

BREATHING IN THE MUD

*Resilience and Traumas of Porong Communities
Affected by the Lapindo Mudflow Disaster,
East Java, Indonesia*

Karolina Lamtiur Dalimunthe



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ACRONYMS AND ABBREVIATIONS

AAPG	the American Association of Petroleum Geologists
APBN	Anggaran Pendapatan dan Belanja Negara (state budgets)
BJP-1	The Banjarpanji-1 (gas well owned by Lapindo Brantas, Inc)
BAPPEKAB	Badan Perencanaan Pembangunan Kabupaten (District Development Planning Agency)
BPK-RI	Badan Pemeriksa Keuangan Republik Indonesia (the Indonesian Supreme Audit Agency)
BPMIGAS	Badan Pelaksana Kegiatan Usaha Hulu Minyak dan Gas Bumi (Executive agency For Upstream Oil and Gas Business Activities)
BPPT	Badan Pengkajian dan Penerapan Teknologi (the Indonesian Agency for the Assessment and Application of Technology)
BPLS	Badan Penanggulangan Lumpur Sidoarjo (Sidoarjo Mud Mitigation Agency)
BPD	Badan Permusyawaratan Desa (village consultative body)
ESDM	Energi dan Sumber Daya Mineral (Ministry of Energy and Mineral Resources)
Gempur 3D	Gerakan Masyarakat Korban Lumpur (Victims of Mud Movement)
GKLL	Gabungan Korban Lumpur Lapindo (Lapindo Mudflow Victims Group).
HDCB	High-Density Integrated Chain Ball
IAGI	Ikatan Ahli Geologi Indonesia (the Indonesian Association of Geological Experts)
IMB	Izin Mendirikan Bangunan (a building construction permit)
Jamkesmas	Jaminan Kesehatan Masyarakat (the community health insurance)
Keppres	Kelompok Pendukung Keputusan Presiden (Movement Group to Support Presidential Decree)
KLM	Korban Lapindo Menggugat (Lapindo Victims Suing)
Komnas HAM	Komisi Nasional Hak Asasi Manusia (National Commission on Human Rights)
KNV	Kahuripan Nirvana Village (housing under a cash and resettlement scheme)
KN-PRBBK	Konferensi Nasional Pengurangan Risiko Bencana Berbasis Komunitas (national conference on community-based disaster risk management)
KTP	Kartu Tanda Penduduk (citizen identification)
LULA	Lumpur Lapindo (the Lapindo Mudflow)
LUSI	Lumpur Sidoarjo (the Sidoarjo Mudflow)
LBI	Lapindo Brantas, Inc
MCN	PT Medici Citra Nusa
Mapolsek	Markas Kepolisian Sektor (sectoral police headquarters)

Pagar Rekontrak	Paguyuban Rakyat Renokenongo Menolak Kontrak (Village Association whose members were mostly from Renokenongo village rejected the housing and living allowance)
PAT/AAM	(Peta Area Terdampak/Affected Area Map)
PBP/PNM	Pasar Baru Porong (Porong New Market)
Pertamina	PN Pertambangan Minyak dan Gas Bumi Negara (The State Oil and Natural Gas Mining Company)
Perumtas	Perumahan Tanggulangin Anggun Sejahtera, a housing estate
PKK	Pemberdayaan Kesejahteraan Keluarga (Family Wellbeing Empowering)
PLN	<i>Perusahaan Listrik Negara</i> (National Electricity Company)
Pos KKLuLa	Pos Koordinasi Keselamatan Korban Lumpur Lapindo (the Coordination Post for the Safety of Lapindo Mud Victims)
PP	Peraturan Pemerintah (Presidential decree)
Puskesmas	Pusat Kesehatan Masyarakat (community health centre)
PWJ	(Paguyuban Warga Jatirejo). Jatirejo Village Association
Satlak PB Sidoarjo	Satuan Pelaksana Penanganan Bencana (Sidoarjo Disaster Countermeasure Executive Unit)
Timnas PSLs	Tim Nasional Penanggulangan Semburan Lumpur Sidoarjo (The National Team for Sidoarjo Mud Mitigation)
TKD	Tanah Kas Desa (Village treasury land)
UPC	Urban Poor Consortium
Uplink	Urban Poor Linkage
USEPA	United States Environmental Protection Agency
WALHI	Wahana Lingkungan Hidup (Environmental Organization)
YLBHI	Yayasan Lembaga Bantuan Hukum Indonesia (Indonesian Legal Aid Foundation)

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INTRODUCTION

It was in the morning of mid-August 2014 when I arrived for the first time at a mud mountain as high as twenty meters. I stepped onto the steep yet fragile bamboo stairs that were attached to the containment wall, while I was welcomed by the heat of the sun. It was hot enough to raise blisters but there were no trees to shade from the scorching sun. The direct sunlight burned my skin, and the pungent smell stung my nose. The stench of sulphur, mixed with the aroma of petroleum and the faint smell of rotten eggs, was offensively nauseating. In front of me stretched an open greyish landscape as far as my eyes could see. Hundreds of hectares of mud extended like a desert. In the far distance, in the middle of the desert mud, visible clouds of steam were rising from the mudflat. Then my eyes fixed on the left of the embankment where a small, rickety open-air shelter stood, around which several men gathered, and motorbike taxis parked. A man was coming out of that shelter and walking up towards me. “My kampong was over there,” the man said, pointing to the right of the mud desert. He offered me several DVDs and continued his story: “Eight years ago, underneath this mud, thousands of people built and preserved the life of generations. But our kampong is gone now, the mud has taken it away.”

This mud mountain started to build up following an underground blowout in Banjar Panji 1 well (BJP-1). The drilling site is owned by PT Lapindo Brantas, Inc. and the disaster took place in Renokenongo Village in Sidoarjo Regency, in the East of Java, Indonesia. The hot mudflow disaster that occurred on May 29, 2006 had complicated features and a distinct development compared to other disasters in Indonesia. First, it is about Lapindo Brantas, Inc. drilling in the middle of a densely populated area, about 800 metres from residential areas. According to the Sidoarjo district spatial plan of 2003-2013, this region was meant to be a Regional Unit Development III, dedicated to the development of the region’s agricultural activities, trade, services, industry, and tourism, with the headquarters in Porong. It was a newly formulated regional plan geared towards sustainable development (BAPPEKAB Sidoarjo, 2002). Second, from the Dutch colonial era until 2002, geological studies pointed to the unstable underground of the Porong region, prone to gas eruptions (Kusumaastuti, 2002; Mc. Michael, 2009). Porong is a sub-district in Sidoarjo Regency with an area of 714.24 km², located about 12 kilometers south of the capital city of Sidoarjo. Additionally, Sidoarjo is also known as the Brantas Block, which is the biggest oil and gas production area of Indonesia. In 1990, the oil and gas regulator BPMIGAS¹ awarded the 15,000 km² Brantas Block to the Bakrie Group who already controlled the upstream oil & gas unit Energi Mega Persada, and construed the Lapindo Brantas Inc. in Sidoarjo in 1993 (Lapindo Brantas, 2014). The unstable ground is rich in

¹ BPMIGAS (Badan Pelaksana Kegiatan Usaha Hulu Minyak dan Gas Bumi), a State-Owned Legal Entity (BHMN), was established by Law No. 22/2001 on Oil and Gas and Government Regulation No. 42/2002 on the Executive Agency for Upstream Oil and Gas. On November 13, 2012, Indonesia’s Constitutional Court (*Mahkamah Konstitusi* or the MK) declared BPMIGAS unconstitutional. This state upstream oil and gas regulator was dissolved and SKK Migas was formed to replace it.

natural resources waiting to be exploited, despite the high risks related to its unfavourable spatial and geological condition. The decision to explore a large number of promising prospects in BJP-1 ended in an immense disaster.

Since May 29, 2006, burst points have been spewing mud, water, and gas that reached over 100,000 metric tons per day, now reduced to the range of 30,000-60,000 metric tons per day (Mazzini et al., 2007; Tanikawa et al., 2010). This spewing mud is expected to continue for up to 41-84 years (Rudolph, Karlstrom, and Manga, 2011). It has drowned four villages in three sub-districts, thousands of houses, many mosques, paddy fields, factories, schools, and cemeteries and turned them into 640 hectares of mud embankment. In the following years, another 800 hectares of land around the mud embankment turned into a ghost town because this area is prone to landslides, flood, and gas eruption. Outside these 800 hectares of land, an area has been contaminated because stream or sewer sludge through rivers has polluted the ponds and paddy fields, resulting in crop failure. In 2014, some farmers in Penatarsewu and other areas traversed by the waste had to change their land use to prevent another crop failure.

The damage inflicted on the environment and ecological conditions has overstepped the resilience threshold that makes recovery difficult or impossible. Physically, it is impossible to turn these 640 hectares full of mud back into fertile soil, and also it will be difficult to restore the river ecosystem of the Porong River that has suffered irreparable damage, including heavy metal contamination that will require a lengthy recovery. Research by Purnomo (2014) on aquatic ecosystems and brackish water ponds showed that the significant levels of cadmium (Cd) and lead (Pb), both in the water and the fish that live in waters polluted by Lapindo mud, have exceeded the threshold value quality standard. Furthermore, the ITS laboratory concluded that Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) values and the amount of oil and grease in the mud and fluids are so high that it can interfere with the ecology of the water, when directly discharged into waters without being treated (Mawardi, 2006). In summary, this degradation of the natural environment will affect organisms that use this environment as a habitat including humans that live in this area.

We can see the impact of this disaster on the human system from the beginning up to the present. First, the damage to the physical environment has caused numerous problems in economic, health, and social macro- and microstructures. Around 99,757 people have been displaced, thousands of workers have lost their jobs, many farmers have lost their paddy fields, the children's learning process has been disrupted, many people have health problems such as respiratory tract infections, and there have been many social conflicts and breakdown within and between families, villages, and authorities (Tim Terpadu Kajian Penanganan Dampak Luapan Lumpur Sidoarjo, 2011). The social system that had been working for so long suddenly collapsed and lost its function in organising the community's life.

The long-term impact can be seen through degradation in the physical and social environment. Mud continues to spurt and threaten the surrounding environment in the form of mud floods and burst dams. At the end of 2014, a dam burst in the Gempol Sari area and flooded homes, forcing residents to look for shelter in the village hall for four days (Gempol Sari villagers' interview, February 2015). By the end of February 2016, there was a flood as high as two metres around the main road embankment and the Porong area because the rivers were not able to function normally in draining rainwater into the sea. The main road could not be used for weeks, including public transportation such as

trains and buses. Some residents whose homes were inundated by floodwaters of up to two metres in depth were also forced to flee to their relatives' homes until the water receded. This flood has become routine every year especially during the rainy season.

1. A LONG SHADOW CRISIS²: FAST & SLOW ONSET OF LAPINDO HOT MUDFLOW DISASTER³

The Lapindo mud disaster differs from natural disasters that commonly occur in Indonesia, such as tsunamis, earthquakes, volcanic eruptions, floods, and landslides. Natural disasters are common in Indonesia, because the country is located at the collision of three major tectonic plates, the Indo-Australian, Eurasian, Pacific plates which makes it prone to tectonic and volcanic earthquakes. This natural disaster can be manifested in a horrifying event when it intervenes in a human-constructed environment but then, at some point, the environment will usually be restored and give an opportunity for people to rebuild and reconstruct their lives (Gill, 2007). Compared to natural disasters, the Lapindo mud disaster is powerful and massive in its destruction yet has a lasting impact on the natural environment and human lives. A study by Ekawati et al. (2020) found that the surrounding area of mudflow embankment still contains 42.1% residential land with medium to high level disaster risk such as flood (mudflow), movement and cracks of land, and dangerous gas bursts. Further, four out of eleven villages being assessed, namely Mindi, Gedang, Siring Barat, and Ketapang, have a very high hazard score and vulnerability aspect, including the distance from the mud embankment and high-density population of the settlement. This prolonged impact is a secondary disaster that has a pattern of slow onset. Based on temporality and duration of impact, disasters can be characterised as slow onset indicated by exposure, impact, and consequence that appears slowly and persists over long periods of time rather than having a sudden onset and a short duration, a feature of fast onset disasters (Orom et al., 2012).

The fast onset disaster of the Lapindo hot mudflow in the form of an underground blowout was massive and destructive. However, coupled with slow onset, this incident turned into creeping crises which are characterised by a switch from sudden to slow onset, along with environmental problems, contamination, and the incapability of the authorities on a national level to respond adequately by terminating the incident and its impacts (Boin and 't Hart, 2001; McConnell, 2003; Gill, 2007). The incapability of authorities in handling this incident was spotted in the very beginning of this disaster by Muhtada (2008), who found weaknesses in governmental management and policy, including inadequate organisational structure and framework and the lack of involvement of third parties, including Lapindo survivors, in coping with the complexity of the problems. As local authority resources were overwhelmed by the incident, the central government took over the management of the incident. However, the responses were still inadequate in dealing with its massive disruption and impact, resulting in a lack of governance both at local and central levels (Putro and Yonekura, 2014). Some decisions and actions taken or not taken by authorities seem to have prolonged the disruption of the incident. For example, the concentration on infrastructure solutions while delaying the recovery of people's social

² A term used by Boin and 't Hart (2001) to describe an incident that could not be resolved and turned into a crisis.

³ Some news articles and publications called this disaster as LUSI mud volcano, which stands for Lumpur Sidoarjo or Sidoarjo Mud.

lives and no sufficient action to restore environmental quality have turned the sudden impact into everyday adversities for people who still live in this area, and have prolonged insecurity at personal and community levels (Muhtada, 2008; Putro and Yonekura, 2014).

In this light, there are several factors that should be included other than superficial attributions such as the causal agent of disaster (natural, man-made, or technological) or the temporality and duration of disaster (fast or slow onset) in defining and understanding the Lapindo mudflow disaster. These factors are related to more rooted situations, such as the socially constructed world through technology and development in a capitalistic approach that could bring unjust distribution to the population. In the end these could create vulnerabilities when they overlap with the hazard as a destructive agent (Fredeunberg et al., 2008; Nelson, 2011). For example, the dense population in the coastal area becomes more vulnerable to tsunami, especially when there is a lack of regulation and systematic effort to mitigate the risk of the foreseen hazard. Furthermore, other factors that are attributable to disaster and prolonged crisis are related to the way's authorities handle the incident. When responses toward incidents are insufficient and underestimate social complexity, they will prolong its impact and consequences. In this case, the Lapindo hot mudflow is not just a sudden event in the period of time that has negative consequences caused by a natural or technological agent, but it also began with vulnerabilities rooted in the society that continue to build and create irreversible incidents. In other words, the Lapindo hot mudflow is a kind of crisis, a long shadow crisis, that reflects a dynamic arrangement of social structures and systems that are capable of producing hazards, incidents, and disasters (Oliver-Smith, 1996; Boin and 't Hart, 2001; Perry, 2007).

The acts of mismanaging, neglect, and corruption have become key indicators that a crisis and emergency could turn into a disaster and continue to be a crisis (Boin and 't Hart, 2001; Sawalha et al., 2013). However, the people that have to face and live through this incident also become a variable that has to be accounted for as Boin and 't Hart (2001) described: "tension between the experience of the crisis by those who live through them, and the dominant prescriptive models of crisis management explains why there is often such tension and frustration during the after-math of crises even the well-managed one." In this case, the crises continue to evolve when they cannot be terminated properly and people who live through it cannot feel a sense of security, certainty, and welfare.

Different causal agents, duration of impact, and capability to terminate the incident could give different implications to a society affected by disaster, one of which is the extension of impacts and consequences that denies survivors the chance to start rebuilding their lives. Rather, it holds survivors in a vulnerable state while they have to stay in the hazardous environment. In order to understand the impact of the Lapindo hot mudflow disaster, we have to see it through the eyes of people who live in it and go through it (Boin and 't Hart, 2001; Gill, 2007). There are several facts about the Lapindo hot mudflow disaster that reflect the complexity and long shadow of the crisis. In this case, I observed how macro systemic management, such as national and local governments and other national players, may direct and indirectly influence mezzo and micro systems such as community, family, and individuals in the Porong area. For example, dispute around the causes of the incident, unsettled agreements between authorities, company, and survivors reflected in variances of compensation schemes (cash and carry, 20% cash and 80% instalment, 50% cash and 50% instalment, resettlement and instalment package), the delay of compensation payments (more than 10 years in many cases) and the efforts of national

scientists to stop the mud (that had never been successful) created new environmental and social problems.

To understand the impact of macro level policies on the micro level, the case of Astuti, a middle-aged, married woman with three children, nicely illustrates how survivors need to respond to this crisis, especially when the government fails to produce sound corresponding regulations and implementation. Astuti was forced to leave her family's newly renovated house in Renokenongo village after it was hit by the hot mudflow. She moved several times, from a crowded shelter in Porong market to several rented houses. Furthermore, she was forced to do high-risk work such as collecting bricks from submerged houses in order to provide food for her family. In the second year, she lost her mother who passed away due to inadequate living conditions in a crowded Porong market shelter. She had to face social conflicts within her family and community due to the differentiation between compensation schemes and had to fight against the Lapindo company and local and national government to get better living conditions. She had to change jobs several times in a couple of years but could not secure economic and social stability. At one point, she nearly succeeded in resolving her economic problems after starting to process one of the local resources, Keting fish eggs, as a source of her business. However, pollution discharged into the river by the Lapindo mud caused a decline in the population of Keting fish, and ultimately, she lost her source of income. Years after the disaster, she reclaimed an abandoned house near a mud embankment (around 200 metres from the north mud embankment), living from debt to debt and through the pity of her neighbours. She lost everything and cannot access social security for poor citizens provided by the government, due to unclear citizen identification (KTP, Kartu Tanda Penduduk). She even claimed to "Never ever get sick" due to a lack of family health care budget and loss of access to government subsidies for health care. Survival mode is still relevant for her even after sixteen years of disaster. Many survivors that I have encountered told a similar story and carried the same problems as Astuti's in terms of the loss of belonging and the people they love, having to face social conflict with families, the community, the company, and the government, and having to survive on limited resources while losing access to social assistance.

Thus, several impacts at micro level can be identified clearly, such as the loss of possessions, depleting personal and social resources due to loss of occupation, damage to social networks and the collapse of social capital. However, encountering inadequate responses of authorities in managing and terminating this incident has created situations that cannot be resolved completely, generating more problems that continue to disturb people's lives. There are long-term consequences that individuals and communities have to face, such as floods every rainy season, crop failures, and polluted water and air while they could not reach stability in terms of permanent residence and occupation, having to live under unclear status/ID, and having to face social conflict and stigma that hinder or diminish the capabilities of the social-ecological system to heal and recover. Both adversities, environmental hazards and societal vulnerability, are about the unseen consequences that often occur as accumulative effects of environmental degradation and social impoverishment.

Beside environmental, economic, and social impacts, the Lapindo mudflow disaster is a type of disaster that could create both acute and chronic mental illness at individual and collective levels due to the combination of fast and slow onset impact. At an individual level these psychological problems manifest in the form of tension, sadness, and

helplessness that could indicate depression or post-traumatic stress disorder (PTSD) while at a collective level it can manifest in the form of social conflict, alienation, and the loss of communality that indicates the existence of collective trauma (Baum and Fleming, 1993; Somasundaram, 2007; Gill et al., 2012; Gill et al., 2016; Staupe-Delgado, 2019). Previous studies on individuals and communities affected by technological disasters such as the Buffalo Creek, Exxon Valdez oil spill, and Chernobyl disasters showed corrosive patterns that hamper the recovery of individual and community due to a long-term litigation process, the torn social fabric within and between communities, the loss of community trust toward authorities, and the contamination and degradation of environment that could create a sense of fear and uncertainty (Picou et al., 2004).

Thus, a systematic study is needed to understand the multi-dimensional impacts of the Lapindo mudflow disaster on the Porong community, but it is also important to comprehend how people try to survive in this shadow crisis that keeps reproducing risks for their everyday lives. The Lapindo mudflow disaster is not only about massive impact, degrading environment and corrosive community but also it reflects how the crises could occur and last when authorities and other actors such as the Lapindo Company could not contain or mitigate the risk inherent in the implementation of technology to handle the incident adequately. In order to comprehend people's experience as victims of this disaster, a long timeframe should be implemented so we can see how this disaster is destructive not only at the beginning of its manifestation but in later developments.

Individuals and communities affected by the Lapindo mudflow disaster needed to face ever-changing challenges along with the environmental, economic, social, and psychological problems. Reflecting on their experience, the intriguing questions posed are: what kind of impact does this disaster have on people on individual and collective levels, and how are people able to respond and still function when they have to navigate this long-term and harsh situation? Is it possible for people to move forward when they have to respond to these continual disruptions that demand that they continuously adapt in order to survive? Far from solving and settling, they are still struggling to survive; yet people have to become used to living on this edge that sometimes exceeds the threshold of human ability. All these questions triggered my motivation to go further into conducting systematic and comprehensive research in order to understand the human ability to cope with adversity.

2. HOW TO BREATHE IN THE MUD

There is a popular Indonesian expression “*bernafas dalam lumpur*” (breathing in the mud) which means how difficult it is to survive while facing long-term suffering. Some of Indonesian artists have used this expression as a movie and song title. This expression is also appropriate to describe the condition of the vast majority of survivors, both in a denotative and connotative way. Since the Lapindo mudflow disaster, survivors have to live in an environment full of dangerous and malodorous gas such as methane, phenol and ammonia released from the mud, and they also have to live without adequate resources for a very long time.

It is like breathing in the mud if we look at some major challenges the survivors have to face from the beginning of this disaster until now, which can be categorised as a long shadow crisis. The fast onset disaster relates to two significant events: the mud blowout in BPJ-1 on 29 May 2006 and the explosion of a gas pipeline owned by PT Pertamina on

22 November, 2006. Both of these events triggered shocks or acute stress reactions such as panic, tremendous fear, terror, and chaos for many people in the area. The acute stress response was the first stage of a general strategy to regulate stress, known as the "fight-or-flight" strategy. Almost all survivors at that time had to flee from their houses and live in a refugee camp. Later, a mixed reaction arose in addition to initial psychological states such as despair, anger, depression, anxiety, withdrawal, and even trauma; usually this reaction will resolve over time when the stressful situation ceases, and people manage to respond to disturbances. But sadly, for survivors, after the shock they could not escape the stressful situation immediately but faced another challenge through the slow onset disaster. In this second disaster, there are two major triggers: the degradation of the ecosystem that is difficult to recover, and further disruption triggered in other interconnected systems. An additional trigger is the uncertainty and ambiguity of the problems that appears in the form of contestation of the cause of disaster, blame and protracted litigation that may halt or delay every recovery attempt in this eco-social system and prolong the impact of the first incident.

