflow? If not, what happened?
15. What is the average income for the household per month before and now the mudflow?
16. What is the average expenditures for the household per month before and after the mudflow?
17. Did you have your own business before the mudflow and what happened to it? If you did, did it go well?
18. Did you receive any financial assistance from the government or Lapindo Barantas?

What do you think the government/Lapindo Barantas should do for the non-victims?