What do people do when they face situations like the Lapindo mudflow disaster? There are at least three conceptual terms to describe human abilities in dealing with adversity, stressful and uncertain situations which are coping, adaptation, and resilience. The popular description of coping from Lazarus and Folkman (1984, p. 141) is defined as "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person." It indicates that efforts would be activated especially when humans perceived some external or internal threats or disturbances. Adaptation is defined in the American Psychological Association *APA Dictionary of Psychology*⁴ as "modification to suit different or changing circumstances. In this sense, the term often refers to behaviour that enables an individual to adjust to the environment effectively and function optimally in various domains, such as coping with daily stressors..." It highlights the changing external situation that demands humans to adapt or be adapted. In this light, resilience as a concept seems to embrace both coping and adaptation in its broader definition, as resilience is an ability of an entity (individuals, groups, states, or other larger systems) to maintain its identity in responding, coping, recovering, adjusting, and adapting to critical situations before, during, and after the impact (Cutter et al., 2008; Hollnagel and Fujita, 2013; S. Böschen et al., 2019). Related to a traumatic experience, Ungar (2013, p. 256) highlighted resilience as more than individual capacity per se but it is conceived of as the "capacity of both individuals and their environments to interact in ways that optimise developmental processes". In this way, it is not only individual agency that should matter in finding resources that are needed but social networks with the capacity to provide resources that are culturally meaningful to individuals.

Resilience involves responses to either threatening or beneficial situations, and unlike reactive coping resilience will not stop when recovery has been attained but will continue to examine its potential to achieve a particular purpose by adjusting its function (Hollnagel & Fujita, 2013). Further, it must be pointed out that adaptation is part of resilience in terms of risk perception, event framing, and action. In adaptation, people perceive situations as manageable, evaluate risk based on subjective or private value, and rely on

⁴ *APA Dictionary of Psychology*, s.v. "adaptation," accessed November 16, 2020. <https://dictionary.apa.org/adaptation>

individual action, while in resilience people might perceive events as unmanageable, evaluate risk based on common value, and become cautious to individual action, preferring collective action (Nelson, 2011; Dow et al. 2013; Wong-Parodi et al. 2015). In this light, resilience is wider and collective and as such serves as an umbrella that covers the adaptation process along with the anticipation towards environmental changes. Resilience and adaptation are closely related because adaptation can change components and the dynamic relationship of systems (Nelson, 2011). In other words, responses can undermine or enhance the resilience of a system, and in this context adaptation efforts should be transformative and inclusive actions that improve social cohesion and cultural processes, especially in forming common values that may be used to evaluate risks, situations, and actions (Adger et al., 2011; Nelson, 2011; Wong-Parodi et al., 2015; Pelling et al., 2015). In Chapter 2, the concept of resilience will be further elaborated.

In the Lapindo mudflow disaster, the former environment is lost and difficult to recover and this demands that each living creature adapt to the new environment as its habitat. This new habitat is an environment that shows a trend towards decline. Besides having to adapt to a new habitat, all living creatures have to search for resources to fulfil their basic needs in order to survive. These can be very different resources but demand a new strategy and modification in people's behaviour and skills in order to get them. The way survivors accumulate these resources or adapt to different environments can be difficult, with limited resources leading to competition, conflict, and friction between them. This general pattern of survivors' behaviour could be judged as coping and incremental adjustment efforts, especially when friction and conflict still exist that indicates subjective values which take precedence over common values. However, in terms of framing, most survivors would agree that this situation is unmanageable and could not be resolved only by individual or group actions. Nevertheless, when we evaluate responses from a macro level, in this case the government and the company, the responses tend to undermine the resilient system due to exclusive behaviours such as insensitiveness to feedback, governing as a top-down solution and framing in a narrow and technological perspective that, as far as it may go, can only create temporary or insecure stability for people who are living around the Porong area (Adger et al., 2011).

The temporary and insecure stability has become a challenging situation for survivors on a household level, such as Astuti and her family, even just to provide the basic necessities for daily life. This smallest scale of the social ecological system could not survive solely relying on their individual and household resources, and they need support from previous social networks and places that have collapsed. This has become a general pattern for many survivors who successfully escaped from the hot mudflow hazard but then went back to living in the area surrounding the mud dyke near their lost villages, and regrouped with former social networks for economic opportunities, social support, or cultural reasons. Contrary to staying away from physical danger in order to be safe and secure, immediately or after an interval of time some people went back and chose to stay near this dangerous and degrading environment. Data from the General Election Commission of East Java Province (Komisi Pemilihan Umum Provinsi Jawa Timur, 2013) showed that 87% of survivors still stay less than two kilometres from the mud dyke while a study by Ekawati (2020) found that the area around this mud dyke is still 42.1% residential with high density settlements. In my preliminary research phase, I also found a tendency of survivors to be attached to the lost place; they seem reluctant to leave and keep returning after living far away from the former place. The common statement

amongst survivors about their former place is that it was the original place or kampong that had been built by their ancestors and is the place that marks their identity as individuals and community. In this light, this pattern of regrouping with former social networks implies that resources should be culturally meaningful for survivors in order to support their recovery processes (Ungar, 2013).

Social and cultural identity has been a common value that determines the purpose and meaning of life of survivors and influence their choices, responses and actions. Furthermore, we have to examine the purpose and identity of the Sidoarjo traditional village community before, during, and after disturbance. Research data have given a hint of the original state or identity of the Sidoarjo community and also their aspirations and purpose. Before the blowout occurred at the Banjar Panji 1 well (BJP-1), there is the story about Lapindo Company's plan to expand its wells in their neighbouring areas, especially the company's intention to do gas explorations in Jatirejo village. At that time, most of the community did not agree and they held village leaders' meetings to discuss the Lapindo Company proposition where they agreed to reject the proposal. This story reflects the purpose and value that guided the community in framing the risk and determining their decision concerning the use of their place. It is obvious that these local communities perceived no benefit of the gas exploration to their community and place, so they acted against it. Another hint that signifies the existence of a collective identity is through social reorganisation during and after the blowout, and the survivors need to move together (*bedol desa*) to a new resettlement in order to retain their original/former ties. From this phenomenon, we can assume that the relation to the place and its people has to be a relevant factor that makes survivors continue to adjust themselves in accordance with their collective purpose.

Relational factors, in terms of social and cultural-spatial identity, have become the driving force that navigates survivors to a culturally meaningful way of coping with a crisis. In this light, socio-cultural aspects are an important part of survivors' resilient systems both as resources and collective identity. Relationship between person and a specific place is also known as place attachment, sense of place, or topophilia that is defined by Tuan (1974) as "all of the human being's affective ties with the material environment" (p.93). Further, Low and Altman elaborate ritual, cultural belief, and practices on place attachment as "the symbolic relationship by people by giving culturally shared emotional/affective meanings to a particular space of piece of land that provides the basis for the individual's and group's understanding of and relation to the environment" (1992, p. 165). In this light, the Porong area affected by mudflow can be considered a cultural landscape where people insert a social and cultural meaning into the physical environment. That landscape has become a narrating space that determines the story, the name of the place, and ancestors' authority over the land. However, the disaster has shifted this narrating place into a contested space that reflects social conflict, political, and economic interests between the survivors, the company, and the government. Legally, it belongs to the company and the government because they bought it through a compensation scheme. However, morally, socially, and culturally, it is still the sacred and meaningful place for the survivors as shown by their regular visit to the mud dyke site as part of cultural practices and by the commemoration day of the Lapindo hot mudflow disaster. In this light, the survivors continue to produce local and cultural identities through their movement that marks the mud dyke site as their territory.

However, being displaced from land that has meaning and is part of one's identity has been devastating. Previous research also found it to be associated with many kinds of psychological problems such as depression, grief, and even a sense of 'loss of place' (Cox and Perry, 2011). However, in an adaptive path, place attachment could also be a source of resilience where social and cultural identities navigate a small system e.g., the trajectory from an individual to a bigger system, which is a community. The connections between different levels of systems can be conceptualised in two ways: 'remembering' as a top-down process that focuses on continuity through addressing restructuring effects from larger to smaller systems, and, secondly, 'revolting' as a bottom-up process that addresses contingent effects from smaller to larger systems (Rampp, 2019). In sum, the relationality of interconnected systems in terms of socially and culturally constructed identity will be central analytical dimensions in understanding the resilience of the Lapindo survivors dealing with this crisis. It could be 'the resilience of a culture itself' or of 'resilience through culture' (Bousquet & Mathevet, 2019). Understanding people as part of community that has to maintain its purpose when facing long-term challenges allows us to think about the entity and strategies beyond the previous state due to transformation ability that could even strengthen the community. One of the mechanisms that can enhance a resilient system is when survivors use 'remembering' as a way to bring community back or reorganise, and 'revolting' as a way to give feedback on the macro level represented by local and national governments.

The conceptualisation and systematic explanation of the way people cope and respond to this adversity puts social and cultural-spatial as the central dimension to be explained and analysed. This perspective will enrich theories about disaster that have been produced in recent years focusing on natural disaster and trauma topics. Many empirical studies have been done in the area of disaster, especially natural disasters. In the PsycINFO database, we find that 4234 studies have been conducted and published from 1806 to May 2016. However, only limited research, 55 of these publications, has been conducted on technological disasters, with 28 on industrial disasters, and 11 addressing traumas. As a psychological consequence, trauma often becomes the main topic of disaster research because disaster could be categorised as a trauma-inducing event with a high probability of triggering traumatic responses. However, the socio-cultural issues embedded in human coping and adaptive responses are often neglected, despite their importance in explaining the notion of trauma of local people and describing the distinct capabilities of communities to respond to disaster.

3. PROBLEM STATEMENT AND RESEARCH QUESTIONS

This thesis focuses on the ways in which people from the Porong area in Sidoarjo, who are affected by the Lapindo hot mudflow disaster that abruptly shifted their social and physical landscape, try to respond to their individual and collective suffering. The Lapindo mudflow disaster which occurred sixteen years ago has continued with shocks and waves of mudflows until today. Factors such as the violation of ecological threshold, massive material destruction, and the handling of the disaster by the government have prolonged the initial incident, turned it into a crisis, and extended its effects. This Lapindo mudflow disaster can be perceived as a crisis with a long shadow; a series of temporary stabilisations, alternated with mud disruptions from time to time causing different implications and effects on individuals and communities.

Another important factor that we will examine is the way the people are able to cope and/or overcome cultural, social, and physical suffering in their lives as the space and place on which this stability is (re) built is continuously in rupture and could potentially be disrupted again. Surprisingly, most of the studies that have been conducted in the way people cope with these long-term disasters focus on the psychological coping mechanisms while neglecting the relational factors. In terms of social and cultural-spatial factors that have also been destroyed or at least shifted after the disaster.

People in Porong keep trying to make a living while coping and adapting to shifting situations in different places. In this situation, an anthropological and a psychological approach is important to be able to understand how people cope with this ever-changing situation. Such a perspective is necessary to obtain insight in the way they are embedded in social relations and cultural aspects because rituals and symbols cannot be disconnected from a place and are related to the landscape. People have to cope with this insecure stabilisation in terms of social aspects (social networks), cultural aspects (rituals, symbols, an idea of place), and psychological characteristics. To be resilient, not only do they need to cope and adapt to external threats but also be able to retain their social and cultural identity in the space that is meaningful to them.

Based on these problems, the overarching research question of this study is: *How do people formerly living in the Porong area (Sidoarjo) respond to the suffering of collective and individual trauma following the abrupt and enduring changes in their space and place that resulted from the Lapindo mudflow disaster?* Some (sets of) sub-questions have been developed that work as milestones to arrive at an answer to the overarching question:

- 1) What kind of notion(s) did the people who had to abruptly leave the Porong area have of the former living place and how does this affect the way they attach meaning to life? In other words, what kind of lifecycle and community rituals, beliefs and religious activities were specifically connected to their former living place?
- 2) How did the abrupt and forced replacement of the people formerly living in the Porong area affect their social relations and networks (space)?
- 3) To what extent does the relocation of the people formerly living in the Porong area and the subsequent changes in their notions of place and space generate collective and individual traumas and how have these manifested itself psychologically?
- 4) How do the people formerly living in the Porong area respond to the suffering and other changes in their personal lives and social relations?

4. RESEARCH SITE: PORONG SIDOARJO, PASSAGE BETWEEN BIG CITY AND HIGHLANDS

The Sidoarjo Regency, a densely populated area with 2,843 persons per square kilometre, is located in East Java near the capital of the province, Surabaya. Surabaya and Gresik are on the northern boundary, Pasuruan in the south, the Madura Strait in the east and Mojokerto in the west. Sidoarjo is a buffer zone of Surabaya, the capital city of East Java Province. Sidoarjo has a total area of 63,490 hectares (Ha), consisting of rice fields (28,763 Ha), sugar cane plantations (8,000 Ha), and fishponds (15,729 Ha) (Website Resmi-Kabupaten Sidoarjo, 2016; Humanitus, 2011). Muslims of East Javanese ethnicity are the dominant population of this area. Sidoarjo Regency is mostly rural with some urban

sprawls in rural-urban fringes between Sidoarjo and Surabaya, such as the rapid development of a middle-class housing estate that has created many social problems (Tutuko & Shen, 2016). Besides the urban sprawl problems, Sidoarjo Regency is also one of the nine areas in Indonesia that suffer significant land subsidence due to the exploitation of gas fields (Chaussard, Amelung, Abidin, Hong, 2013).

Sidoarjo Regency is the target area for the big cities such as Surabaya to expand their territory for production or human habitat. This area has become a destination for agricultural products from highlanders such as Malang. It is a good place for people from Surabaya who cannot afford to buy an expensive house in the big city and also for people from the remote areas in East Java who look for opportunities and a better income. Housing is considered to be cheap compared to the Surabaya area. The regency has many education facilities and services and provides good opportunities for people to find jobs in both industrial and agricultural sectors.



Figure 1. Sidoarjo District in purple circle

Source: NatGeo Mapmaker Interactive

The Porong area is a suburb of Sidoarjo which is directly adjacent to the Pasuruan Residency. Based on the Sidoarjo District spatial plan 2003-2013, the Porong area (Porong sub-district, part of Jabon and Tanggul Angin sub-districts, Tulangan and Krembung sub-district) was classified as a Regional Unit Development III headquartered in Porong and was primarily geared towards becoming the hub of agricultural and industrial activity and of trading, services, and education.

Since the time before the Lapindo mudflow disaster, people living in this area have told stories related to changes in their society caused by this development and industrial expansion. First, the story is about the gradual change from an agricultural to industrial society. Since 1980 land trading for industrial and development purposes had become more common around this area. The term ‘*landas/landasan*’ which means saleable or in demand has become a popular term amongst communities around the Porong area. This physical change followed the social change because many of the young generation refused to help their parents in the rice or farm fields and preferred to work in factories. Around 1986, the government developed a toll road from Surabaya to Porong, and some of the impacts of this development were the splitting of some places such as Renokenongo and Besuki Village. While administratively Besuki remains the same, its social life and social organisations slowly became divided between West and East Besuki.

Besides the spatial change, the demographic and composition of the population also changed gradually as the result of interracial marriage in addition to the influx of migrants

from other areas in East Java such as Malang, Tulung Agung, and Trenggalek who were seeking an opportunity for a better living. Sometimes these migrants introduced local people with new skills and home industries such as the leather industry in Ketapang and Kedungbendo. The growth of new industries was followed by rapid housing development that drastically changed the social life, the way of living, and economic condition of this area. At this time, the administrative status of some villages also changed to sub-district (*kelurahan*), especially those located on the side of the Malang-Surabaya highway such as Siring, Jatirejo, Mindi, Gedang, and Ketapang. Many people said that this change had brought a lot of good things to their life and wealth to the area. Some home-based businesses that developed along with this industrialisation were *pracangan* or stalls, *waring makan* or small restaurants, catering and dormitories for factory workers, and housemaid services for people who live in a housing complex. Only some people were aware that this rapid growth and development also brought negative impacts such as the rise of criminality and juvenile delinquency.

Besides being open and very supportive to these new developments, most of the villagers welcomed the migrants and strangers that stayed on their land. As often stated by both natives and newcomers, local people embraced new people, making them feel at home and keen to buy a house and stay permanently. Disputes that arose in these places were usually related to domestic conflicts and fights between neighbours, that could be solved locally through the involvement of the head of a neighbourhood or village. In some areas, differentiation in communities was already apparent, even before the mud disaster occurred, usually between a landowner and a farm worker. In places with a strong Islamic tradition, the landowner usually also occupied a respectable position as a religious figure.

Even though some places have lost some of their traditions such as *rumat desa* (the ritual to get rid of the bad thing from the village) and have discontinued observing such practices, especially villages that have changed their status into sub-district (*kelurahan*), most of the customs and livelihoods still have the same characteristics and form of agrarian society along with their simple, small house with a broad yard for subsistence farming land. There is also a pattern of living together with a large family on land that is shared as a legacy from an ancestor for building houses and subsistence agriculture. Often *gotong royong* (working together) becomes a principle in the delivery of daily necessities and in raising children. Neighbourhoods often consist of an extended family and communality, or togetherness (*gotong royong*) often defines a feature of relation that is woven in a village.

While culturally *nyadran* (a ritual observed by the fishermen community to give thanks to the ruler of the universe) is Sidoarjo's most well-known tradition, other popular rituals include *sedekah bumi* observed by the agrarian community, as well as *barian* and *syukuran* that are popular as rituals to give thanks to the Almighty. When looked at closely, however, these Javanese rituals and traditions are slightly different from one another in practice. For example, a staged puppet show is forbidden in Kesambi because it is believed to invite snakes, and no gong is allowed during a *gamelan* show in Siring as the use of the gong is believed to lead to spirit possession.

5. CONCEPTUAL FRAMEWORK

The analytical framework for this study partially builds on the ecological-contextual model of Kloos et al. (2012 and 2021) who tried to get to grips with stress, coping, and adaptation in context by linking individuals to communities. The perspectives behind the model are central in community psychology and start from the premise that the quality of life of individuals is inherently connected to, or rather intertwined with, community life. Community is broadly defined as a set of relationships among persons at many levels, whether tied to a place or not (Kloos et al. 2012, p. 18), and according to Kloos et al. (2012, p.12) “An individual lives within many communities and at multiple levels: family, networks of friends, workplace, school, voluntary association, neighbourhood, and wider locality—even cultures.” Community psychology thus provides a different approach to human behaviour from other fields in psychology by focusing on community contexts and stressing effective ways for preventing problems rather than treating them after they arise. Thus, it focuses on the structural factors that influence problems of behaviour and how they could be modified to improve the lives of individuals and families (ibid., 14). As such, community psychology draws upon concepts and methods of other disciplines that have previously attempted to understand the influence of environment and culture on individual perspectives and behaviour, most notably anthropology. This synthesis of perspectives from both psychology and anthropology serves as the basis for the conceptual framework of this thesis.

Within community psychology two levels of analysis are distinguished, that of ‘ecological levels of analysis’ (multiple layers of social contexts) as well as ‘core values of analysis’, such as wellness or wellbeing, sense of community, social justice, empowerment, and citizen participation (Kloos et al., 2012; Nelson, Kloos, Ornelas, 2014). Ecological levels of analysis are used to comprehend the influence of environmental factors on individuals and the linkages between them. These ecological levels of analysis consist both of relations that are closest to the individual, the so-called proximal systems, and the more distant interactions, or the distal contextual factors, that exist in the outer layer of so-called macro systems, such as cultures, economic conditions, and so on (Kloos et al., 2012; Nelson, Kloos, Ornelas, 2014).

The embeddedness of individuals in these distal and proximal contextual factors is an important aspect for understanding the Porong people's problems after the mud disaster. What Kloos et al. (2012) has offered, including the social and cultural perspectives from which to comprehend psychological problems, is therefore relevant and applicable for analytically framing the problems faced by Porong people after they were affected by the Lapindo mudflow disaster. Contextualising mental health problems helps to understand more comprehensively why one symptom has emerged significantly and why other symptoms do not manifest at all. For example, the disruption in place attachment has become a significant issue for Porong people. Because of their history as locality-based communities who possess strong ties to ancestral land and their original community, the mud has engulfed these lands and scattered the community. Therefore, losing one's land and feeling of belonging to a specific community has been experienced as a traumatic event for Porong people, which again may lead to a higher chance of generating psychological disturbances.

Kloos et al. (2012, p. 251) further noted that “persons are embedded in multiple contexts”, and this embeddedness in social and cultural dimensions may manifest itself as the affective component of relationships within communities that are related to specific

behaviour and connections. In this light, concepts such as neighbouring, place attachment, citizen participation, and social support are useful for exploring the effects of the Lapindo mudflow disaster on relationships between individuals and their environment (Kloos et al., 2012). Further, this community psychology framework can also help to comprehend the recovery and individual development process that should account for the role of its social contexts, especially in the context of the Lapindo mudflow disaster. Recovery is the product of the dynamic interaction between individuals' characteristics, the characteristics of contexts, and those exchanges between individuals and contexts (Nelson, Kloos, Ornelas, 2014). In this light, the changes in cognitive, emotional, and spiritual dimensions are affected by their embeddedness in social contexts, such as family and community. And such embeddedness may both facilitate or hinder the recovery process, in the form of a lack of opportunities for choice, lack of housing, and poverty that may lead to discrimination, stigmatisation, and social isolation (Nelson, Kloos, Ornelas, 2014, p.34). The dynamic relationships between persons, context, and subsequently the exchange, will interact with what can be described as outcomes of the coping and adapting processes. It can be positive, such as increased resilience or wellbeing, or more negative, such as the manifestation of trauma and other psychological disturbances – or it can be both. The manifestation of both conditions could occur because when we perceive an individual and community as a subject, even though they experience hardships and mental health problems, by drawing upon their agency they may still be able to respond actively to these challenges. Besides, this framework helps to understand that the coping process itself is interdependent, which means that each factor and subject will continuously and dynamically interact. Thus, when it reaches its outcome, it will not stop but the process will continue, depending upon individuals, context, and the exchanges between them. This latter part will be discussed more extensively in Chapter 2 and 5.

By drawing upon the concepts and ideas of Kloos et al. (2012, 2021) as set out above, I arrived at a somewhat twisted and tuned conceptual model that allows me to frame the analysis of the empirical data for this research. The conceptual framework is visualised in Figure 2.

The framework, starting from the top left, shows that I start by identifying the contextual factors that are involved on the way people experience traumas and respond to these, both as single and multiple layers. It also includes individual characteristics that are also important in understanding the coping and adapting process related to the Lapindo mudflow disaster. After that, it allows further elaboration on the coping process and examination of the elements involved, including the patterns of interaction between person and context. Lastly, it leads to measuring or assessing the outcome of the process, whether it is resilience or distress and trauma. What follows is a brief overview of how the various concepts and dimensions as visualised in the framework will be discussed in the empirical chapters.

The distal contextual and personal factors can be a risk or protective factor when it comes to stress and coping efforts. The distal contextual factors are an ongoing environmental condition that in this study is represented by social and political forces that contribute to how crises turn into disasters and vice versa (Chapter 1). The ecological-contextual model of Kloos will be further enriched by the notion of resilience as will be elaborated in Chapter 2 in order to stimulate the development of hypotheses that serve to answer the research questions posed above. Another contextual factor consists of cultural

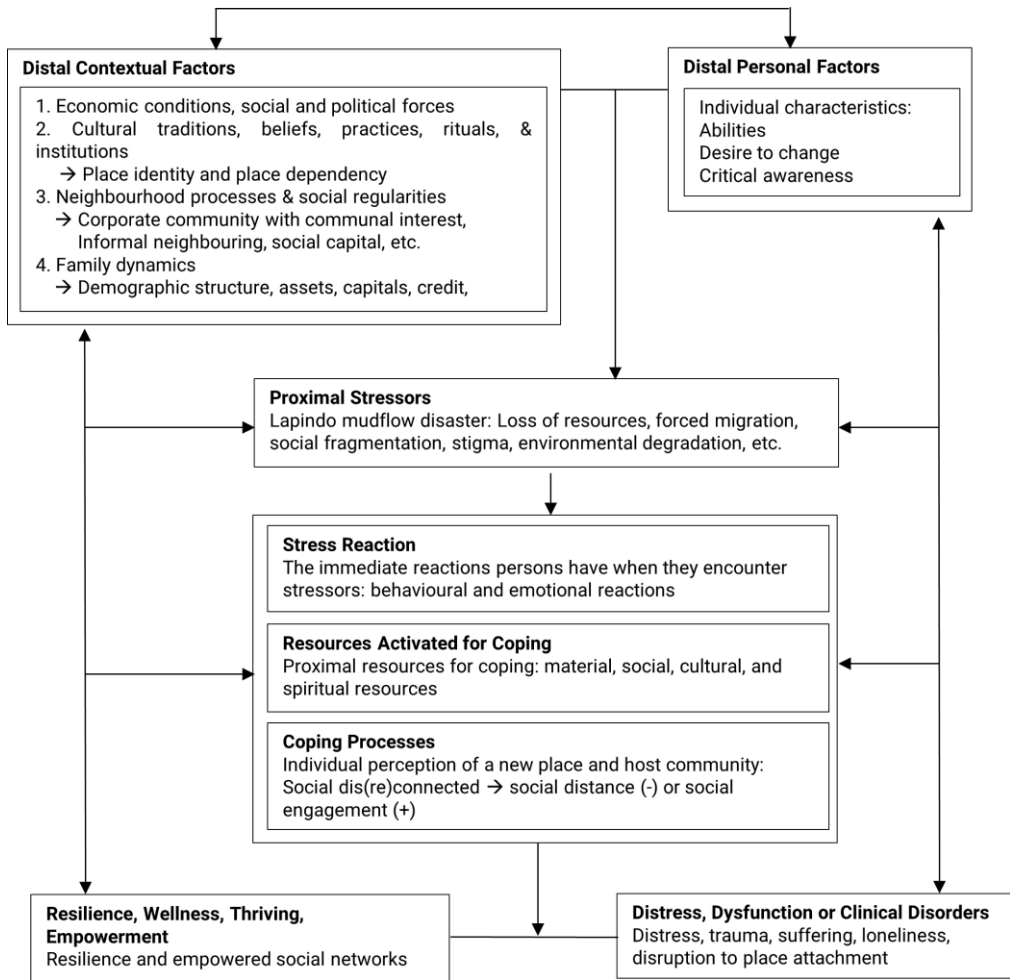


Figure 2. Conceptual framework of research
 Modified from Kloos et al. (2012)

traditions, beliefs, practices, and rituals that could provide meaning and strength to impacted communities (Chapter 3). The neighbourhood processes and social regularities in terms of community relationships, social roles, and power dynamics are also important to examine in this study, because the neighbourhood that once was a protective factor for the Porong people has turned into a risk factor following the Lapindo mudflow disaster. Family conditions need to be analysed as one of proximal resources for coping with disaster (Chapter 4). The family condition and destruction of the neighbourhood because of forced migration and the social fragmentation that followed may affect levels of stress, coping, and resilience (Chapter 5). As distal contextual factors, neighbourhood and family will also be examined in terms of their resilience. In this study, the distal personal factors such as biological factors, personality traits, etc. will be discussed in Chapter 6, especially in terms of personal history and specific characteristics such as critical awareness and desire to change that will influence individual capabilities to adapt to adversity. The proximal stressor is the Lapindo mudflow disaster that represents an actual loss of

resources. To some extent, stressors and coping responses shape each other. Further, stressors are defined as events demanding adaptive change and coping through responses or strategies used to reduce stress. People need to activate resources that can be material, social, cultural, and spiritual resources (for example: *istigosab* or mass praying) to cope with stressors. As stated by Kloos (2012, p263), “coping is a dynamic process that fluctuates over time according to the demands of the situation, the available resources, and a person’s ongoing appraisal and emotions.” So, coping processes will include judgement on the environment such as how the Porong people evaluate their new place and host community and responses to dis/reconnect with them. Stress reaction, resources activated for coping, and coping processes for the most part will be discussed in Chapters 4, 5 and 6. The last element is outcomes: wellness, resilience, thriving, or empowerment on the one hand, and distress, dysfunction, or clinical disorders on the other. In this study, in Chapter 5 the outcomes will be discussed in terms of distress, trauma, suffering, loneliness, and disruption to place attachment and in Chapter 6 in terms of empowerment and resilience.

6. RESEARCH METHODS AND DATA ANALYSIS

To arrive at an appropriate understanding of the impact of the Lapindo mudflow disaster in its full complexity I opted for applying a sequential mixed methods approach. Such an approach is also applicable to respond to culturally sensitive issues and helps to accommodate local context-specific measurement instruments. In this light, rather than using one single inquiry method, the integration of qualitative and quantitative approaches allows for arriving at complementary insights needed to answer the comprehensive and multi-level research questions. It is sequential in the sense that it consists of three phases or strands that followed and were built upon each other. The first strand consisted of qualitative methods which were followed by two quantitative ones (Creswell, 2018). In the first strand I explored the phenomenon as a whole by using participant observation, open and semi-structured interviews, and small talk, while in the next strand I built a feature to be tested that was used for collecting quantitative data in the last strand. The sequential mixed methods design that underpinned this study can be pictured as follows (Figure 3):

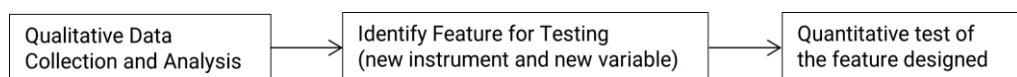


Figure 3. Three-phase design

Such a design allowed me to start out with an exploration and identification of survivors’ conditions nine years after the disaster in the first phase and tune these insights towards the development of a questionnaire survey that connects to the worlds or realities of the respondents under investigation in the next phases.

Before, I started with the actual data collection for this thesis that lasted from January 2015 to January 2016, I undertook an exploratory investigation in the period July-August 2014. During this exploratory phase, through interviews and also website info, I collected archival data about the Lapindo hot mudflow disaster from 2006 until 2014 from the Sidoarjo Mud Mitigation Agency (BPLS/Badan Penanggulangan Lumpur Sidoarjo) and the local government and involved the stories of NGOs about the disaster, the number

of people affected, places where the survivors live, and their involvement in the ‘time of the disaster. In this phase I also took the initiative to build rapport with some informants and interview those who possess information about the Lapindo mudflow disaster such as the survivors, the local government, and the NGOs. I also visited and observed some important sites such as the mud dyke, the settlement provided by Lapindo Brantas Company, the settlement created by the survivors and the common settlement that functions as a new place for the survivors to live. I also conducted participant observation at Ar-Rohma, one of the informal organisations created by the survivors, which at that time was making a video to be submitted to the Indonesian government as a way to secure social assistance and justice. An important insight from this exploratory investigation was the tendency of people to be sentimental towards the former place and the community that may be described as a form of nostalgia. Barcus & Shugatai (2022; p.103) stated that “the concept of nostalgia implies a level of romanticization of a place or time period, a selective ‘remembering’ of a place held in the imagination of an individual or group of people.” This means that in reality, the place was not always as perfect and harmonious as told by the survivors since a process of selection highlights the best memories as part of a romanticization of the lost place.

A. Purposive sampling of locations

I used purposive sampling in selecting neighbourhoods involved in the survey. In this study, the community level encompassed a neighbourhood unit (*rukun tetangga*). First, I chose the representation of each settlement type which are the settlements provided by the company, the settlements provided by the survivors’ committee and local housing developer, the common settlement, and kampong. After selecting the neighbourhoods, I selected households and individuals in these 34 neighbourhoods located in Sidoarjo and Pasuruan Regency. I included around 10-30% from the total households of each neighbourhood in the survey. In some “less hospitable” neighbourhoods, where the rejection rate was so high, I decreased the number of households to be taken by around 5% from the total population. Further, I took a sample randomly but also guarded the representativeness of each block dispersed over the neighbourhood. For example, if I was to conduct a questionnaire survey of 30 households and there were 10 blocks in the neighbourhoods then I would take around three households in each block. In total the survey questionnaire resulted into appropriate data about 517 households, 519 individuals and 34 neighbourhoods.

I applied some sampling criteria for selecting participants. Firstly, participants in this context were members of the neighbourhoods from one of the sub-districts affected by the Lapindo mud, which are Porong, Tanggul Angin and Jabon. Secondly, the neighbourhoods had to be a group of people from the areas mentioned in four presidential decrees (Perpres), namely Perpres Nos. 14/2007, 48/2008, 40/2009 and 37/2012. Other criteria applied for recruiting participants are based on the new places they currently live in. There are four types of settlements identified during the fieldwork (Figure 4). These are:

1) Settlements provided by the Company

This settlement was provided by Lapindo Brantas, Inc. as one of the compensation schemes or options (cash and resettlement schemes) offered to the survivors from Siring Timur (East Siring), a big part of Jatirejo, Kedungbendo, and Renokenongo that are also known as the first ring or inside Affected Area

Map (AAM) that became the company's responsibility in terms of compensation payments.

2) Settlements provided by the survivors' committee and local housing developer
After the first forced displacement, most of the survivors are aware that it is not easy to live a new life without their former neighbours on the land of strangers. Some of the survivors then took the initiative to plan and create their own settlement (a new kampong) that could accommodate all their fellow villagers. In order to move together with their whole neighbourhood (*bedol desa*), they created a committee as a representative of the kampong or neighbourhood to plan and arrange the process of building the new settlement, including the permit and construction process. This committee usually worked together with a local housing developer to create a new resettlement. Sometimes an offer or initiative was made by local developers or rich people (who sometimes are also survivors) who have the capital and they will persuade the survivors to buy land through the local or religious figures. In sum, the role of influential survivors (in the form of a committee or team) is more or less to work together with a developer in building a new settlement. An example of this type of resettlement is Renojoyo that is created by the PagerRekorlap group from Renokenongo.

3) A common settlement

This settlement is an existing housing complex built by local or national developers/constructors and was not built specifically for Lapindo mud survivors. Survivors usually move individually or in a small group that consist of relatives or close neighbours. In some housing complexes such as Perumtas 2, the number of Lapindo survivors continues to increase from time to time because some new migration groups prefer to choose this place as a new settlement.

4) Kampong

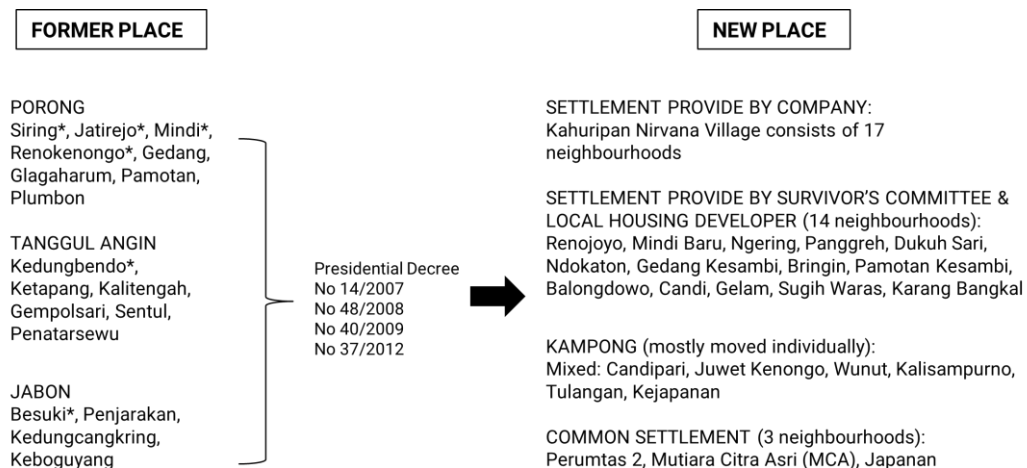
This settlement is an existing kampong built a long time ago in Porong and Sidoarjo areas. What makes a common kampong settlement different is the origin of the place, layout, and the composition of residents that are mostly homogeneous. Typically, a kampong has small, simple and semi-permanent houses with a big yard and subsistence farming.

The techniques applied for collecting the survey information were self-reporting questionnaires, survey interviews, and observation checklists. The self-reporting questionnaire and survey guide were written in the Indonesian language. Other parts of the data collection process were conducted through interviews in the local language of East Java. For this purpose, too, I recruited nine local enumerators to collect quantitative data during the remaining six months of my fieldwork. As principal investigator, I was the employer as well as co-worker of the enumerators. Thus, collaborative work and numerous exchanges took place between me and the enumerators, who at times also provided insights regarding the socio-cultural and economic conditions of local communities. Their input prompted me to constantly reflect on the data collection strategies, while they did enhance my understanding of problems in local communities.

B. Data collection strands

Strand one: qualitative data collection and analysis

After this thorough exploratory investigation, I started with qualitative data collection that took place during the first six months of the fieldwork to explore the variety



(*) The place is no longer existing because engulfed by the mud or the residents have been totally moved from the place

Figure 4. Four types of settlement

of dimensions related to the research questions in depth and in breadth. Based on these findings, I added the dimension about social and cultural-spatial aspects to my research questions in order to arrive at a better understanding of the forced migration experienced by Lapindo Mud survivors. In addition, I also found that the survivors were scattered across a wide area and the easiest way to obtain access to them was through developing contact and staying at their newly established settlements. In this phase, I attempted to arrive at a deeper understanding of the dynamics of the Lapindo mudflow disaster, its effects on local people's life and how they responded to it. As little information could be obtained through archival data, due to poor documentation by both the local and central governments, qualitative methods were mostly applied to collect the information, predominantly through participative and non-participative observations, unstructured and semi-structured interviews, as well as group discussions.

I conducted interviews and small talk with many survivors from different villages. I explored and probed all possible dimensions and thematic aspects in the survivors' lives after years of the Lapindo mud disaster. I used observation as a technique when participating in various events and activities such as the Lapindo mudflow celebration day, the mass praying (*istigasab*), the day of payment of compensation, and other social actions such as the survivors' strike and protest. I also observed various activities in significant and important sites such as cemeteries, mosques, and around the mud dyke. In addition, I conducted some semi-structured interviews and group discussions with the aid of interview guides. I used a group discussion mostly to verify the findings that I had already gathered earlier and also to explore more about some puzzling issues. For example, I cross-checked the host communities' statement that most of Lapindo survivors did not want to blend in with them (*tidak mau berbaur*) or to socialise with the host community. By the end, this data collection consisted of semi-structured interviews with 106 survivors and group discussions with 34 survivors (see Table 1 for a more detailed overview).

Table 1. Recapitulation of the data collection

Place of origin		Data collecting tools		Present place
District	Sub-district	Interview	Group discussion	
		<i>n</i>	<i>n</i>	
Jabon	Babatan	3		Ngering, Patuk
	Kedungcangkring	3		Ngering, Patuk, Kedungcangkring
	Besuki Timur	15	13	Podokaton, Dukuh sari, Pangreh
Porong	Siring	13	5	Mud dyke, Perumtas 2, KNV
	Jatirejo	13	5	Mud dyke, Perumtas 2, KNV, Japanan
	Renokenongo	14		Renojoyo, KNV, Mud dyke
	Pamotan	4		Kesambi, Beringin
	Mindi	7	4	Kesambi, Mindi
	Gedang	5		Kesambi, Gedang
	Glagaharum	3		Ngering, Glagaharum
Tanggul Angin	Gempol Sari	7	3	Balongdowo, Gempol Sari
	Ketapang	6	4	Near Perumtas 2, Candi
	Kalitengah	3		Kali tengah
	Kedungbendo	10		Tulangan, Japanan, Candi, KNV
Total		106	34	

The qualitative responses were recorded, transcribed, coded, and then analysed. When I reached saturation around specific themes, I started to build features to be tested before they were translated into specific questions for the questionnaire survey. I applied thematic analysis to identify the main themes relevant for cross-checking and further investigation. Based on the qualitative exploration, it is convenient to gather quantitative data in nested levelling because it allows the researcher to comprehend the different impacts of the Lapindo mudflow disaster on individual, household, and community. This finding encouraged me to develop and gather quantitative data in a hierarchical manner. Further, the migration did not occur in unison but in waves, small groups and dispersed. As a result, this pattern of migration mostly creates a small type of neighbourhood in the new place known as '*kaplingan*'. The exception is the survivor who moved individually to a kampong or the common housing complex and to the Kahuripan Nirvana Village (KNV), the housing complex provided as part of a compensation scheme by Lapindo Brantas, Inc. In this huge housing complex of the KNV, I found a larger set of neighbourhoods of survivors (17 neighbourhoods) although it does not totally consist of all Lapindo mud survivors due to residents' turnover.

At the individual level, the most prominent impacts after nine years of disaster that needed to be measured were disruption to place attachment, social distancing, and isolation or loneliness. Based on observations and interviews, the form of common trauma reactions of people affected by horrible events (such as nightmare and re-experience of the event) had decreased or did not strongly manifest after nine years of the Lapindo mud disaster. However, the uproot trauma in the form of disruption to place attachment, social disconnectedness, and alienation seem to be common responses in most of the survivors I encountered in six months of fieldwork. There is also the need to draw a picture concerning the impact on household livelihoods in terms of economy and social relationships after forced migration, and also patterns of household movement/migration. Furthermore, there is also a significant finding from qualitative data about the collapse of social and cultural capital, thus the profile of social relation and organisation in a new place as a community needs to be structured.

Strand two: identify features for testing (new instrument and new variable)

Based on data analysis in phase one, I construed the quantitative data collection at a contextual and individual level. At a contextual level, I collected data concerning neighbourhood/community and family/household as an effort to explain the proximal resources activated for coping and to examine resilience of these contextual factors. At community level, the model from Cutter et al. (2008) was used to assess disaster resilience at community level with its five categories of social, economic, institutional, infrastructural, and communal capitals. This model consists of antecedent conditions that allow the community to absorb impacts and cope with disasters as well as its post-event adaptive ability that helps the system to adjust and learn in response to the disaster. The community survey is a way to collect actual community assets and social interactions to assess how the community develops in the new resettlement. The instrument for a neighbourhood survey is a combination of observation checklists, blank tables to be filled with specific information, and some open-ended questions. The checklist observation is used to check the availability of public facilities in the neighbourhood such as a meeting hall, a place of worship, etc. The blank table is used to collect information about demographics, such as the age, education, and occupation of the residents living in the neighbourhood and to list the routine and non-routine activities in the neighbourhood. The open-ended questions are used to gather information about social relations and to capture the social dynamics of the neighbourhood. To complete this neighbourhood survey, enumerators observed the neighbourhood's environment and conducted interviews with some key informants who have good knowledge about the neighbourhood.

At household level, capabilities to respond to the shock can be assessed through several aspects. Conceptually, resilience of a household is assumed to be derived from assets, capitals, and opportunities (Alinovi et al., 2010). Some researchers also consider access to credit and a lower cost of lending and borrowing such as in a microcredit scheme that allows households to cope with shocks and improve their resilience (Suri et al., 2021; Islam and Maitra, 2012). Household resilience is also related to the capacity of households to cope with the impact of a disaster (Greiving, 2006). This coping capacity of households refers to the level of resources and ability to use these resources to respond to adverse consequences of a disaster (Billing and Madengruber, 2006). In this light, assets, livelihood strategy, public transfers, and credit are important resources for households to increase

resilience to shocks (Davies et al., 2013). Other household demographic characteristics also contribute to household adaptive capabilities such as education, skills, income diversification, and age-dependency-ratio (Vincent, 2007; Salignac et al., 2019). The instrument for the household survey is a combination of a blank table to be filled with specific information, some statements with multiple choice answers and some open-ended questions. The blank table is used to collect information about demographic data, the history of physical and mental health of family members, lists of associations the family members attend, and household assets, income, expenses, and debts. Statements with multiple choice answers were used to collect data concerning resident status and history of movement and migration before and after the Lapindo mud disaster. Open-ended questions were used to collect information concerning family relationships and problems. To complete this household survey, enumerators conducted interviews with family representatives for about one hour.

At an individual level, quantitative data are concerned with individual coping processes and outcomes. Coping processes are part of personal factors of resilience that are promoted by social connectedness and a sense of place (Boon, 2014). They reflect individuals' perception of his or her community, for instance social trust, place attachment, and so on (Ungar, 2011). In this study, the coping processes are represented by how an individual perceives a new place and the host community and how s/he responds to it with social distancing or social engaging behaviour as part of an avoidance-approach coping style. The concepts of social participation, social involvement, and social gathering have been used interchangeably with social engagement. Further, the social activities people could engage in may vary from individual-based to community-based. In this study, social activities are based on social regularities in the Porong community which consist of informal and relaxing activities such as chatting, joking around, or gossiping and formal activities such as social, religious, political, and cultural activities that are often associated with, or restricted to, a certain group with distinct characteristics. The quantitative measurement of outcomes are loneliness and disruption to place attachment. Apart from being prominent phenomena, social connectedness and a sense of place are proper concepts when explaining social fragmentation and forced migration as part of the disaster impact. The individual self-report questionnaires consist of statements by survivors about their present psychosocial condition living in the new place after disaster. These four features of measurements were created on the basis of themes while groups and items of each measurement were generated on the basis of statements and quotes from the survivors. Before using these individual self-report questionnaires as tools to collect quantitative data, I had constructed a Cronbach's alpha for testing the reliability for 30 respondents and the result for all instruments seemed to be a good fit with a Cronbach's ranging between .7 and .8. The self-report questionnaire was given to one or more family members to be filled out after enumerators conducted household survey interviews. Please find the features and the design for each level below in Table 2:

Table 2. Instruments as feature for testing

Level	Feature	Design
Contextual factors	Neighbourhood/community Community demography	Survey on number of people, occupation, gender

Level	Feature	Design
	Public facility & infrastructure	Observation checklist on public facilities
	Social organisation & interaction	Survey on daily routines, social/organisation activity, and cultural practices
	Collective problems & supports	Survey on conflicts or/and cooperation within residents and host community
	Family/household	
	Household demography	Survey on education, age, occupation
	Family migration history	Survey on household movement and migration
	Economy condition	Survey on asset, income, expenses, and debts
	Social relations	Survey on social support & family relationships
	Problems and opportunities	Survey on household problems and assistance
Individual factors	Coping processes	
	Social distance	A self-report questionnaire consisting of 17 items with four choices (almost never, sometimes, often, almost always)
	Social engagement	A self-report questionnaire consisting of 7 items with four choices (almost never, sometimes, often, almost always)
	Outcomes	
	Disruption to place attachment	A self-report questionnaire consisting of 30 items with four choices (almost never, sometimes, often, almost always)
	Loneliness	A self-report questionnaire consisting of 17 items with four choices (almost never, sometimes, often, almost always)

C. Data analysis

I used descriptive and inferential statistics to organise and analyse the quantitative data. This quantitative part is cross-sectional research using a nonparametric test, correlations, and a regression analysis. Nonparametric techniques will be used to test small assumptions such as to evaluate the reason for choosing a place to move based on score rank. In this nonparametric approach, we also compare two groups or more or compare two sets of scores that come from one participant such as comparing numbers of relatives before and after the disaster using a Wilcoxon signed rank test. Another type of test is a correlation test that can be in the form of cross tabulation followed by the correlation test. We use this type of analysis to check the relationship between two variables and the test is mostly done using a Pearson's chi-squared test. The last test is a regression analysis, either nominal or linear regression, that would enable us to predict the outcome variables based on values of the predictor variables, such as to predict loneliness based on values of social engagement and disruption to place attachment. There is also a statistical analysis such as the Exploratory Factor Analysis (EFA) especially used to test the local construct of social distance, disruption to place attachment, and loneliness.

In general, the quantitative data analysis was carried out in three parts: analysis at household level, analysis on individual level, and analysis that involved both levels. At household level, the purpose of analysis was specifically to examine the impact of the disaster and the capabilities of households to adapt and recover from the disaster. The capabilities of households to respond to the shock was assessed through several aspects which are derived from assets or capitals, household coping strategies, and household demographic characteristics that may contribute to household adaptive capabilities. On an individual level, to assess individual personal factors of resilience the statistical analysis was carried out in terms of coping processes and the outcomes through two main elements: social connectedness and a sense of place. The coping processes are represented by individual responses, which are social distancing or social engaging behaviours, and the outcomes of the coping processes are loneliness and disruption to place attachment. The analysis that involves household and individual levels was done to examine the pattern of adaptation of individuals. Here is the list of statistical analysis in this study in Table 3.

Table 3. Statistical analysis

The purpose of analysis	Element	Statistical test
Household level		
Impact of disaster	Migration and movement	Descriptive analysis
	Number of relatives	Comparative analysis
	House ownership, Occupational status	Correlation analysis
Capability to adapt/recover		
Demographic	Household type and characteristics	Cluster analysis
Vulnerability	Household economic burden	Linear regression
Coping strategy	Household coping strategy	Correlation analysis
	Livelihood portfolio and its role in coping	Nominal regression analysis
Individual level		
Coping processes		
Social connectedness	Construct of social distance and social engagement	Exploratory factor analysis (Paf, Promax rotation)
Outcomes		
Negative consequences	Construct of disruption to place attachment and loneliness	Exploratory factor analysis (Paf, Promax rotation)
Factors that predict loneliness	Individual characteristics, disruption to place attachment, social distance and social engagement to loneliness	Correlation and linear regression analysis
Household and individual level		
Factors that predict social engagement	Individual, household, and resettlement toward social engagement	Linear regression analysis

The purpose of analysis	Element	Statistical test
Adaptative pattern	Household demographic, individual coping processes and outcomes	Cluster analysis

7. OUTLINE

The findings of this study will be presented in six chapters partly related to the various research questions. Chapter 1 and 2 provide some contextual background to the study. The first Chapter is an intensive review of the Lapindo mud disaster, the causes, the area affected, and the impacts. Chapter 2 is about the multidimensional challenges that arises from the Lapindo mud disaster for the people in Sidoarjo. It touches upon the issue of resilience and the way people in Sidoarjo are coping with and adapting to the social and environmental changes they face.

Chapter 3 specifically relates to the first and second research question and provides a better understanding of the way people perceived the former living place and the process of forced displacement. Chapter 4 further elaborates on the effects of this forced displacement and the way it has shifted people's livelihoods and their space; in other words, how their social relationships and networks broke down and have been reformed. As such it aims to understand household resilience, i.e., in withstanding, recovering from, and/or adapting to the Lapindo mudflow disaster and crisis. Chapter 5 attempts to provide an answer to the extent to which the replacement of the people's former living space in Porong and the subsequent changes in the notions of place and space have generated individual, collective, and/or other psychological traumas. Chapter 6 will discuss the ways that these people try to respond to challenges that have transformed them into different kinds of actors and generated new social relationships and networks. Finally, I summarise the main findings of this study, arrive at a concluding discussion around the central research question and themes of this study and provide some directions for future disaster research in the Conclusion.

CHAPTER 1

LAPINDO MUDFLOW DISASTER

1.1 THE BEGINNING OF THE DISASTER

The following story about the Lapindo mudflow disaster is popular among the victims: For several weeks, a lot of large trucks went to and from the paddy fields in ‘Renomencil’ (literally means ‘isolated Reno’), part of Renokenongo Village, but now standing apart due to the development of the Surabaya-Gempol highway in the 1980s. Some residents of Renokenongo assumed that it was part of a chicken farm operation, while others thought it reflected the rush for animal feed factory development. This was what Renokenongo Village Head Mahmudatul Fatchiyah had told them when she persuaded Renomencil landowners to sell their land: “it will be used for factory development”. It never occurred to them that the hustle and bustle in the middle of the paddy field was a gas exploration activity at the soon-to-become gas field. In the third week of May 2006, a foetid and pungent odour was spreading in Siring Subdistrict, the area near to the exploration site. While confusion reigned, an announcement on the mosque loudspeaker forbade residents to light a fire, even for cooking. The day after, people in company uniform came to the village to distribute weeks-long food and clean water to residents, followed by the arrival of a large number of troops and police officers who stood on guard around their houses (Interviews with the residents of Renokenongo and Siring villages, 2014-2015).

On May 29, 2006, Renokenongo Village in Sidoarjo, East Java, Indonesia was hit by the eruption of hot water, gas, and mud, locally known later as LULA (Lumpur Lapindo/the Lapindo Mudflow) or LUSI (Lumpur Sidoarjo/the Sidoarjo Mudflow), approximately 150–200 metres southwest of the Banjarpanji-1 (BJP-1) well (Mazzini et al., 2007; Davies et al., 2008). During the initial phase of the mudflow, the BJP-1 was owned by Lapindo Brantas, Inc (LBI)⁵ as operator and Medco E&P Brantas and Santos Brantas Pty Ltd as participating partners. The exploration at the BJP-1 started on March 8, 2006 by PT Medici Citra Nusa (MCN) as a drilling contractor hired by LBI and ended after 80 days, leaving a mudflow volume of 70,000–150,000 m³ per day at a temperature between 70° and 100° Celsius (Neal Adams Services, 2006; BPK RI, 2007; Davies et al., 2007).

The mudflow was expanding rapidly. On June 1, 2006 the second eruption occurred, followed by the third the following day. Schools and factories nearby had to be closed and 735 villagers were evacuated to the Renokenongo Village Hall or to stay with their relatives. The next morning, a large proportion of the population was evacuated to safer places, such as the PBP (Porong New Market), Mapolsek (sectoral police headquarters) and the village hall. Within three weeks, the densely populated area of 90 hectares was buried under the mud, forcing more than 2000 people to abandon their village (Richards, 2011; Novenanto, 2016).

⁵ The Bakrie Group controlled upstream Oil & Gas unit Energi Mega Persada formed Lapindo Brantas Inc. in 1996 with the purchase of American owned Huffington Corporation's interest and operatorship of the Brantas Block in East Java, Indonesia. The ownership of Lapindo Brantas Inc. was later shared between Santos (18%) and Medco (32%).

The mudflow proved to be unstoppable and raged on to claim more populated areas in the region, despite extensive joint efforts by LBI/Lapindo Brantas Inc, the company that operated the drilling site, the Sidoarjo district administration, the East Java provincial government, the independent team formed by the Minister of Energy and Mineral Resources (ESDM) and later on Timnas PLS⁶ (the National Team for Sidoarjo Mud Mitigation). These efforts comprised a snubbing unit, side tracking, a relief well and the High-Density Integrated Chain Ball (HDCB). The situation got even more critical with several levees used to hold mud ponds collapsing. On September 22, 2006, Pertamina's gas pipeline exploded. The blast tore apart the right-side levee of the Surabaya-Gempol toll way, which served as the only strong barrier between the 60 million cubic metres of mud and the southern regions of BPJ-1 well, setting the mud free to inundate Perumtas 1 in Kedungbendo Village and the surrounding area. As of the end of 2006, the mudflow had buried four villages and twenty-five factories, displacing 11,000 people (BPK RI, 2007; Davies et al., 2007; Richards, 2011).

The mudflow continued much longer than the villagers had expected, preventing them from returning to their homes. Davies et al. (2007) initially predicted that it would take several years for the mudflow to stop naturally, but their thorough study suggested that the mudflow eruption would last for twenty-six years (Davies et al., 2011). The latest prediction about the duration of the Lapindo mudflow posits a 50% chance that it will last for more than 41 years and a 33% chance that it will last for more than 84 years (Rudolph et al., 2011). However, the government seems to have stopped gathering data on the extent of the area and population affected by the disaster. No government-released official figures are available that may shed light on the extent of the affected and vacated areas. The last documented data on the mudflow-affected population, excluding the recently affected areas stated in Presidential Decree No. 36/2012, is presented on Table 4.

Table 4. Population affected by the mudflow⁷

District and sub-district	Population affected based on Presidential Decree						Total	
	No. 14/2007		No. 48/2008		No. 40/2009		Family	Person
	Family	Person	Family	Person	Family	Person		
Porong								
Siring					326	1,115	919	3,430
Jatirejo	900	3,865			233	826	1,133	4,691
Mindi					308	1,096	1,304	4,493
Glagaharum	408	1,649					1,385	5,419
Renokenongo	1,808	6,437					1,808	6,437
Plumbon							323	1,078
Pamotan							1,117	3,009
Gedang							1,634	6,776
Tanggulangin								
Ketapang	199	708					1,366	5,073
Kalitengah	34	146					2,721	9,387
Kedungbendo	9,665	24,513					9,665	24,513
Gempol Sari	93	314					1,251	4,421

⁶ Timnas, or the National Team, which was formed as a special mitigation team to overcome the Lapindo mudflow on 8 September 2006 based on Presidential Decree No. 13/2006 on National Team for the Mitigation of the Sidoarjo Mudflow (National PLPs), was slated to be on duty for 6 (six) months.

⁷ Tim Terpadu Kajian Penanganan Dampak Luapan Lumpur Sidoarjo. *Kajian Penanganan Dampak Luapan Lumpur Sidoarjo*. (Jakarta, 31 October 2011), 8-9.

District and sub-district	Population affected based on Presidential Decree						Total	
	No. 14/2007		No. 48/2008		No. 40/2009			
	Family	Person	Family	Person	Family	Person	Family	Person
Sentul							701	3,475
Penatarsewu							782	2,831
Jabon								
Pejarakan			403	1,464			505	1,864
Kedungcangkring			158	501			1,151	3,871
Besuki			1,063	3,624			1,408	4,824
Keboguyang							1,167	4,165
Total	13,700	39,947	1,624	5,589	867	3,037	30,340	99,757

Table 4 shows that in the first year of the mud eruption in 2006, it only affected villages in Porong and Tanggul Angin District. In 2008, there was an increase in the number of the affected areas, including villages in Jabon District. While the mudflow disaster affected most of the population in the first year (amounting to 39,947 people, 24,513 of whom were the residents of Kedungbendo Village), the number continued to decrease the following years.

While data on the number of people in the population who have been affected by the mudflow disaster are not complete, it is estimated that the mudflow has affected more than 99,757 people. Even though the number of displaced people is decreasing by the year, the mudflow will continue for many years to come and will likely make the surrounding population suffer. The adverse impacts of the mudflow on the population will be discussed further in this chapter along with other important topics such as the cause of the disaster, the litigation process, the affected areas, and the government's strategy to handle the mudflow.

A. The cause of the disaster: man-made and/or natural?

The triggering mechanism of the mud eruption has been the subject of contentious debate since 2006 (Davies et al., 2008; Plumlee et al., 2008; Sawolo et al., 2009; Drake, 2016). The debates have taken place in legal, political, public, and scientific arenas involving companies, the government, non-governmental organisations, victims of the disaster, scientists, and the general public. Many local and international scientists collaborated and published contradictory findings on the cause of the disaster. Up to this point, there are three hypotheses on the cause of the disaster: a mistake in the oil and gas drilling activity, an earthquake, and the combination of natural disaster and human error.

The first investigation into the cause of the mud eruption was conducted on June 12, 2006. The Indonesian Ministry of Energy and Mineral Resources (ESDM) created the first official team led by Rudi Rubiandini, a petroleum engineer, to investigate the incident. The outcome of the investigation pointed to LBI as the cause of the eruption, for negligently failing to install the protective casing as planned when drilling the BPJ-1 well. This prompted the government to demand that LBI cover the cost of handling the mudflow and social problems (Schiller et al., 2008; Novenanto, 2016).

The second investigation was triggered by the dispute between LBI and PT Medco Energy. As a participating partner, Medco denied responsibility for the incident, arguing that during the meeting on May 18, 2006 it had advised LBI to install the protective casing at a depth of 8500 feet at the BJP-1 well to anticipate drilling technical problems. However, as operator, LBI did not heed Medco's advice. To settle the disagreement, in November 2006 Medco brought the case to the international arbitration court in New York, USA. Medco commissioned Neal Adams Services and TriTech Petroleum

consultants to investigate the incident. The companies' investigation results confirmed that the Lapindo mudflow was caused by LBI's operational errors and omissions. With regard to the finding, Neal Adams states that:

The numerous errors and omissions by Lapindo in causing the Banjar Panji No. 1 blowout can be considered as negligent, grossly negligent and/or criminally endangering the lives of the crew and surrounding residents as well as endangering the environment.⁸

Furthermore, this gross negligence by LBI that refers to numerous operational mistakes as well as errors and omissions, both in violating its own Well Plan by failing to install a protective casing and in lacking the technical competence to diagnose and handle the blowout, had led to several unsuccessful attempts to kill it. However, the trial has never been performed, and in March 2007 Medco Energy suddenly announced the sale of its subsidiary PT Medco E&P Brantas for only US\$100 to Prakarsa Group from Indonesia, which is owned by Bakrie Group. Many suspected that it was LBI's strategy to end the arbitration case (Adams, 2006; Wilson, 2006; Pohl, 2007).

The third investigation was conducted by BPK RI (the Indonesian Supreme Audit Agency) into the permit, implementation, and government monitoring of the exploration of the BJP-1 well. BPK also investigated the handling of the mudflow, refugees, and social impacts. It found a lack of government supervision of LBI's activities, and that the issuance of a gas exploration permit did not comply with regulatory provisions. In addition, it suspected that incompetence in the drilling of the BPJ-1 well and human errors in the exploration process had caused the mud eruption (BPK RI, 2007).

Even though the results of the three investigations indicated that LBI's drilling activity was the cause of the disaster, LBI adamantly denied that its drilling activity had caused the mudflow disaster. As stated in the Lapindo Brantas report (2014):

The eruption of the mud volcano called "LUSI" (a contraction of Lumpur Sidoarjo wherein lumpur is the Indonesian word for mud while Sidoarjo is the town where the mud eruption occurred) has been linked by many local and international scientists to the powerful 6.3 earthquake that hit Yogyakarta, Central Java, some 250 kilometers away from the drilling site two days previously.... The tremor was noted by a German university research team as one of the most powerful ever to rock the island of Java, which is firmly situated within the so-called "Ring of Fire".

Using scientific arguments, LBI contradicted the results of the investigations and declared its innocence. Additionally, LBI claimed that their involvement in the post-disaster rescue and response efforts as a form of sympathy and assistance to the Indonesian government, which at that time was overwhelmed and underfunded, as it was also dealing with the Yogyakarta earthquake (Lapindo Brantas, 2014).

It is interesting to explore the developing ideas among the scientific community regarding the cause of the mudflow, as some of the scientific findings were different from the results of the investigations by the three institutions above. To begin with, *Birth of a mud volcano: East Java 29 May 2006* by Davies et al. published on February 1, 2007, the first

⁸ Neal Adams Services, *Causation Factors for the Banjar Panji-1 Blowout*, (Final Report, 15 September, 2006), 6.

publication concerning the cause of the mud eruption, pointed to drilling activity as the cause. In the next paper on the Lapindo mudflow, Davies et al. elaborated on their opinion of the cause of the mud eruption, saying that LBI's failure to set a protective steel casing during penetration of the deep reservoir zone of limestones and over-pressured mud had activated pressure induced hydraulic fracturing. Fractures propagated to the surface, where pore fluid and some entrained sediment started to erupt (Davies et al., 2008; Tingay et al., 2008, Tingay et al., 2015).

On the contrary, Mazzini et al. published several papers in which they concluded that the earthquake in Yogyakarta (about 318 km from the mudflow area) that occurred two days before the mud eruption was the trigger (Mazzini et al., 2007; Mazzini et al., 2009). This counter group suggested that an anomalous seismicity change due to the Yogyakarta earthquake activated displacements on the Watukosek major fault zone. The displacements, they argued, produced fractures that provided a flow path for hot mud to discharge to the surface, creating a mud volcano. Among the geological experts and specialised agencies that also support this opinion are BPPT (the Indonesian Agency for the Assessment and Application of Technology), IAGI (the Indonesian Association of Geological Experts) and Manga et al. (BPK, 2007; Manga, et al., 2009). The latest research in 2013 using seismic energy-simulation methods is also in tune with the opinion that the Lapindo mudflow was caused naturally (Lupi et al. 2013).

The geoscientist community tried to resolve these differences when the American Association of Petroleum Geologists (AAPG) raised the dispute over the cause of the mud eruption at one of its International Conference and Exhibition events in Cape Town, South Africa in 2008. This organisation tried to reach a conclusion on the cause of mudflow by taking a vote amongst the 74 members of AAPG. The result was 42 votes pointed at the drilling of the BJP-1 well by oil and gas company LBI as the trigger, three votes were in favour of the Yogyakarta earthquake as the natural cause, 13 votes preferred the combination of earthquake and drilling activity as the cause, and 16 votes opted to declare that evidence was inconclusive ("Conclusive Vote by Global Scientists Determines Real Cause of Indonesian Mud Volcano" Durham University News, 2008).

While the voting result during the AAPG conference can be considered as conclusive because more than half of the scientists present at the conference voted for LBI's drilling operation as the cause, the debate continues. In this Lapindo mudflow case, it is important and crucial to highlight that the contestation has occurred not only at a practical level but also at conceptual and scientific levels. Furthermore, scientific findings, especially those that are contrary to the investigation results by the three institutions, have been used by LBI as a justification to avoid any legal consequences. In this case, any form of findings, including investigation report, expert testimony in court, public hearing, and scientific publication has become the primary consideration of related parties in making decisions and upholding disaster management policies that sometimes endorse the interests of certain stakeholders. As David Cyranoski (2007, p. 812) states:

Lusi's devastation has so far been a defeat not only for civil engineering but also for scientific understanding. Efforts to figure out how it started have turned into a hotly contested whodunit...

Scientists are also engaged in heated debates, rather than building a collaboration as a way to discuss and examine how the disaster occurred and find a better solution to mitigating

the impact. This strengthens the assumption that partisanship has framed the disaster to such an extent that it further complicates the situation, raises ambiguity with regard to the cause of the disaster, and intensifies divisions among stakeholders (Drake, 2017). This situation indicates that almost all parties, including scientists who celebrate objectivity and systematic approaches, have had a hand in blurring the context and cause of the disaster. Rather than helping put an end to the disaster, conflicting views potentially prolong and aggravate the consequences of the disaster.

B. The affected area: the inside and outside of the embankment ring

The Lapindo mudflow has affected Porong, Tanggul Angin and Jabon subdistricts, which are part of Sidoarjo Regency, East Java, Indonesia. The mountainous subdistricts are located along the Madura Strait and are on the border of Pasuruan and Sidoarjo districts. Rich in mineral resources, they have long been known as Brantas Block. During the exploration of the BPJ-1 well, the subdistricts were a vibrant settlement, with sprightly agricultural activities, and bustling factories. This was in keeping with regional planning that envisioned the region as a hub of agriculture, industry, and tourism.

Unfortunately, the mudflow disaster tore the vision apart, turning the area into 11-meter-high ring-like layers of earthen embankments. The embankments were made after efforts to staunch the mudflow failed. LBI proposed the idea of mapping out the affected areas according to its buyout strategy. The Sidoarjo Regent reportedly suggested land acquisition by LBI, with the National Team (Timnas PSLs) coming forward as a negotiator in reaching an agreement with the company. Several parties, including Timnas PSLs, LBI, and the Sidoarjo Regent, were reportedly involved in the initial determination of the affected areas, followed by the East Java provincial government and the Speaker of the East Java Representative Council, in verifying and signing the affected area map on March 22, 2006.

The affected area mapping according to LBI's buyout plan was a top-down process. However, mudflow victims protested that they had not been involved in the making of the map. The first PAT/AAM (Peta Area Terdampak/Affected Area Map) was released on March 22, 2007, which serves as a reference to Presidential Decree No. 14/2007 on disaster countermeasures. This PAT, known as the December 4, 2006 map, contained one-third of the area marked on the March 22, 2007 map. As the map was being legally processed, Pertamina's gas pipeline burst, affecting Kedungbendo and Gempol Sari villages, prompting the residents to be included in the PAT.

The government, through Timnas PSLs (The National Team for Sidoarjo Mud Mitigation), claimed that LBI was responsible for compensating the victims in areas included in the PAT. According to the PAT (see Figure 5), areas totalling 613.4 hectares were submerged in approximately 120 million cubic metres of mud. The mud-submerged areas were:

- 1) \pm 325 hectares of Siring, Jatirejo, Renokenongo and half of Kedungbendo villages, according to the December 4, 2006 map (highlighted in orange).
- 2) The Pertamina pipeline burst expanded the affected areas to \pm 229 hectares, leaving four villages under mud, which subsequently spread to six other villages, namely Ketapang, Kalitengah, Glagah Arum, Gempol Sari, Pejarakan, Mindi, and Keboguyang (highlighted in red).
- 3) Subsidence, which cracked houses in non-submerged areas, extended the PAT coverage by \pm 32.4 hectares (highlighted in yellow).

Regulation No. 14/2007 requires LBI to cover all the buyout costs within two years. However, after eight years, the owners of 13,237 files⁹ had not received full payment.

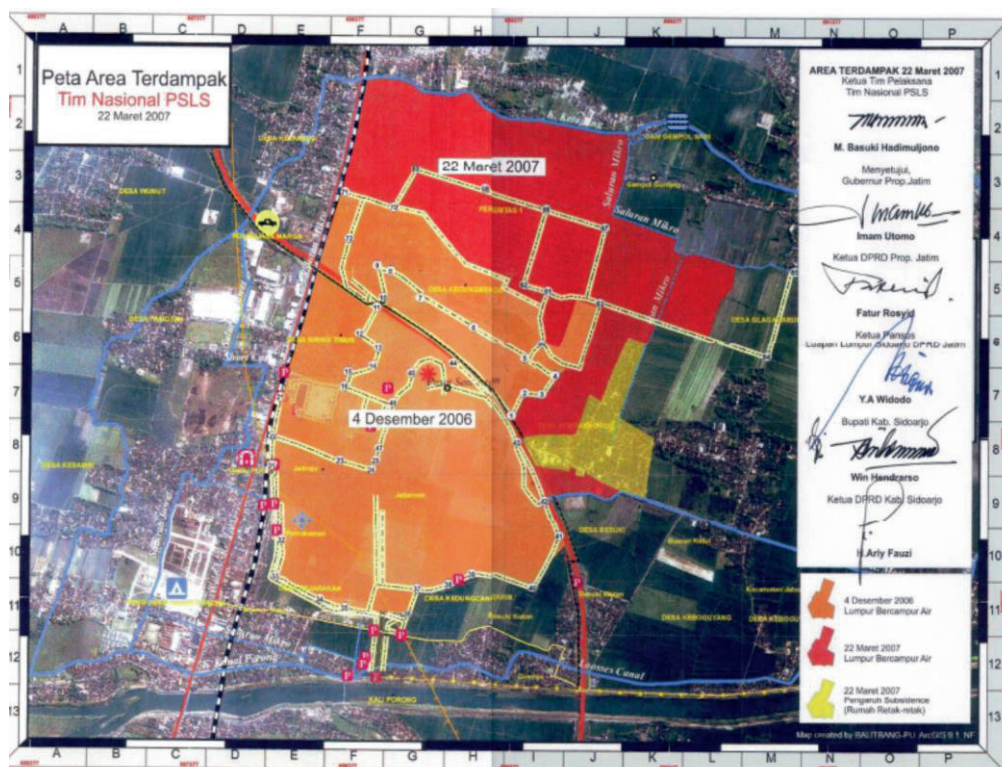


Figure 5. The area inside ring or PAT/AAM (Peta Area Terdampak/Affected Area Map)

Source: BPLS (Sidoarjo Mud Mitigation Agency), 2007

The government did not consider areas ‘outside the ring’ (see Figure 6) to be affected areas, so they were designated as areas for mudflow mitigation management (highlighted in green), non-liveable areas (highlighted in blue) and insecure areas (highlighted in brown line). The government was responsible for the compensation (land and building acquisitions) for these areas. The following is the overview of the extended areas:

- a) The area for mudflow mitigation management included Besuki, Penjarakan, and Kedungcangkring villages, which were later ratified by Presidential Decree No. 48/2008 (17 July, 2008), in a revision of Presidential Decree No. 14/2007. This area is known as ‘Wilayah 3 Desa’ (the Area of Three Villages), referring to Besuki, Pejarakan, and Kedungcangkring villages in Jabon Subdistrict, Sidoarjo. Some advised that this area should be evacuated for embankment and sewer development along the Porong River, while others said that the three villages were the victims of non-optimal mudflow handling. The buyout mechanism for the three villages was similar to that under the PAT scheme, but this time it was

⁹ File refers to the documents of land ownership that have been verified by LBI. However, this file does not reflect the number of persons or households because one person is often responsible for several files, while in other cases one file is actually owned by several families.

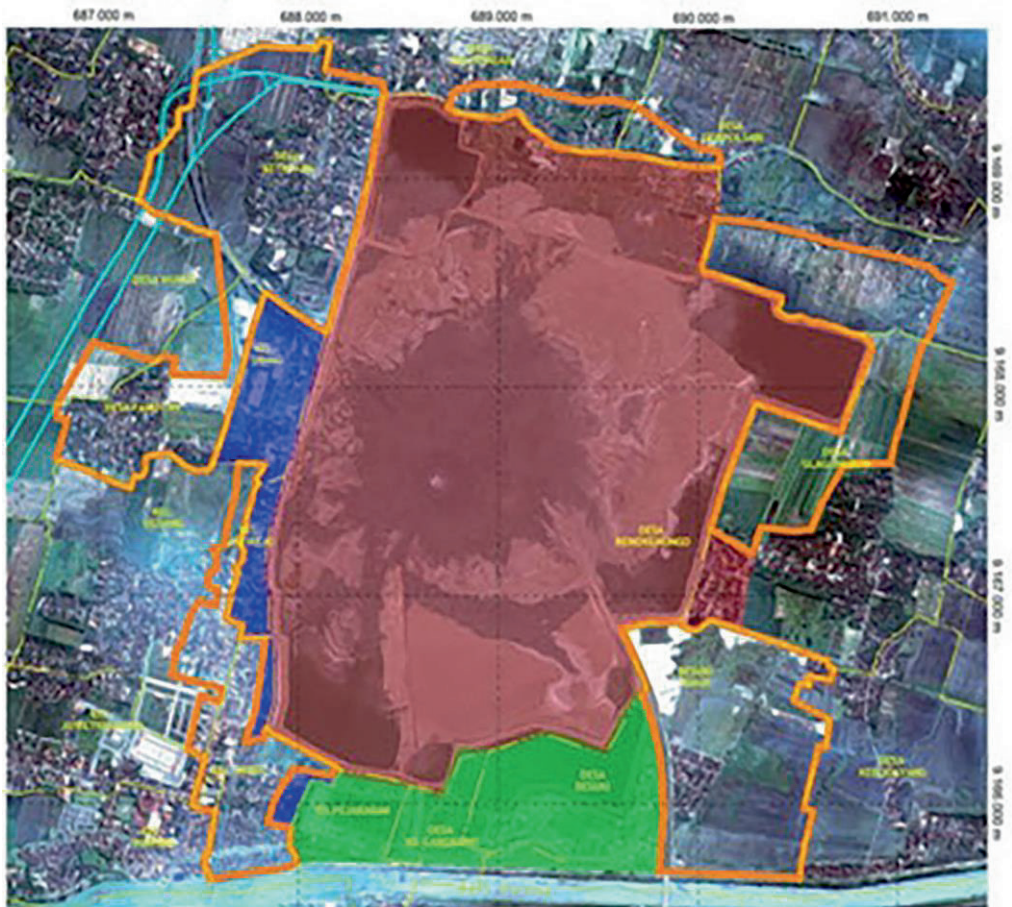
the government who shouldered the costs, with asset value referring to LBI's assessment and payment. To clarify the areas to be vacated, BPLS added new markings on the March 22, 2007, map.

- b) The blue area is known as 'Wilayah 9 RT' (the Area of nine neighbourhood units). It is a product of the second revision of Regulation No. 14/2007, as mandated by Presidential Decree No. 40/2009 (September 23, 2009) that designated several areas as non-liveable, including nine neighbourhood units in Siring, Jatirejo, and Mindi villages that were impacted by soil deformation and the emergence of harmful blowouts. This area was to be fully vacated within two years and the government would provide social assistance to the residents (money for renting houses, annuity, and the cost of evacuation). Presidential Decree No. 40/2009 did not regulate compensation for residents' land and buildings. Such compensation was regulated under Presidential Decree No. 68/2011 (September 27, 2011) as the third amendment to Presidential Decree No. 14/2007. Compensatory mechanisms and the value of compensation remained the same. In October 2011, BPLS released a map that included this area.
- c) The insecure area (brown line) is known as 'Wilayah 66 RT' (the Area of 66 neighbourhood units). In addition to the determination of the compensation for nine neighbourhood units, Presidential Decree No. 68/2011 also included the formation of an 'Integrated Team' by the BPLS Steering Committee to assess the areas affected by the spreading of Lapindo mud. The team recommended that several newly-affected areas should be vacated, and they were declared as uninhabitable in Presidential Decree No. 37/2012 (April 5, 2012) as the fourth amendment to Regulation No. 14/2007. The newly-affected areas that must be vacated included 65 neighbourhood units in Besuki, Mindi, Pamotan, Gedang, Ketapang, Gempol Sari, Kalitengah, and Wunut villages. On May 8, 2013, Presidential Decree No. 33/2013 was issued as the fifth amendment to Regulation No. 14/2007, which detailed the boundaries previously set by Presidential Decree No. 37/2012, added one neighbourhood unit in Porong Village, and changed the name into 'Wilayah 66 RT' (the Area of 66 neighbourhood units).

A detailed description of the determination of the affected areas in the context of Lapindo hot mudflow disaster is important, as different areas received different treatment, leading to different experiences among the victims. Being inside or outside the embankment determined the type of situation the victims had to face in terms of the pace of change, the clarity of issues and their resolution.

The population inside the ring area had to face rapid change coupled with a high level of uncertainty and experimental solutions. After years of disaster, the problems were not fully resolved, including unpaid compensation. In addition, the residents had not received their house and land certificates at the Kahuripan Nirvana housing under a cash and resettlement scheme. They often had to move from a refugee camp to rented houses, or, for those who could afford to purchase them, their own houses.

In contrast, people outside the ring area faced a clearer situation and more predictable changes, which allowed for better movement planning. They also did not have



KETERANGAN



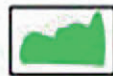
Batas Desa



Relokasi Jalan Arteri



Area Terdampak Tanggal 22 Maret 2007
(Berdasarkan Peraturan Presiden No. 14 Tahun 2007)



Wilayah Penanganan Luapan Lumpur
di Desa Besuki, Pejajaran, dan Kedungcangkring
(Berdasarkan Peraturan Presiden No. 48 Tahun 2008)



Wilayah Penanganan Luapan Lumpur
- Desa Siring bagian Barat (RT 1, RT 2, RT 3, & RT 12 di lingkup RW 12)
- Desa Jadirejo (RT 1 & RT 2 di lingkup RW 1)
- Desa Minda (RT 10, RT 13, & RT 15 di lingkup RW 2)
(Berdasarkan Peraturan Presiden No. 68 Tahun 2011)



Batas Wilayah Tidak Aman
Sebagaimana Dimaksud Dalam
Peraturan Presiden Ini Pasal 158 ayat (1c)



Skala 1 : 35000



Sumber Peta:
Ikonos Quickbird Bapel BPLS tahun 2008

Sistem Koordinat:
Universal Transverse Mercator (UTM)
Datum World Geodetic System (WGS) 84
Zona 43 Southern Hemisphere

Figure 6. The area outside the ring or outside PAT/AAM (Peta Area Terdampak/Affected Area Map).

Source: BPLS (Sidoarjo Mud Mitigation Agency), 2010

to face delays in compensation. This gave them the opportunity to buy land and a house. However, this does not imply that people outside the ring area did not have problems; they were just less burdened by external pressures such as sudden outbursts, the gas pipeline explosion, and delays in compensation.

Unlike most PAT people who moved arbitrarily and were scattered around, the people of East Besuki who had to abandon their village in 2013 had the chance to discuss and plan their evacuation very carefully. Meanwhile, people from the first affected area decided to move together to new dwellings that should be more than five kilometres from any mudflow and nearby public facilities such as school, a traditional market, and paddy fields. However, an extensive description on how the people were displaced and resettled will be discussed further in Chapters 3 and 4.

1.2 WHO IS RESPONSIBLE?

The Lapindo mudflow disaster countermeasures were regulated through a presidential decree that has undergone several revisions regarding the widening of the affected areas. In this regulation, the government takes into account the possibility that LBI's drilling activities have caused the mud eruption, and the company therefore must incur all the costs spent on efforts to stop the mudflow and on the care of refugees. Over time, the government also shouldered the mudflow handling costs.

In addition to its emphasis on efforts to stop the mudflow, the presidential decree also stipulated the division of responsibility between the government and the liable company on buyout process and mud management in the future. The company was therefore responsible for social compensation in PAT areas, or 'inside the ring' areas, and the government was responsible for social compensation in 'outside the ring' areas intended for mudflow mitigation management, as well as non-liveable and insecure areas.

Before elaborating on the burden shouldered by the government and the company, it should be noted that buyout or compensation is a mechanism used by the government and the company in dealing with social problems and compensating the loss of land, buildings, social networks, and social capital in cash or in property. LBI and the government offered the victims a higher price for their land and buildings (ten times higher than the normal rate) to compensate the loss. Within this perspective, it can be assumed that the responsibility of the government and the company to the victims will be fulfilled when the buyout process is complete.

A. Legal setting and lawsuits

The legal basis for the Lapindo hot mudflow management is based on government regulations that continue to undergo revisions. The Table 5 is the list of regulations that have been implemented in dealing with the Lapindo mudflow disaster:

Table 5. The division of tasks between company and government

Legal basis	The institution roles	
	BPLS (Sidoarjo Mudflow Mitigation Agency)	LBI (Lapindo Brantas, Inc)
Presidential decree 14/2007	- Supervising the social compensation management issues conducted by LBI	- Conducting social compensation management within the PAT dated March 22,

Legal basis	The institution roles	
	BPLS (Sidoarjo Mudflow Mitigation Agency)	LBI (Lapindo Brantas, Inc)
	- Conducting social and infrastructure issues outside PAT (Affected Area Map) dated March 22, 2007	2007 - Conducting efforts of mud eruption countermeasures and handling the mudflow
Presidential decree 48/2008	Added task: Conducting social compensation management outside the PAT for 3 villages (Kedungcangkring, Besuki, Penjarakan)	- Conducting social compensation management within the PAT dated March 22, 2007 - Conducting efforts of mud eruption countermeasures and handling the mudflow
Presidential decree 40/2009	Added task: - Conducting efforts of mud eruption countermeasures and handling the mudflow - Conducting social aid of the non-liveable area in 9 neighbourhoods in three villages (West Siring, Jatirejo, and Mindi)	Conducting social compensation management within the PAT dated March 22, 2007
Presidential decree 68/2011	Added task: Conducting social compensation management for the non-liveable area in 9 neighbourhoods in three villages (West Siring, Jatirejo, and Mindi)	Conducting social compensation management within the PAT dated March 22, 2007
Presidential decree 37/2012	Added task: Conducting social compensation management outside the PAT based on research held by integrated team consisting of 65 neighbourhoods	Conducting social compensation management within the PAT dated March 22, 2007
Presidential decree 33/2013	Conducting efforts of mud eruption countermeasures and handling the mudflow	Conducting social compensation management within the PAT dated March 22, 2007
Presidential decree 76/2015	Conducting efforts of mud eruption countermeasures and handling the mudflow	Conducting social compensation management within the PAT dated March 22, 2007

Source: BPLS (Mudflow Mitigation Agency), 2007

The table above shows that there are two important facts concerning this division of tasks. The first is the transfer of duty from LBI to BPLS. For two years, LBI was tasked with mud eruption countermeasures and handling efforts. In 2009, the task was handed over to BPLS, becoming a government responsibility. The second important fact is LBI's inability to meet its obligations to complete compensation payments two years after Presidential Regulation No. 22/2007 was issued. Table 5 shows that LBI carried out the same task from 2007 to 2015. LBI could accomplish the task when the government provided interest-free loans for the company to settle the payment of social compensation

to the victims ‘inside the ring’. Furthermore, there have been several mudflow-related lawsuits against LBI. The court dismissed all the lawsuits as shown below (Table 6):

Table 6. List of litigations against LBI (Lapindo Brantas Inc)

Litigant	Date	Court	Result
Medco Energy	November 2006	The international arbitration court in New York, USA.	Cancelled related to a purchasing of Medco shares by LBI
YLBHI (Indonesian Legal Aid Foundation)	November 2007	District Court of Central Jakarta	No evidence of infringement against the regulations by LBI and the government
	June 2008	The High Court of Jakarta	Mudflow may be considered a natural disaster
	April 2009	The Indonesian Supreme Court	The mudflow was a natural phenomenon and a lawsuit against LBI was dismissed
Environmental Organization (WALHI)	December 2007	The District Court of Jakarta Pusat	Refused the claim
	October 2008	The High Court of Jakarta	The mudflow was a natural phenomenon. The claim was refused.
	August 2009	The District Court of Surabaya and the East Java Police Office	Issued a letter regarding termination of the investigation into the civil lawsuit between WALHI and YLBHI against LBI and the Government of Indonesia
National Commission on Human Rights (Komnas HAM)	August 2012		Conducted an investigation and announced that this event is a serious human right violation and that the LBI is responsible for mud disaster
Penyelamat APBN Korban Lapindo	December 2012	Constitutional Court	Rejected request to change 2012 law on state budgets

The court dismissal shows that the Indonesian judicial system affirmed LBI’s claims of innocence. Thus, LBI cannot be held responsible for any damage caused by the mudflow, including obligations to handle the mudflow and pay social compensation to the victims. The court’s decision triggered changes in the role of the government and LBI with regard to mudflow management and compensation. The government has increasingly taken more responsibility in dealing with the disaster and LBI has gradually stopped the funding for mudflow handling and land acquisition, in violation of the decree’s amendments. Furthermore, the agreement between LBI and the victims in the PAT suggests that it is only an issue of land transactions between the victims and LBI. With LBI remaining an

innocent party in the case, it will be difficult to make the company fully compliant with the applicable laws and regulations.

B. Sharing the burden: the role of the government and responsibility of the company

From 2006 to the present, there have been changes in the division of roles in the Lapindo mudflow disaster response. The government's role increases while the role of the company decreases over time. Several factors may have caused the shift of roles. First, the legal decision that declared LBI innocent and debated causes of mudflow as discussed above; second, a shift in strategy with regard to disaster emergency response, mitigation, and the reconstruction phase; third, LBI's financial distress due to economic crisis and shortage of funds.

In the first year, LBI had to provide funds and other resources, including providing personnel to support efforts to stop the mudflow, constructing embankments, and incurring the cost for the evacuation of residents from their original location to a refugee camp and eventually to rented houses. During this period, the government was represented by Timnas PSLs and then by BPLS to provide assistance to LBI in performing its duties. To this point, the government provided funding for the establishment of the teams (Timnas PSLs and BPLS) and for maintenance of public facilities. When it became clear that they could not stop the mudflow, a presidential decree was issued, and under this law LBI was committed to purchasing 640 hectares of land and buildings inside the embankment that were equivalent to or higher than market value as a way to compensate the victims. In this context, the presidential decree took into account the acceptance that the mudflow explosion was triggered by drilling misconduct at the BPJ-1 well (BPK-RI, 2007).

The presidential decree indeed placed the burden of the mudflow management on LBI and formed the basis for subsequent agreements on compensation. As specifically stated in Article 15 of Regulation No. 14/2007 on property losses, Lapindo is required to pay compensation to villagers who have suffered a loss of property due to the mudflow. This would be paid in two instalments: first a 20% advance payment based on the total value of the property lost, distributed to affected households without delay, and the remaining 80% to be distributed one month before the end of a two-year period. During this time, a housing allowance was to be provided by the company. The eligibility for this scheme was determined by loss or damage suffered within a defined map area dated March 22, 2007.

The shift began in 2008, along with efforts to manage the mud that continued to erupt. During this time, the Jakarta High Court ruled that the mudflow was a natural disaster, reinforced by the Supreme Court in 2009. From this time on, the government seems to have taken far greater responsibility for social compensation outside the PAT, and in 2009 the government took over LBI's obligations in mud eruption countermeasure efforts and the handling of the mudflow.

In line with the expanded impacts of the mudflow, the presidential decree was amended five times to respond to 555.9 hectares of land outside the embankment that were also affected by the mudflow. The government converted some of this area into ponds to contain the mud before being dumped into the Porong River. But another area remained unoccupied. The purchase of residents' land and buildings was conducted and funded by the government. Up to now, the government has spent IDR

11,717,860,000,000 in state budget on Lapindo mudflow countermeasures (Novenanto, 2016). Meanwhile, the company claimed that the total financial assistance that had been disbursed as of April 2014 was IDR 8,599,971,380,233.

Table 7. LBI total cost to date for mudflow countermeasures (update April 2014)

Financial aid assistance	Total (IDR)
Social assistance	866,653,148,187
Eruption and mudflow management	3,329,393,900,451
House & land purchased	3,829,424,227,654
Business to Business	49,633,198,263
Operational	524,866,905,678
Total	8,599,971,380,233

Source: *Lapindo Brantas Report, 2014*

Table 7 shows that company's budget was mostly allocated for mudflow management and purchase of land and houses inside the mud embankment while the government's budget was mostly allocated to the relocation of infrastructure and purchase of land and houses outside the mud embankment. In 2015, the government extended a loan to LBI to complete its compensation instalments to the victims inside the ring. In summary, there has been a division of duties between the government and the company that affected the amount of funds they had to spend on disaster countermeasures, among other implications. In total, the government and the company have spent around IDR 20,000 billion (around 1.54 billion euros) to overcome the disaster. However, most of the spending was on mud management, relocation infrastructure, and social compensation to the victims.

C. Social movement & protest: responses to the neglect of physical & social security

Social movement and protest, mostly initiated by the victims of Lapindo mudflow disaster, have occurred since the first year of the disaster. The social uprising can signal two things. First, it can be perceived as the victims' response to how the company and government are dealing with the disaster. Second, it can also be perceived that the government's solutions did not fit the specific conditions and needs of the people. The response of the victims to the government's and the company's solutions can be divided into three stages.

In the first phase, residents thought that the mud could be stopped, and their protest was addressing their concern over the safety of their property, neighbourhoods, and environment. For example, on June 9, 2006, residents rejected the idea of dumping sludge into Kalimati River because they thought the sludge contained hazardous material. After a few weeks, protest developed into a wide range of issues that seems to reflect public anxiety over sudden and rapid changes in their lives. For example, on June 17, 2006, 100 employees of a cracker factory demonstrated at the LBI office because of their loss of income. Meanwhile, in Besuki, residents rejected the government's offer to use their land for sludge ponds and protested against the failure of the levees in barricading their land against the mud (Richards, 2008). It can be assumed that for residents or victims whose land, houses, and workplaces had been affected by mud, they mostly demanded some aid to compensate their losses, but for residents who had not been affected, they rejected the

ideas that would make the mud enter their area. There have been controversies over dumping the mud into the river, however on September 4, 2006, hundreds of residents from five villages (Sentul, Glagaharum, Plumbon, Permisian, and Keboguyang) urged LBI and the government to channel the mud into the Porong River over concerns that the mud would overflow and flood their villages.

In the second phase, when people realised that the mud could not be stopped, the residents' concern shifted to other issues such as compensation and relocation. Compensation may take various forms, such as LBI providing them with new settlements, giving them cash for renting houses, or purchasing their land and property. In this phase, a number of people protested over not receiving money to rent houses. On the other hand, some people refused a house renting scheme and wanted LBI to provide them with a plot of land and some cash to open new settlements. From all of the options available, the majority of the residents chose the buyout scheme or were persuaded to opt for the scheme.

In the last phase, especially when the PAT had been released and the presidential decree was issued and supported the buyout scheme, protests and demonstrations concentrated on such issues as the value of compensation, the compensatory procedure, the map, the designation of land, required documents and the timescale of payment. Even though there were disputes over the value of compensation, all parties involved finally managed to reach an agreement on it. The affected areas map, compensatory scheme and procedure, required documents, and timescale of payment were the issues that would potentially trigger mass protests and long-term conflicts among the government, LBI, and residents.

Protests over the map erupted when the 'December 22, 2006' map had been established and suddenly Pertamina's pipeline exploded, resulting in mud inundating Kedungbendo Village, including Perumtas 1, an extensive and densely populated housing estate. For months, residents staged protests and rallies demanding that their area be included in the affected area map. Their demand was finally granted and the whole Kedungbendo and some parts of Gempol Sari were included in the 'March 22' map.

Another major social movement was triggered by the requirement for residents to have a certificate of land and building ownership to qualify for LBI's compensation. Many victims did not have the required certificate because the documents had been engulfed by the mud. Also, in most cases, villagers never had such a certificate because the proof of ownership or purchases of land was documented by a village clerk in a village book. On the other hand, it was easy for people who lived in housing estates such as Perumtas 1 to provide the required certificate because they could obtain it either from a developer or a bank. Protests over the issue were staged not only around the dykes in Sidoarjo and Surabaya, but they were also staged in Jakarta in front of the presidential residence or other strategic places in the capital. This situation attracted a lot of attention from various parties, including well-known cultural activist Emha Ainun Najib.

Issues over compensation scheme and procedures were also widely protested by the victims. The government and LBI decided to pay the compensation in two phases: the first 20% in cash and the remaining 80% in instalments over a period of two years. In the meantime, the victims were also divided by different demands, some wanted LBI to pay fully in cash while others wanted cash and land for a new village. There were also many protests over a delay in the 80% payment and LBI's sudden decision to replace the 80% payment with a resettlement scheme. The replacement occurred in 2009 when LBI offered

the Kahuripan Nirvana Village housing estate (KNV) for completion of the 80% compensation due to a monetary crisis in Indonesia. This was the worst conflict and source of contention among the victims. Most of the victims believed that GKLL (*Gabungan Korban Lumpur Lapindo*) was the only victims' group that LBI managed to win over. LBI was able to persuade several people who played important roles in GKLL to sign a KNV settlement agreement as a replacement for the 80% cash compensation. Other GKLL members who did not agree left the organisation to form a new group.

Protests and rallies over incomplete compensation and failed delivery of house certificates in KNV also occurred. For example, in early 2016, KNV residents protested around the mud dyke and also in their KNV housing estate over the handover of their certificates. Meanwhile, there were other groups that raised issues other than compensation or certificates, such as health care, education, and social security that were no longer available due to the mud disaster. They, especially those who were underprivileged, were denied access to these facilities because they did not have an ID card, which was lost in the disaster. Advocacy, participatory research, adult learning, and hearings with the regional representative's council were among the means they used to convey their problems and needs.

1.3 IMPACTS OF LAPINDO MUDFLOW DISASTER

The complexity of the Lapindo mudflow disaster is evident from its massive and multidimensional impacts on almost every aspect of human life. Thus far, mudflow has inundated 12 villages, thousands of houses, many mosques, paddy fields, factories, schools, and seven million square meters of land. The environmental damage has created numerous economic, health, and social problems. Almost 50,000 people were displaced and lost their jobs, children's learning process was disrupted, and many people developed health problems such as respiratory tract infections (Nijenhuis, 2006; Davies et al., 2008; Mazzini et al., 2012; Nuwer, 2015). There have been conflicts and breakdowns in and between families, villages, and authorities. These indicate that the devastating damage not only had an impact on the environment but also social spheres. It would be difficult to talk about this disaster if we dismissed its massive impact. Furthermore, one form of impact became a trigger for another. It is sometimes difficult to reconstruct the damage the mud has caused. Here is the overview of the impact of the Lapindo mudflow disaster on the environment, economy, social, and cultural order, and the health of the population.

A. The decay of the environment

The direct and sudden impact of the Lapindo mud eruption has created irreversible change, with the birth of a mud volcano bringing mud deposits that engulfed areas of more than 540 hectares. Most of these engulfed areas were human settlements. Furthermore, the longevity of a mud eruption that potentially lasts up to 84 years could cause continual disruption and risk to the ecosystem and human beings (Davies et al., 2007; Plumlee, 2008; Rudolph, 2011)

The mud eruption has changed the surface and deeper ground of the Porong area, and these changes can be dangerous to both the ecosystem and human-made environment. Some scientists predicted that a region several kilometres wide from the central eruption would subside more than 30 metres, with a more dramatic collapse surrounding the main site (Davies et al., 2007; Plumlee et al., 2008). Furthermore, there

has been ground displacement and land subsidence, along with constant tectonic movement. This poses a geohazard risk that potentially changes the surface structure. In the end this can damage houses and dykes, causing mud flooding and destroying infrastructure such as railroads and gas or water pipelines (Fukushima et al., 2009; Istadi, 2009).

On the surface, the mudflow has the potential to contaminate and degrade the quality of soil, water, and air with its physical and chemical contents. This process will be slow and cumulative. Although some studies found no harmful elements in the mud that exceed the contamination threshold, long-term exposure could accumulate the elements and might endanger living organisms. As stated by Plumlee et al. (2014):

Many factors can influence the health effects of DM (Disaster Material) and other earth materials on exposed humans and other organisms. The initial factor is the exposure pathway, which includes the disaster material source, transport media (soil, dust, sediments, air, water, foodstuffs, etc.), points of exposure, and exposure route is how humans take up DM or DM-contaminated materials through inhalation, ingestion, or dermal/ocular contact. The dose, which is the intensity and duration of the exposure, is a key factor in potential health effects.

The mud itself contains a level of phenol that exceeds the threshold allowed and is toxic to aquatic vegetation, fish, and humans (Pohl, 2007). Another investigation also found a level of arsenic in the mud that exceeded USEPA remedial guidelines for residential soils but that are near or below average U.S. soil concentrations (Plumlee et al., 2008). In 2009, there was an assessment on mud taken from a crater, big hole, pond, overflow, and spillway. The result showed the concentration of heavy metal was below the environmental soil quality guidelines, but the physical and chemical content of mud water was above the environmental standard (Krisnayanti and Agustawijaya, 2014).

The most clearly harmful impact from this mud is its slow damage of the environment through degrading water quality. It is clear that the quality of surface and groundwater sources for drinking water has been compromised. The mud water contains high levels of fluoride, nitrate, iron, manganese, aluminium, sulphate, chloride, and total dissolved solids (Plumlee et al., 2008). To address this issue, BPLS regularly supplies fresh water to villages around the mud dyke. Furthermore, polluted water also could be dangerous and could threaten aquatic organisms and the ecosystem as shown in the study by Purnomo (2014) that found Cd (cadmium) and Pb (lead) exceeded the threshold value quality standard both in water and fish.

Furthermore, the way quantities of mud as great as 180,000 m³ being dumped into a river has posed another problem for the river and marine ecosystem due to increased sediment in Porong River's estuary and coastal areas. Some results from environmental studies showed that the solution of pumping the mud to Porong River did not increase the flood frequency but significantly affected the quality of the water (Kure et al., 2014). This finding was in accordance with the ITS laboratory results. The result showed Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) values a high level of oil and grease in the mud and fluids that could interfere with the ecology of the water when directly discharged without being treated.

For the people of Porong, it will be difficult to live and earn a living in this destructive environment. Firstly, if people chose to live and work in this environment, they have to be ready to be exposed to dangerous disaster materials that put their health at risk.

Secondly, the contamination slowly changes and destroys the environment to the point that this environment may no longer provide the resources needed for daily living. With this massive and irreversible destruction in the environment, it will be a huge challenge for people to earn a living while maintaining their health and well-being.

B. Echo effect: economic impact

The Lapindo mudflow has caused economic losses due in part to its massive physical destruction. BPK RI has calculated an estimated total economic cost for the period of 2006–2015 stood at IDR 32,895,970,000,000 (around € 2,182,877,903), which consists of direct economic cost (60.46%), indirect economic cost (22.51%) and relocation economic costs (17.07%). BPK RI has calculated the direct economic cost, which refers to costs directly incurred in the territory of a mudflow or due to direct damage. These costs include compensation for the loss of assets and income of the people affected by the disaster across a certain period (2006-2015).

There is a big gap between the economic costs calculated by BPK and financial costs that the government and the company have spent in reality¹⁰. This large discrepancy exists because economic costs are also affected by the effects of this event on economic activities in Sidoarjo and East Java. This event occurred in residential and agricultural areas with public infrastructure that was essential for economic activities locally, across regencies/municipalities, and even at regional and national levels. Moreover, BPK predicts that this gap in economic costs will continue to increase in relation to the dynamics of the burst with no predicted end. Thus, a decline in economy and well-being is to be expected, not just among the population affected by the mud, but also among local people and even all people of East Java (BPK RI, 2007).

The predictions of BPK regarding the economic decline were not too far off from reality. As of 2015, the population affected by mudflow, especially those who still lived around the mudflow, felt the difficulty of generating an income. This was due to several factors, including the loss of work instruments, unavailability of cheaper raw materials, and the loss of networks of workers and customers. Furthermore, the revenue of one's business decreases or increases after a disaster depending on whether the business relies on the local environment to meet the needs of raw materials, funding, workers, and customers. As stated by one of the villagers affected by the mud:

I used to make Krembu (a woven bamboo container to store fish) but now I have an odd job. I only make it if someone orders it because when in Reno [Kenongo], bamboo is everywhere, easy to find and cheap, around IDR 5,000 per rod, but now I have to buy it around IDR 15,000 per rod because it came from Prigen and other places outside Porong (Man, Renokenongo Village, 2015).

Furthermore, it is not only the total loss of raw materials due to the mud that engulfed villages, but the presence and continuous disturbance of the ever-flowing mud that will likely affect one's effort to generate income. For example, after two years of disaster, one woman found a new way to earn money through selling Keting fish egg steam.

¹⁰ The financial costs are related to cash payments and payment commitments to overcome the mudflow and other mud-caused damages. The financial costs can be seen in Subsection 1.2, with the state budget and LBI's budget totaling IDR 20,361,831,380,233.

Unfortunately, her new business collapsed because Gempol Sari River, as the source of fish, was slowly polluted by mud and the Keting fish is gone (woman, from Renokenongo now in Glagaharum, 2015).

The income and practicality of an occupation drastically changed if jobs or businesses relied on local materials as their main materials (bamboo rod, local fish). It also applied where people depended on local job providers such as a local (small) factory or home industry as a means to earn a living. Furthermore, other sources of income that need wider land such as a duck farm or tofu factory also could not be revived because this type of business cannot be run in the new resettlement, that often consists of modern buildings with a very narrow yard.

Besides a decrease in income or the loss of it, there has been higher cost of living compared to the period before the disaster. This has to do with the loss of a sustainable environment that once provided daily necessities at almost no cost. The sustainable living could be achieved because they utilised wider yards for subsistence farming. As a woman from Renokenongo said “If I need fruit such as banana or papaya, I just take it from my garden/yard. But now I have to buy almost everything I need. Everything has a cost, and none is free now”. Previously, not only could they grow food in their own yard as part of subsistence living, but their neighbours also became part of their food security. The environment (physical and social) protects and maintains the survival of the resident through a network that makes the necessities of life affordable (cheaper or free) and available (easy to get). When it is lost, daily living becomes more expensive and difficult to achieve. A woman who works at the Renokenongo village office said “It is nice when I was in my village. When I ran out of spices, I just asked my neighbours, and they would give me spices for free. I cannot do it in my new place. I don’t really know these people and their habits.”

Daily living becomes more expensive because they have lost the easy access to some places that will fulfil their needs such as a school, market, and hospital. Most of them have had to move to a remote area far away from these basic facilities. This situation demands additional daily costs for transportation and increases household expenses, as said by this woman from Mindi:

My business is good in here, but I still prefer staying in my former place because everything is easy there. I just walked down the street and I could reach a highway to Surabaya or Malang. I also could take becak (tricycle) that only cost IDR 5,000 to go to a traditional market. In here, I need IDR 15,000 to reach to the market with becak. People need a motorcycle in order to go to other places because they are too far away. In my former place, I only used my bike or just walked to reach some places such as shop and sub-district office.

During the current Lapindo mudflow disaster, dependency on local materials and social networks coupled with the loss of local access to physical elements such as land, work instruments, and raw materials has become a critical factor for a business seeking to bounce back and generate relatively the same revenue as that before the disaster. It is different from the loss of the local networks of workers and customers. It depends on the capability of these networks to remain attached and work together. For example, there is a woman from Ketapang who earns better income after the disaster. She had a leather wallet business before the disaster, and she is still able to generate good income from the business after the disaster. This because she has procured raw materials from outside

Porong since the beginning of her business and sold the products somewhere else. The only local resources that she uses for her business are the local workforce that, luckily, moved to an area close to her, while others who live far away from her still maintain a good relationship and continue to work for her by bringing home raw materials to be made into finished or semi-finished products within a week.

The dynamic would be different if the business relied heavily on local networks that are extensive, place-based, and difficult to control. If the base, which is a physical location, was gone, the networks would be also lost unless they preserve the networks and remain in touch. For example, we can consider four women who each had a food stall before the disaster. Two of them from Mindi and Gedang can maintain their businesses, despite a sharp decline in production and income due to the loss of many of their customers. Even though Mindi is now nearly empty because of mass displacement of its population, the main road is still functioning and used by people who later became her new customers. This also happened to the woman from Gedang, whose former customers were mostly shopkeepers who are no longer around because many shops are now closed. Her business relies on the three-quarters of the Gedang population who continue to live around her. The case is however different with two women from Jatirejo and Gempol Sari, who could not continue their businesses because their customers were from the mud-engulfed areas of Jatirejo and Kedungbendo villages.

How networks are preserved in the new living place is also important for a business seeking to sustain and bounce back. For example, Jatirejo, Kedungbendo, and Siring villages and another one inside the PAT did not have their own resettlement, only a small number of Renokenongo villagers who moved together. As networks, the villages inside PAT failed to move as a group and were scattered into several different places. This kind of random movement can be fatal for a business that relies on local customers because it wipes out the networks of customers. In the unfamiliar place, they cannot rebuild their business right away because of many obstacles; being strangers is one of them. As stated by one of the victims from PAT:

When we were in Siring, we had a store, stall, but [now] when we are in other people's village, we feel uncomfortable [to open a new store]. We're afraid of being a rival [to the existing stores]. So, we cannot have any venture. All our ventures or businesses are gone. So, we're just waiting for anything that Lapindo provides [and live on compensation] ... Just like my brothers and parents, they don't have any income. They used to work at a factory, now they are unemployed, don't have any income. They just wait for instalment compensation. In the end, we owe a lot [of money]. When we received 20% [of instalment compensation], which is around IDR 40 million, we spent it on paying off debts. We want to buy land, but we have a lot of debts and feel ashamedly uncomfortable with people who have lent us money (Man, Siring, 2015).

Another village outside PAT has a different story. It managed to build a settlement for the displaced villagers. Apart from other factors such as conflicts or a lack of religious and cultural activities, moving in a group is beneficial because it allows them to start a business and keep their customers. As a woman from Mindi said "I can earn more money from my shop here [in the new place] than in my former place because my new house now is located right beside the main road and in front of the housing estate for mud victims."

In summary, even after years of disaster, the displaced villagers' economic condition has not improved. They still find it difficult to make ends meet because of a decrease in income, or the loss of it, while the cost of living continues to rise. The reflected echoes of the mud eruption are still felt to this day by most of the people in Porong. Furthermore, there is no clear line between economic problems faced by the displaced villagers due to their social relations, or their new places. The economic loss cannot be taken as a mere number or nominal amount because it is the loss of a sustainable living network that once fed more than 99,757 people for a long time. This can backfire on the strategy of forced displacement because it fixates on cash compensation for all the social loss, which is very difficult, if not impossible, to calculate in numbers. Every factor and point of network must be counted as a loss or cost because the affected areas are not just vacant land.

C. The downfall of social and cultural capital

The Lapindo mudflow disaster has broken down the social and cultural capital of these affected villages by destroying their resources, networks, and reciprocity of social relations among the people. The networks represent connection and interaction between people, groups, and organisations. The reciprocity or trust is a norm applied to these relationships among them. With this understanding, the loss of the resources should be taken as the loss of social and cultural resources in addition to physical, financial, and human resources.

The resources that have been destroyed by the mud are not only individual lands and buildings but also communal assets such as village treasury land, as well as public and social facilities. Every village usually has shared facilities such as village hall, *musalla* (Islamic prayer room) and other facilities such as *tanah kas desa* (village treasury land) to assist the management of the village in payment for village officers. All affected villages lost their communal assets due to a lack of regulations and procedures governing the replacement and management of their assets, as well as the issue of who is entitled to compensation for these communal assets given the population of the village is scattered in their new dwellings.

Furthermore, social networks were destroyed by scattered new dwellings and conflicts or fragmentation inside the community. The scattering of new dwellings has become a physical obstacle for villagers attempting to reconnect with their former networks, while conflicts have become a social and psychological impediment that make them less willing to repair and maintain their interaction with old connections. Up to now, no affected villages have been able to successfully move all residents to new resettlements. Moreover, even if 10% of them managed to move together, conflicts would rise inside the new resettlement. The victims often lament that they are no longer their old selves due to the fragmentation.

Conflicts and social fragmentation have emerged since the beginning of the mud disaster. The causes are extremely diverse. These range from fighting among neighbours and villagers over territorial claims when building a levee, in the earlier period of the disaster, to disagreements among victims over a compensation scheme. These often led to kidnapping, or the seizure of compensation money. The scale of the conflicts also varies, ranging from disputes between the victims and the government and LBI, disputes among and within villages, disputes among neighbours, to conflicts inside a family. The conflicts lasted for quite a long time, and even now disputes remain among the victims. Moreover, conflicts and fragmentation are likely to undermine or even destroy the social order that governs their social life. More importantly, it is the community's superstructure,

rather than physical and infrastructural aspects, that suffered the most severe destruction, as stated by one of the victims:

The senseless thing we did in the earlier period of the disaster was being at war with our fellow villagers: among neighbouring villages, among residents of the villages and among members of a family. Families were broken apart just because of this mud, this buying and selling of assets. Broken. People saw we had a lot of money. Hey, you just don't know. Behind all of this, behind what you have seen, there is even severer destruction. We no longer get along well with our siblings [family, extended family] because some of them think that they have been treated unfairly because they don't get a share [of the compensation]. Wrecked, real wrecked...and this continues up to now, they can't be reconciled by Idul Fitri [Lebaran, an Islamic day of celebration during which members of a family gather together and Muslims are religiously obliged to forgive each other]. Only a few [families were willing to reconcile], but the rest are reluctant [to meet each other]. Things like this can't be measured by... (Man, East Besuki).

There have been family disputes because of the mud disaster. The disputes are mostly over compensation, in addition to different choices concerning a relocation site or payment scheme. The family disputes tend to last longer than necessary because of poor handling of the problem, even the *Id Mubarak* moment (the moment to forgive) is of little help to reunite them, as stated by a woman from Jatirejo:

My husband and his brother no longer talk to each other, even though they work at the same place (as motorcycle taxi drivers around the mud dykes). It is because his brother took and used all the compensation money that was supposed to be divided between them. He spent all of it and left nothing for my husband. During the last Id Mubarak, we had the initiative to come to his house [because he is the eldest] but he just left the house earlier to avoid us and went to the mud dyke... they continue refusing to talk to each other till now (Woman, Jatirejo).

Only few people in a family can resolve this potential problem because they have commendable characteristics such as acceptance or surrender and sincerity (*nrimo* and *ikblas*), while others resolve the conflict through activities that can reunite all family members such as *arisan keluarga* (family gathering).

The thing is my family is of a kind that accepts anything. We are simple people. It is okay for us whether [parents] give us something or nothing. My elder sister received a big share around 250 [million rupiahs] because she said she took part in building our house. We have no problem. We are not demanding. Alhamdulillah (God bless). Maybe that is my parents' wisdom. My parents maybe think that it's okay because I already work as a civil servant. Alhamdulillah. My brother who works in a factory also has a good position. My family accepts anything. We should accept [anything that parents give]. They give a small amount, I accept; they give me a lot, I accept. Alhamdulillah. My brother received a share of around 70 [million rupiahs] because he needs it to build a house. It is okay for me because he needs that money. The other four children already have their own house. So, there is no problem even though four of us have to share the [small amount of] inheritance, but my sister and

brother didn't have to share it. We are not demanding, [we are] accepting (ikhlas) (Man, Gedang)

The unpleasant picture of the Porong society today is very different from its past achievement and performance. In the past, while family and neighbourly disputes arose, they were not a routine occurrence and could be resolved through available mechanisms. Togetherness became the main binding value for social relations, social systems, and social support in most of the mudflow-affected villages. At its extreme point, although a person or a family did not have any facilities or was very poor, they could survive with support from the surrounding environment. For example, poor families could still drink, bathe, and wash clothes even though they did not have a well because neighbours provided them access to their well.

This local social system governed almost every aspect of their social life. Furthermore, they were related to each other, with social support mechanisms and mutual assistance that helped villagers respond to day-to-day needs, and facilitated extraordinary events such as building a house or marrying off their children. For example, there is a '*jakeno*' or '*jalukan*', which is a neighbourly investment system by providing either equipment, food or entertainment to neighbours who will marry off their children. Neighbours who received assistance would later return it and provided the same items. Compared to a modern system that relies on insurance and savings in anticipation of higher costs for extraordinary needs, they saved through social relations based on trust.

The first local social system that was destroyed by the Lapindo mudflow disaster is *guyub* that refers to harmony and unanimity in groups. To bring about harmony they will gather regularly with other fellow kampong residents, an activity known as '*cangruan*' or '*nyangruk*' that is often done in the afternoon or night, but also in the morning, depending on the tradition of the kampong. After the mudflow and forced displacement, the habit of hanging out with neighbours is gone, not only because of different customs in the new living places but also because they are not familiar with their new neighbours even though they are from the same kampong, as stated by a man from Ketapang, "In here [housing estate], what we have every day are closed doors and windows. In our kampong in the past, we used to hang out every afternoon with neighbours."

In addition to hanging out together to reach this state of *guyub*, their mutual assistance and togetherness were a way to create peacefulness and harmony in the kampong. With the current Lapindo mudflow disaster, they can no longer receive the same support due to other factors, including stigma, as a 'rich' Lapindo victim said:

We just asked neighbours for spices or food when we ran out of them. We cannot do this anymore in our new place. People would say this Lapindo person just asks this and that but never does something in return." (Man, Siring)

Most of the social, communal, and cultural activities are gone due to forced displacement. The change is experienced by both the people who still live in the affected areas and those who have left them. The contributing factors are the loss of spaces (such as a cemetery), scattered resettlement, cultural differences in the new places, daily life hardships, and the mental state of the people (mud victims). Some communities have tried to stay together in the new places, but they are still unable to bring back the cultural, communal, or social activities due to some changes in place, space, occupation, and other things that block

their capability as a community to maintain the activities. Here is one example of perceived cultural differences that could inhibit the willingness of the mud victims to invest their individual resources such as time and money in social relations and institutions or cultural activities:

It is different between east and west [divided by the highway], in terms of habits and attitude. In the east, we used to hang out with neighbours. I don't feel at home in Tulangan because of cultural differences. After labor [praying time between 12.00 to 15.00] all the windows are closed, maybe they are afraid of being asked for money by street singers. In the east, every afternoon we will go out, get together, chitchat. Here, I am distressed (wedged) (Man, Kedungbendo Subdistrict).

In the end, the conflicts, fragmentation, and stigma have turned the trust and reciprocity that once existed in this population into suspicion, doubt, and mistrust. They do not have enough confidence to invest in social relations and institutions. Meanwhile, most of the victims often say that their life has just restarted from zero, meaning they must reinvest in various aspects, including social relationships, in order to rebuild a new life.

If we examine these social and cultural impacts, an important question emerges, namely whether compensation given by LBI and the government is enough to replace the loss incurred by the mudflow-affected population? The mud has not only robbed them of their properties such as land and buildings, but also of their occupation, income, communal assets and facilities, status, identity, social networks, trust, and other immaterial things that reflect a long-term investment in terms of money, energy, and time. Even now, people in Porong continue to struggle to restore what they have lost.

D. The cocktail of suffering: the physical health and psychological impact

There was an effort to identify the physical and mental condition of refugees in the early phase of this disaster. Since the eruption in 2006, 11,494 people have been treated for acute respiratory tract infection and digestive problems, such as diarrhoea. The cases of respiratory infection have increased significantly (Nijenhuis et al., 2006; Nuwer, 2015). The decline in the physical health of the people is due to environmental changes. Researchers assumed that mud water and soil contained heavy metal that may have a long-term effect on human health. Unfortunately, there is a lot of uncertainty regarding this issue and there is no advanced research as yet to verify the long-term effect of the mud on human health.

In the case of mental health, Surabaya's association of doctors and psychiatrists identified a depression trend among the Lapindo hot mudflow refugees that was worse than that suffered by the victims of the Aceh Tsunami and Yogyakarta Earthquake¹¹. At that time, they predicted there would be mass depression if the government did not take the necessary measures to handle the problems caused by the disaster. However, the government and another party have made no effort to investigate and document the impacts of the disaster on people's physical and mental health condition. Only the 'Integrated Team' created by the BPLS Steering Committee managed to assess the post-

¹¹ Based on measurement using questionnaire toward 150 victims in Pasar Baru Porong (Porong New Market) refugee camp in 2006.

traumatic stress condition as one of their considerations before they relocated residents in the area of 66 neighbourhood units in eight villages.

The first year of the mud disaster was dominated by rapid changes and uncertainty, creating a situation that triggered confusion, tension, anxiety, and fear that sometimes drove the victims to act aggressively or unreasonably. In fact, there was not only a depression trend in the affected population but also a wide range of other problems, including adaptation to psychological disorders. Stress is the most common psychological condition suffered by the victims, caused by several factors, including sudden change due to the loss of resources and frequent tension and conflicts. But a few of them also suffered a severe psychological breakdown and disorders such as psychoses.

Loss of ancestral lands unexpectedly, the sudden loss of their belongings, and the subsequent uncertainty of the authorities in dealing with the problem (such as arranging compensation payments) could trigger the emergence of psychotic disorders. These could be recognised from the way psychotic people talked to themselves, looked very sad, cried in the street, and strolled aimlessly searching for a lost house or counting compensation. A statement from a young man from Kedungbendo reflects the situation in the first year of the disaster:

As soon as I arrived at a refugee camp, I saw a lot of my neighbours who had moved there earlier. I later saw people who had lost their mind, crazy because of the mud, there are a lot of people in the new market [refugee camp], they are villagers ... they are talking to themselves [an expression of psychotic people] in Javanese language.

The stress was usually caused by incomplete instalment payments, debts (bank loans), daily life hardships, and also uncertainty about life in the present and future because of unstable economic conditions. Mud victims who received full payment were also prone to stress because of stigma or because they had to respond to other external and internal threats having received a large amount of compensation (money) and also other vulnerabilities. Both types of victims (those receiving both complete and incomplete instalment payments) had to adapt to changes in their lives. For some of the mud victims, this event was a difficult journey or process that left them in a vulnerable condition. They must be resilient enough (not to get sick, depressed, or die) to pass through it, as one of the victims from Jatirejo said:

Many problems ... People do not understand. We have received this money... but in this journey or process, there is always a problem even though we receive full payment. If [I have to choose] to gain the money or not, it is better not. The problem is in the process of this journey, which is difficult. So, if we are not strong, we may die, become ill or depressed. Many are like that. So, we must be strong in undergoing these stages.

People who still lived in the affected areas were worried or concerned. They were afraid of potential mud flood, landslide, and criminal offences. They were worried about differences (culture, habit, people) if they left the affected area, how to adapt to an unfamiliar environment, and the treatment they would receive from people in the new place.

Yesterday, when it was raining heavily, I was really scared that the Porong River or dyke would overflow. Our furniture's no longer here [it has been moved to the new house] but the people were still inside the house so I could not sleep till the rain stopped, other people in the house were sleeping, only me that was still awake... Here, I do not feel at home. I feel lonely [because] neighbours have all gone [they all have moved away] and also not secure. This house ever conceded a burglar. (Woman, Mindi)

The stigma has a major role in triggering this anxiety of moving out. It can be considered a dilemma: if they stayed, they would be haunted by mud flood or landslide, but if they moved out, the differences in culture, unfamiliar environment, stigma, and fears about how people (would) treat them made it difficult for them to make the right decision. Some people tried to postpone moving out to another place until they were ready, or they had no other choices. The growing public image in the Sidoarjo community regarding the mudflow victims was that they were rich and had a lot of money from compensation payments. Because of this image, a lot of mud victims felt that they became a target for people who wanted their money.

If they asked, "you are Lapindo people, right?" They thought that we had a lot of money. This really burdens me. With a lot of money, they will become the target of thugs, or powerful people in the new place will ask them for money. In east part, there are a lot of people who sold their [new] house and moved out [again] because people know them as Lapindo people and asked a lot of money (Man, Mindi)

After years of disaster, psychological tension remained, with a lot of mixed and negative emotions such as anxiety, depression, confusion, anger, and sadness. Furthermore, other negative emotions arose such as homesickness and emptiness because they could not detach easily from their place of origin. This heavy heart, combined with the difficulty in making a living and unresolved conflicts with families could create a very unpleasant psychological condition for living their present and future life. All of this psychological manifestation and disturbance will be discussed in more depth in Chapter 5.

1.4 STRATEGY IMPLEMENTED IN DEALING WITH THE LAPINDO MUDFLOW DISASTER

LBI company and the government have deployed many strategies and spent a considerable resources and time to overcome this disaster. However, the strategy implemented by LBI and government mostly highlights the technical problems without much attention to the problems beyond infrastructure, such as health, social, and cultural matters. An agency such as BPLS claimed that they already offered occupational remedies such as shoe making and sewing for mud victims to begin a new life and help them generate income. However, this program involved few people, and was short-term and partial compared to the massive destruction caused by this disaster. They only benefited a tiny community and let most victims to figure out their problems.

A. Technology efforts to stop the mud: keep away mud from people

The Lapindo mudflow disaster can be considered as a rare occasion. Despite controversy regarding its cause, this mud has become the biggest mud volcano in the world. Since the

first eruption, this phenomenon has attracted many scientists from around the world. They came to investigate the cause of the mudflow, examine the content of the mud, and even look for any possible utilisation of sludge.

Despite its attraction, it is also a failure of civil engineering, especially its failure to stop it from flowing. Almost eight months had been dedicated to an effort to stop the mud. From common techniques to overcome blowout such as snubbing unit, side tracking, and relief well, to experimental techniques such as putting a lot of High-Density Integrated Chain Ball (HDCB) into the hole, all efforts failed.

Several factors are suspected to be the cause of this failure. The first factor is lack of operator knowledge and skill in handling the blowout. As stated in the Neal Adams Service report (2006), incorrect actions taken by the operator when the initial blowout occurred at the well actually increased the pressure in the well and aggravated circumstances. The other factor is LBI's lack of serious commitment to funding efforts to stop the mud. The delay in funding led to a delay in handling the blowout to the point that it was no longer possible to stop the mud using common techniques. The last factor is closely related to the cause of the mud itself. If the cause is natural, it would be very difficult to stop.

Facing many problems, the government had to prioritise its action. Besides stopping the mud, they also had to manage tonnes of mud, thousands of refugees and dysfunctional public facilities. At that time, rescuing government assets such as a toll way had become the main objective. For example, the embankment was made mainly to save government assets and, consequently, put the population in a more fragile situation.

At that time, all available options had their own risks that may or may not have been taken into account. For example, channelling the mud into the river could cause a flood and also contamination. On the contrary, if the mud were to be discharged directly into the sea through a channel relying on gravity, then ocean regions would suffer a lot. The second option also contains a very high cost of installation. However, after years of mud disaster, some of the risks have manifested, such as frequent flood and high metal concentration in water.

B. Keep people away from mud: land acquisition and resettlement

This strategy, which emerged by chance, was implemented after the effort to stop the mudflow failed. Based on Novenanto's study (2016), the mechanism of relocation and compensation for the victims accidentally came from Deputy Head of Sidoarjo. At first, in September 2006, the government required a piece of land in the Jatirejo village to build a dyke on the west side of an eruption. The deputy head then offered twelve residents of Jatirejo IDR 1.5 million per square metre for building and IDR 1 million per square metre for yard. This was far above the price of the land before mudflow, which was between IDR 75,000 and IDR 150,000 per square metre. Information about the price spread quickly among the other victims, which at that time were asking LBI to compensate their losses, but not certain about the mechanism and the value of compensation. Later on, the value and mechanism 'buying and selling assets' were applied as the basis for determining and awarding compensation to all victims.

Timnas PSLs (The National Team for Sidoarjo Mud Mitigation) became the representative to the victims in the process of negotiation with LBI regarding the compensation and its mechanisms. On November 27, 2006, Timnas PSLs sent an official letter to the head of Lapindo that required community compensation in cash and

calculated IDR 1 million per square metre for land, IDR 1.5 million per square metre for a building (including the second floor), and IDR 120,000 per square metre for paddy fields. On 4 December, 2006 LBI indicated their willingness to give victims compensation for losses and agreed with the value, while the mechanisms promised by LBI were 'buying and selling'. LBI also attached the first version of the affected area map (PAT) in its reply letter. After Timnas PLS added some regions to be covered in the map, which was released on 22 December, the second revision was quickly made due to Pertamina pipeline explosion in the form of the 22 March, 2007 affected area map. The fixed agreement on the value was reached that was later known as the 'Lapindo price'.

Presidential Decree No. 14/2007 followed up this agreement and stipulates specifically compensation for property losses, obliging Lapindo to pay compensation to villagers who have suffered a loss of property due to the mudflow. This was to be distributed to the affected households in two instalments, first a 20% advance payment without delay, based on the total value of the property lost, and the remaining 80% to be distributed one month before the end of a two-year period. During this time, a housing allowance was to be provided by the company. The eligibility for this scheme was determined by loss or damage suffered within a defined map area dated 22 March, 2007.

The key problem encountered with the implementation of this buyout strategy was an issue of verification and a team was established to overcome it. In the middle of the global financial crisis, LBI was unable to meet its target to pay 80% instalment in two years. LBI then suggested two alternative schemes, which were:

- 1) Cash and resettlement: a scheme to provide resettlement at the KNV plus compensation for property lost paid in instalments of IDR 15 million per month.
- 2) Cash and carry, a scheme for compensation for property lost paid in instalments of IDR 15 million per month without resettlement.

The buyout strategy and this alternative scheme had given rise to various problems. Besides triggering conflicts among the people and families concerning compensation, it also created a less favourable stigma against the victims. The alternative scheme had prolonged the suffering of the victims because the LBI company postponed full payment for more than nine years and the victims could not move on and continue with their life.

C. Geopark: living in harmony with mud

Up to the present, BPLS is the government agency that makes the mud eruption countermeasure efforts and mudflow handling, as well as dealing with social problems including social compensation. At the time of the field study in 2015, BPLS was still active in maintaining the dyke, providing clean water for some Gempol Sari residents who lived near the dyke. They had also built a new dirt embankment around RT 10 Gempol Sari Village that was hit by mud flood due to the leakage of the levee.

In the midst of daily tasks, BPLS managed to create a program called "geopark", which was intended to reconcile human relationship with nature. In planning, BPLS wanted to build a centre for geological studies related to sludge and also a place for public recreation. It would convert more than 1000 ha into a huge expensive complex complete with mud monitoring equipment, paved roads and transparent magnificent building in the middle of the mud dyke.

However, it will take a long process for BPLS to implement this plan. First, they have to wait until the whole compensation is fully paid to the victims. They also have to respond to the residents who resist resettlement. Lastly, they have to settle disputes over communal

properties. Besides the issue of land ownership, the implementation of the plan faces many challenges, including stopping environmental degradation while rebuilding the community around the mud dyke. With these integrated efforts, hopefully, the government will not build an ivory tower in the midst of suffering people.

1.5 LAPINDO MUDFLOW AS A DISTINCTIVE TYPE OF DISASTER THAT GIVES A DIFFERENT CHALLENGE TO THE VICTIMS

The Lapindo hot mudflow has developed into a distinctive type of disaster. Some of the simple questions are: Is Lapindo hot mudflow crisis or disaster? And if it is a disaster, is this a natural or technological disaster? It is not easy to conclude the type of this occurrence if we only count on a particular and existing category for crisis and disaster. Nevertheless, the answers to these questions are important (in the context of this study) because they will influence interpretation of the impacts, experiences, and responses expected from the victims, the company, and the government.

Crisis and disaster can be similar in some aspects, but obviously, these are two different terms. There is a sense of “not yet done” in the term crisis and it demands difficult, important, and sometimes quick decisions in order to restore balance. On the other hand, disaster is closer to the “consequences” of an event, action, or decision. It highlights the negative effect of the decision, action, or event. In a crisis, the consequences may probably be avoided or mitigated.

Based on this understanding, the Lapindo mudflow is both crisis and disaster. Some of the important moments occurred as events during the crisis, namely the effort to stop the mudflow, to evacuate the population, to relocate gas pipeline, the way mud was channelled or dumped, and also the decision to choose a buyout strategy from other available options. The strategies implemented to solve the problems also carried risks, and when no anticipatory measures to respond to these risks were available, it created further problems.

As a result of how people respond to these Lapindo mudflow crises it has also become a spread-out disaster, which gives a long-term and multidimensional impact not only on the environment but also on the whole population that is directly and indirectly affected by the mud. Furthermore, there is not only the massive impact arising from how people handled the crisis situation, but it also led to a situation that was simultaneously changing, unstable, and dangerous and affects individuals, groups, communities, and even the whole society.

In this crisis moment, many parties were involved and influenced the decisions being made, such as the effort to stop the mudflow involving the central government in the presence of an independent team. This was followed by Timnas PLS working mainly to formulate a technical solution to stop the mudflow, companies under the supervision of LBI, Medco, and Santos that covered the costs, and local governments under the supervision of the Sidoarjo District government and the East Java provincial government that mostly worked on permits and developing alternative solutions. As a result, unsuccessful attempts to stop the mudflow have been attributed to LBI's lack of operational competency in handling this mud eruption in the first instance. LBI did not fully support efforts to stop the mudflow due to the high costs they needed to spend to fund the efforts, coupled with the dispute between LBI and Medco over how to bear all the mud handling costs (Adams, 2006; Novenanto, 2016).

The extent of the crisis did not stop at the figuring handling of the mud. It continued with debates about how to relocate the residents, the buyout procedure, and so on. Nine years later, around 13,000 households have not received any compensation. Is this still regarded as a crisis? In the eye of the government perhaps it is not a crisis, but in the eye of the people, the crisis has just begun. When did the crisis transform into a disaster? When did we start counting the casualties? Is the counting over now? In the eye of decision makers, the transformation started when they dissolved the Timnas PLS and replaced it with BPLS (the Sidoarjo Mudflow Mitigation Agency) on April 23, 2007. We can see how the crisis is over, in the eyes of the government, through the tasks assigned to the BPLS to manage the disaster recovery based on Presidential Regulation No. 14/2007 and subsequent regulations.

In this context, my argument is that the crises have not yet stopped. In the beginning, there was a sudden crisis that demanded that people act quickly to overcome it. Later on, the ways in which people implemented the highly risky strategy, accompanied by failures in the earlier stages of the disaster, have perpetuated the crisis because the risks have increasingly predominated in spreading the negative impacts. It turned into creeping crises that slowly evolved and developed into a slow-onset disaster.

The typical understanding of slow-onset crisis and disaster is that it will take a longer time, maybe months or years, to become disastrous. For example, pollution and contamination are slow-onset disasters, because it takes several years to build up significant concentrations of toxic materials, and sometimes their cumulative impact may not be felt for decades. This seems to be the tendency of the Lapindo mudflow which stems from a crisis and disaster that progressed rapidly but was not concluded, leaving a problem in the form of slow-onset crisis and disaster.

This becomes the background and context when we discuss the adaptation and resilience of society. This never-ending type of disaster is what the Porong people have faced over the last sixteen years. Another factor that has worsened the situation of the victims is that they have to face it alone. With the buyout strategy, the government and the company assumed that they already settled everything, without bothering to check how the people are doing today. Especially for most of the victims, the crises linger on. The attempts to stabilise living conditions often failed, and for some people, they have to survive from one crisis to another. Several factors have precipitated the crises, primarily delays in payment as well as the mud that continues to flow and destroy the environment, preventing the people from having stable resources to work and re-start a living.

CHAPTER 2

RESPONDING TO A SHADOW CRISIS

This chapter will discuss how people respond to disturbances in the context of Lapindo disaster, which, as stated in Chapter 1, is both a crisis and disaster. In fact, it can be considered as a long-term and on-going crisis because the mudflow continues. Furthermore, the fragmented, top-down and short-term solutions are a contributing factor that prolongs the crisis. The solutions are fragmented because they highlight material compensation over social reconstruction, with initiatives mostly coming from the government and the company, without regard to potential problems in the future. As a result of the trade-offs, a range of issues cannot be resolved holistically, providing the people with only temporary stability and changing predictable resources to unpredictable ones known as ‘resilient systems’ (Davidson-Hunt and Berkes 2003). These resilient systems will demand a different strategy to adapt to, compared to stable systems where resources are more predictable. Before discussing the resilient systems, and a shift in strategy as an effort to adapt to it, I will first elaborate on resilience in general in the following section.

2.1 RESILIENT SOCIETY

The term resilience has been briefly explained in the introduction. In the physical sciences, resilience was initially described as the ability of an object to spring back into shape. After 1970, some disciplines such as psychology and ecology began to adopt the term to describe different phenomena, including those related to a disaster event (Southwick and Charney 2018, Community and Regional Resilience Institute 2013). The term further evolved with its adoption by many scientific disciplines, including physics, ecology, economics, the social sciences, including cultural anthropology and psychology, enriching its definitions to cover such terms as ability, process, outcomes, adaptation, resistance, trajectory, and predictability. Thus, contemporary resilience approaches have become a platform for interdisciplinary debate, dialogue and collaboration that comprises a multi-layered and interdisciplinary matrix of ideas. Health disciplines, for example, highlight process-related notions of resilience as relational and involving sociocultural contexts, while the social sciences have focused primarily on transformation perspectives and the identification of resilient qualities in social communities (Folke, 2016; Edwards, 2020).

There are several key elements that differentiate various views on resilience. Firstly, in the scope of resilience, such as individual resilience compared to communal or ecological resilience. Secondly, in denotation, with resilience perceived as the capability of an entity, or as a process and desired outcomes. Thirdly, in the way resilience works, such as whether it is an adaptation to adversity or resistance to change or adversity. The fourth key element is trajectory, which relates to whether or not something changes in the face of adversity. The fifth and last key element is the nature of activation of resilience; whether resilience works only in times of adversity, or it is inherent in individual and community (Manyena 2006; Community and Regional Resilience Institute 2013).

Of all the existing definitions of or approaches to resilience, the ecological and social systems perspective turns out to be the most suitable approach to the Lapindo disaster. It

is a suitable approach because it is a systemic and holistic view considering every aspect of the system. As we know, not only has the Lapindo disaster adversely affected individuals, but it also has disrupted complex ecological and social systems. With this framework, we can develop an interdisciplinary approach that emphasises the important link between social and ecological systems (Gunderson & Holling 2002; Berkes, Colding and Folke 2003; Collins et al. 2011).

With regard to the Lapindo mud disaster, the link between social and ecological systems is clear, i.e. disturbances to the systems were caused by human activities such as mining. Furthermore, the relation will be mutual: “[e]cosystem responses to resource use, and the reciprocal response of people to changes in ecosystems, constitute coupled, dynamic systems that exhibit adaptive behaviour” (Gunderson et al., 1995 as a quote in Berkes, Colding, and Folke, 2003). Even though it is important to discuss the relationship between complex social systems and complex ecosystems, this study will focus on the discussion of complex social systems. Ecosystems will be discussed only in connection with the adaptation effort, which is local, place-based, and closely related to the surrounding ecosystem. This form of socio-ecological resilience will constitute a multilayered umbrella of social, psychological and community resilience that recognizes the structural constraints but also takes into account the agency of individuals, households and their wider community (Edwards, 2020; Preston et al., 2022). In other words, the emphasis in this thesis will be on social resilience, while acknowledging that the social and ecological systems are entangled. Accordingly, I will take into account the ecological, in terms of the Porong landscape, but shall discuss, where possible, the interrelations with the social system. As a consequence, the framework developed by Kloos (2012 and 2021), as already introduced in the introduction, will be in line with and enriched by the concept of resilience, especially because both embrace the ecological approach that highlights the importance of context for explaining individual behaviour.

Resilience is inseparable from change, minor or major, that disrupts the stability of individuals and communities. It is a component that is of great importance for societal adaptation, and resilience is concerned with the magnitude of disturbance that can be absorbed or buffered without the system undergoing fundamental changes in its functional characteristics. In other words, it concerns the capacity of a system to absorb disturbance and reorganise to still retain essentially the same function, structure, identity, and feedback (Berkes, Colding and Folke 2003; Walker et al., 2004). People in Porong had faced a series of changes that disrupted their personal and communal lives long before the Lapindo mud erupted. This externally-imposed change comes in the form of new technology, development, and policy. Local people could recall significant changes in the 1950s and 1980s when farming technology started to be applied to intensify land use, and the development of infrastructure such as toll roads and factories. Resilience is closely related to changes faced by the society. How development and technology affected the society will be discussed in this section on multiple challenges.

Furthermore, the people of Porong could still tolerate changes prior to the Lapindo mud disaster showing that “the system can undergo and still retain the same controls on function and structure, or still be in the same state, within the same domain of attraction” (Berkes, Colding and Folke, 2003). It was different from the disturbance caused by the Lapindo disaster that forced the system to transform from relatively constant, and biologically-controlled environments to more fluctuating and physically controlled

situations (Holling, 1973). In this case, a threshold effect¹² is at play and this flip is considered irreversible, while recovery for the area outside the mud dyke can be costly. In turn, this new harsh environment characterised by unpredictability demands a different strategy to cope and adapt. Lean in Holling (1973) and Yellen (1977) describes stability and resilience systems as:

Stable systems are those which tend to return quickly to equilibrium after a temporary disturbance and can be best described with equilibrium models. In resilient systems, there may be no single point of equilibrium. Individual components may be subject to rapid, unpredictable change; however, basic relationships between components or populations remain the same.

An example of a resilient system given by Yellen (1977) is a society that lives in tough environments characterised by unpredictability, such as hunters and gatherers who live in a desert. They form a small, flexible, and minimal structure to adapt to these unpredictable resource fluctuations. Whereas the group that lives in predictable resources and a stable environment such as African pastoralists tends to have a formal structure, lineal inheritance, longer occupations, be settled, and maintain cooperation. The first strategy is known as generalist and the latter is known as specialist (Brooks, Gelburd, and Yellen, 1984 in Berkes, Colding, and Folke, 2003).

The switching of the form of social organisation as a strategy to respond to environmental change can be observed in the case of Lapindo. Indeed, the Lapindo disaster has transformed settlements, paddy fields, farms, home industries, and factories that were part of a stable system into a mud dyke or mud volcano that was later known as one of the tourist destinations in Porong. Furthermore, the way survivors reorganise themselves, making a new living around the mud dyke, is in line with the generalist type especially in terms of the small, flexible, and minimal structure they have created to meet the challenges of the new place. It is quite in contrast with their former social organisation where they collected resources that were mostly settled, long-term, and formal. The new way or strategy adopted by the people to adapt to the new situation will be further discussed in Chapters 3, 4 and 5 along with self-organisation and learning as part of the transformation of networks and social organisation.

It is a dynamic and long process to transform one domain of stability into another. In this case, it does not only concern the Porong society as a system, which is its social structure and networks, including its interactions, meanings, and values, but it is also, more importantly, about where the system nests. As part of the nature of a complex system, the system contains many hierarchical subsystems such as a nested set of systems at individual, household, community, regional, and national levels (Walker et al., 2004). Thus, resilience cannot be seen as a separate and stand-alone system, as it works at different levels strengthened by feedback interactions. It is consistent with the conclusion of Berkes, Colding, and Folke (2003) based on Adger's study (2000) that:

[t]he adaptive capacity of all levels of society is constrained by the resilience of their institutions and the natural systems on which they depend. The greater their resilience, the greater is their

¹² A threshold effect is a sudden and radical change in a phenomenon, which often occurs after surpassing a quantitative limit, called the threshold. https://en.wikipedia.org/wiki/Threshold_effect

ability to absorb shocks and perturbations and adapt to change. Conversely, the less resilient the system, the greater is the vulnerability of institutions and societies to cope and adapt to change

Under such conditions, the Lapindo mud related crisis was made worse by the implementation of a centralised system to manage resources. It works through passing control of land from local residents to regional, national, and global players such as Lapindo Brantas Inc. In the past, the local residents saw their land as part of the denotative instruments of kinship and local identity. It was sacred and a lineal inheritance. It was of material and cultural value, as well as a symbol of connectedness. If somehow local people needed to sell their land to an outsider, they would first ask the permission and consent of their family and relatives. However, local people had to sell their land to the company and the government for industrial purposes at regional or national levels that tended to emphasise the material functions of the land and exploited it beyond the limit of its productivity.

The local system became more vulnerable or less resilient when locals lost control of their land, and in turn, lost the connection and attachment to the land. One of the concrete examples of losing land control is when the communities did not know at all about the gas drilling activities around their neighbourhood. Furthermore, when a centralised system becomes dominant, it reduces the buffer capacity of the whole system to absorb disturbances because diversity, one of the important aspects of maintaining resilience, is eliminated. As stated by Berkes, Colding, and Folke (2003):

[i]n operationalizing this view of resilience, managing for sustainability in socio-economic systems means not pushing the system to its limits but maintaining diversity and variability, leaving some slack and flexibility, and not trying to optimize some parts of the system but maintaining redundancy. It also means learning how to maintain and enhance adaptability and understanding when and where it is possible to intervene in management.

Local systems produce a natural variance in managing resources compared to a centralised system. The variations allow for a backup when one fails. Moreover, local systems will provide a quick and more direct path of feedback compared to a centralised system. An example of delayed feedback in the Lapindo mud case was the lack of government supervision of Lapindo Brantas Inc.'s activities, as found by the investigation by the Supreme Audit Agency (Badan Pemeriksa Keuangan RI, 2007). The investigation also found that the issuance of gas exploration permit violated the applicable regulations. The central government acknowledged the procedural mismatch after an error occurred. Such an error in a big, national-scale project could be fatal compared with trial and error experiments done by the local system. A fatal error in a big project could create a magnitude of disturbance that could not be absorbed by the local system and could flip it to a new stability domain. In the end, this surprise has left a huge challenge for the local people to respond and adapt to.

Resilience does not only concern an ability to absorb disturbances, but it is also related to 'the degree to which the system is capable of self-organisation, and the ability to build and increase the capacity for learning and adaptation' (Berkes, Colding, and Folke, 2003; Folke et al., 2010). As part of the nature of a complex system, after a collapse, dispersion, and instability, a complex system will typically reorganise. It is a spontaneous local process where order arises out of chaos. It is possible through multiple relations, and

memory is an important element for self-organisation that allows a system to reorganise after a disturbance. Memory is the accumulated experience and history of the system, and it provides the sources for self-organisation and resilience (Berkes, Colding, and Folke, 2003). This is evident in the case of Lapindo disaster, where the collective memory of the former living place became one determining factor for the Porong community as they reorganise themselves. It was a factor not only in choosing the type of resettlement in which they would live, but also in determining the most efficient way to carry out practices, engage in social activities, and build relationships in a new place and with new people. The way the people or the local system reorganised themselves will be further discussed in Chapters 3 and 4.

It is part of a dynamic and nonlinear approach inherent in a complex system that makes change, disturbance, and resilience more like an adaptive renewal cycle than straight line processes (Holling, 1973). If we only consider resilience as the ability to bounce back to the original state, then it will be impossible for Porong society to completely restore their former living conditions. The cyclical principle has made the adaptation by the Porong people possible, and even though their communal or social capital system collapsed, it did not vanish, and they would find a way to renew or modify the system. Renewal will occur if there is a memory as a seed (Gunderson & Holling, 2002). In this context, it is a seed that carries societal legacies and reflects connectedness with the past structure. Memory is the accumulated experience and history of the system, and it provides a context and source for renewal, recombination, innovation, novelty, and self-organisation following a disturbance (Folke, 2006).

In the context of Lapindo disaster, ‘remembrance’ or ‘memory’ is not only related to past social structure but it also includes the memory of a recent experience with the disaster itself. For example, the people created stone inscriptions at a mud embankment to remind them of the event, which they commemorate on May 29 every year. In the process of building a new community, they had to integrate new experiences and meaning as ‘victims’ that emphasised resistance or the fight for the legacy of an old world that valued self-resignation or self-surrender. Remembrance is a cross-scale connection that is important in times of change, renewal, and reorganisation (Folke, 2006). This topic will be further discussed later in other chapters, especially in Chapter 5 in the section on surrender or fight (*pasrah atau lawan*).

Resilience is also about adaptation and learning. In this sense, “adaptation may concentrate on reducing the impacts of change, or it may take advantage of new opportunities created by change” (Berkes, Colding, and Folke, 2003). Furthermore, adaptation processes can transform a system as a deliberate action or can be seen as a result of inadvertently crossing thresholds (Nelson, Adger, Brown, 2007). In the Lapindo case, a system transformation is caused by inadvertently crossing thresholds and initiates a forced transformation that is “an imposed transformation of a social-ecological system that is not introduced deliberately by the actors” (Folke et al., 2010). In this case, the action could be more of taking advantage of the new opportunities offered by the changing environment. This inadvertent crossing of thresholds has created uncertainty in resources and challenged the people/community to find an adaptive way to cope with the new situation. Evidently, communities deployed strategies and tactics in facing the situation such as reorganising in a small-scale group, in order to access social and health security provided by the government. These adaptation processes will be further discussed later in other chapters.

However, the small-scale of the organisation so far does not reflect the weakness of the strategy deployed; in fact, it is actually a fit and suitable generalist strategy in facing uncertainty about resources. The existence of small and flexible groups could also reflect that there remains instability of resources despite the fact that the disturbance has lasted for sixteen years. This suggests that the local system has not yet found sufficiently resilient strategies to maintain stability, or that uncertainty has become part of their renewed life and they are in a resilient system mode. This mode will give small and flexible groups the opportunity to persist and endure a harsh and challenging environment. It is consistent with the three cornerstones of resilience as an outcome of social learning, namely functional persistence, self-organisation, and adaptation (Folke, 2006).

In a nutshell, self-organisation and adaptive responses through social learning are related to the actors' ability to find the best way to employ their resources in response to the collapsed system and environmental change due to the Lapindo disaster. Finding the best way to adapt, or reach the state of adaptation is a challenge faced by Porong society. When a system can adapt flexibly enough, it will persist in dealing with the changing space and time. As Walker et al. (2004) stated, "adaptability is the collective capacity of the human actors in the system to manage resilience." Collectively, Porong society faces a significant challenge as it needs to find the best way to integrate resilience in the community. In this light, social resilience concerns not only how persistent and adaptive a community is, but it also includes the radical transformability of communities. In other words, sustainability principles, subjective intentions and resilience thinking must be central aspects in contemporary resilience research (Edwards, 2020).

The rapid emergence of the concept of resilience over the last decade must also be considered in conjunction with various debates that imply different viewpoints regarding the quality of resilience as a theory. On the one hand, the theory of resilience allows scientific pluralism so it can be a platform for collaboration and transdisciplinary approaches when addressing complex and wicked problems such as major disasters or climate change, but, on the other hand, it contains the risk of becoming a polysemous concept and an overstretched theory (Olsson et al., 2015; Edwards, 2020). There are also conflicting opinions regarding a binary opposition between agents and their environment in framing adaptation, the normative models that might overlook the deprivation of the most vulnerable domains, such as skin-deep resilience patterns (Allen et al., 2022; Samaraweera, 2021; Brody et al., 2020). The skin-deep resilience concept suggests that low socioeconomic status (SES) youth who try hard to succeed in life have positive psychological and scholastic achievements at the expense of their physical health (Chen, et al., 2020; Brody et al., 2020). To address this debate, resilience theory should be viewed as both an analytical framework and as an object of inquiry. Applying a resilience framework critically, with attention for integrative and reconstructive critiques, can be a useful strategy to overcome the assumptive and empirical weaknesses of the concept of resilience (Davidson et al., 2016; Edwards, 2020). The openness to alternative interpretations can also be a way to address the debate. It is important, for example, to recognise structural constraints, while investigating resilience at the local level (Rushton, et al., 2022; Davidson et al., 2016; Anderson, 2015; Chandler, 2014).

2.2 MULTIDIMENSIONAL CHALLENGES IN THE AFTERMATH OF THE LAPINDO MUDFLOW DISASTER

In this section, I will describe the challenges arising from the destruction of the Porong area due to the Lapindo mudflow disaster. This will provide a better understanding of the experiences, reactions, and efforts of the people in coping with and adapting to the current situation. A clear picture of the challenges faced by the Porong people will also serve as a trajectory for my research.

To begin with, I will prefer to use the word *challenge* rather than problem or difficulty because I want to underline that even though the destruction is severe, the people still have the capability to overcome it and do not give up in the face of great challenges. Also, because adaptability is the collective capacity of the human actors in the system to manage resilience. It highlights the roles of actors to recreate the system and manage resilience.

I will also replace the word ‘victim’ that I often used in Chapter 1 when referring to individuals, families or communities affected by this disaster with *survivor*. This word offers a nuanced and different tone when discussing the capability of an agency in deploying a manoeuvre in the context of a changing spatial and social structure. Challenge can be defined as a situation that demands great mental or physical effort and therefore tests a person’s ability.¹³

In the context of this disaster, some challenges are difficult to categorise or classify because of their entanglement. For example, to categorise land loss and spatial change as only a physical challenge would prove inaccurate, because, upon reflection and as the findings of this study show, they also are social and psychological challenges. Because of this, I prefer to focus on explaining a wide range of challenges faced by the Porong people.

This section will discuss two primary challenges. The first challenge concerns the character of this disaster, regarded as an onset disaster that is both rapid and slow, that creates instability in people’s life. People are challenged to stabilise by settling down and having a relatively regular income for living. This disaster has expunged the steadiness of the people mainly in these two aspects: permanent residence and regular income. The source of instability comes from several factors, including continuous displacement because people cannot afford to buy a house. Some of the people could afford to buy a house or obtained a house under a resettlement scheme but the condition was not as expected or desirable in terms of environmental safety, comfort, and other preferences that in the end forced them again to move to another place. This lack of housing that suits the need of the people has created instability in terms of residence. The other source of instability is the loss of jobs and scarcity of steady jobs, resulting in income uncertainty. Besides instability at individual and household levels, there is also instability at a community level, which makes it difficult to perform social and communal activities on a regular basis.

The second challenge concerns the loss of space and place. From survivors’ stories and narrations, the Porong region had never been an empty space and it always embodied a meaning. Consequently, to talk about the Porong area as a place is to talk about a meaningful space. As stated by Tuan (1977), a place is an organised world of meaning. In fact, survivors had been living in a distinctive place for so long and the separation due to the Lapindo mud robbed them of meaningful social relations and place. Thus, it becomes a challenge for the Porong society to rebuild their new meaningful place. People’s

¹³ <http://dictionary.cambridge.org/dictionary/english/challenge>, 2016.

intention can be observed from the way survivors looked for a place of residence that was not only affordable but also enabled them to express themselves and feel at home.

In a nutshell, people are challenged to stabilise and continue their meaningful life. Stabilisation refers to housing and livelihood that are relatively settled, whereas the continuation of life refers to the ability to create or recreate a meaningful life in harmony with their values and beliefs. In addition, these two challenges are inseparable because they complement each other. Moreover, a meaningful life is important as a continuation of their past, present, and future narrative, culture, and identity.

The challenge to stabilise and continue their meaningful life mainly emerges from the loss of land. In the land loss case, the challenge not only relates to physical aspects, but also relates to the destruction of culture and social structures associated with the land. As three-quarters of the population in this study claimed themselves as natives, it is therefore the place of origin for most of them. As an illustration, Table 8 presents some household data that reflect their origin and nativity.

Table 8. Duration of residency, number of generations in the former place and migration experience

Categories	<i>n</i>	%
Duration of stay		
Less than one year	1	.21
1–5 years	8	1.66
6–10 years	19	3.95
11–15 years	27	5.61
More than 15 years	426	88.57
Number of generations		
One generation	50	11.06
Two generations	136	30.09
Three generations	151	33.41
Four generations	47	10.40
Five & more of generations	68	15.04
Migration experience		
Never	424	89.45
Less than 6 months	16	3.38
6 months–2 years	6	1.27
2–4 years	9	1.90
More than 4 years	19	4.01

Most of the households had lived for a very long time in this place, with the longest recorded in this research being 80–90 years. It implies that they had been born, raised, and lived according to the social rules and systems applicable in this place. Furthermore, it is not only the land where they were born and raised (*tanah kelahiran*), but they also claimed it as their fatherland (*tanah tumpah darah*) and ancestral land (*tanah leluhur*). Table 8 could support their claim about ancestral land as the data show that a majority of the research population claimed that they are natives (452 out of 481 or 93.97%) and most of them had been living in the former place for two to three generations. Moreover, 15.04% stated they had lived long enough and some of them are the direct descendants of their ancestors. This suggests that these people were directly and indirectly involved in the development of the former place.

The relation between these people and their land can be regarded as exclusive or non-variant because most of them had never left their kampong or rarely migrated to other places before the mudflow disaster. The below data show that 89.45% of the population that participated in this research had never moved to other areas or regions before the mudflow. It means that the population had low mobility and were rooted in one place. All knowledge, sentiment, and value were genuinely local, or were at least modified to make them more compatible locally if the place was porous enough to allow penetration of outside influences to the local system. Meanwhile the nativity claim by the rest of them was quite possible hooked on their experience of living locally.

From Table 5, it could be concluded that there has been a long and stable relationship between the people and the place. For decades they developed a distinctive way of life, structured it, and gave meaning to this land whose structured place provided them with resource security and gave meaning to their life as part of society. The critical question would be: is it true that the space they have inhabited so far is stable and continuous?

Actually, it is not. From the biographical data collected, the local communities had been exposed to some changes that challenged their way of life and the continuity of the notion of their living space. It had happened long before the Lapindo mud and they tried hard to keep the continuity of their social space by keeping or transforming their rituals and traditions.

Local people experienced changes in spatial structure and social space with the adoption of technology in the agricultural sector in Indonesia, beginning in the 1950s and 1960s. National policies from the ruling government of that time, intended to increase food production, led to the application of farming technology to intensify land use. This was to be a green revolution, namely the 'new order'. In some parts of this region, it changed or swept away agricultural traditions that were part of communal rituals. This transformed crops from sacred into a mere commodity. Some farmers had even sold their agricultural products before harvest time, leaving the agricultural ritual meaningless.

Regional policies have also played a role in changing the spatial structure of the Porong area. One of the significant changes occurred when the provincial government decided to build a toll road from Surabaya to Pasuruan in order to accelerate the distribution of commodities between cities. It was a purely regional project aimed to bolster economic value and speed up the distribution process of the chains of production. At the same time Surabaya, as the capital of East Java Province, treated this area as their buffer for production processes. As a consequence, a lot of agricultural lands were converted into factories and housing estates for labour. It also transformed the new generation of Porong people from agricultural to manufacturing/factory labour.

However, the regional projects to accelerate the pace of production and commodities by changing the spatial structure of the Porong area had created a number of daily obstacles for the local population and changed their social space. This change of spatial structure had split and isolated some villages such as through the formation of Renomencil, which later on became the site of Lapindo mud. There was also an extensive housing estate, namely Perumas 1, in the middle of Kedungbendo village. Most of the local people did not realise the consequence of these changes, but slowly this new spatial structure affected their day-to-day activities. For example, it was difficult for the residents to assemble for joint activities because they had been separated by the toll road.

Facing the imposed change through farming technology and other developments, Porong society managed to keep stability and continuity of their meaningful life. Some

deliberate and forced system transformations were undertaken to make the system more adaptive to situational demands. For instance, they gradually transformed from an agricultural society into an industrial society in terms of their occupations, while as a society they maintained their traditions with some modification in ritual location, such as from a paddy field to a mosque. In short, even though the local people had lived long enough in the former living place and had rarely migrated, the macro policies and the advance of technology continued to affect their living space, changed the spatial structure, and challenged their ability to maintain the continuity of the local narrative. Before the Lapindo mud disaster, they managed to maintain the stability of their social system with incremental system adjustments. The latest challenge arising from the Lapindo mudflow that threatened their capability in maintaining the continuity and stability of living as the people of Porong can be considered as the hardest one.

In order to understand how the people, respond to changes in their spatial structure and social space, we first need to understand the way in which the people were attached to their place and aware of their ways of attaching meaning to their life. I will therefore discuss at length the lifecycles and community rituals, beliefs, and religious activities that were specifically connected to the former living place.

In this case, at least two important points on space and place need to be discussed: what is the significance of space and place for the Porong people and how did this society create them? Firstly, to understand Porong as a meaningful space we cannot refer to it as an absolute entity but as a relative and relational one. An absolute space is fixed and cannot be changed. It obviously has a distinctive character and name that differentiates it from other spaces. On the contrary, a space as a relative term will accentuate the role of the observer in establishing perspectives. The spatial frame varies according to what is relativised and by whom (Harvey, 2005). For example, in the Porong toll road case, for the regional government, the change in spatial structure would accelerate production and transportation processes, but for the locals, it was an obstacle that hampered their daily social and communal activities. The most important term that will enable me to discuss the further effects and consequences of the Lapindo mudflow disaster is *relational space*. Under this term, it is mandatory to highlight statements that process and produce space and time. In other words, space and time are internalised within matter and process. Phenomena that can describe this relational space are dreams and collective memories (Harvey, 2005).

For the Porong people, space can be described with these three terms. It is an absolute space because they owned the space. It is also relative because the Kampong intersection, for instance, did not only mean an intersecting road but it was also a mystical place where they celebrated annual rituals such as *Bari'an* in the month of Suro. The people also attached different meanings to this former place of living. It is a source of living for some and a place to realise dreams, and for others a place to get together and be close with their extended families. The relational space was obvious when the Lapindo mudflow hit these villages. Before the disaster, the relational space in this place was reflected through annual rituals at shrines or ancestral tombs, sacred places because they relate to collective narratives or memories about their origin and identity as a community. These rituals represent an internalised idea about the past, present, and future of one's community. Within this framework, it is understandable why for the Porong people the former place of living is absolute, relative, and relational. The Lapindo mudflow disaster drastically changed this unity of space.

The second question is how the Porong people created their space of living. The Porong people created their place of living by giving meaning and value to it. Furthermore, it is also related to how space is perceived, conceived, and lived (Harvey, 2005). The Porong world that I understand is mostly the result of an effort to make the space connected and communalised among individuals in private ownership. The social world of 'sharing' has created a lot of shared space for daily living and seasonal rituals, and even in habits such as leaving the doors and windows of their houses open around the clock. For daily social activities, almost all people of the kampongs created their own space for hanging around such as at front porches or on bamboo benches in front of their houses or small wooden buildings in front of settlement entrances. Even though their daily social activities had varied since the development of many factories in the area, they tried hard to keep their communal habits alive. The older generation would usually work in accordance with agricultural cycles. Apart from the planting and harvest seasons, which would be the busiest times of the year, they would spend much of their time hanging out around their villages. As for the younger generation that worked at factories, they would stick to factory schedules and routines, and would mostly hang around with neighbours in the afternoon after they got back from work.

They declared themselves as a solid and cohesive community (*guyub*) with working together (*gotong royong*) as one of their communal values. They were accustomed to giving and receiving neighbourhood assistance, such as the *soyo* tradition where neighbours help each other in building houses. Also, the *jakno* tradition, in which neighbours provide financial assistance to a household holding a celebratory event that needs a lot of money and resources.

Porong as a local system has its own binding structure that governs social relations between individuals and groups. As social networks, the Porong community is mostly connected through kinship relations. The data show that they mostly lived close to their families and relatives in their former villages. The terms families and relatives in this study refer to consanguineal and affinal kinships. As many as 93.05% of the participants (n = 475) have families and relatives that lived in the same neighbourhood. One factor that makes this possible is the lineal inheritance of land. Parents would usually bequeath family land to their children to make new houses around their house. In this way, families and relatives would stay and live closely in the same area or neighbourhood. In addition, marriage mostly occurs among residents of villages in Porong, Jabon, and Tanggul Angin, allowing them to continue to live close to each other.

Furthermore, there is also a small number of people that do not relate at all to the population. The data show that 6,95% of the participants in this study do not have kinship relations with the rest of the population of former villages. However, this does not mean they are not attached or connected to the villages. There is a tradition in the villages to receive outsiders or strangers as part of the community. Villagers and migrants that had lived in Renokenongo, Jatirejo, and Siring said that local people embraced the migrants and made them part of the kinfolk. In fact, the Siring people believe that a non-local who drinks the village's water will automatically become part of them. Therefore, kinships in Porong were constructed through procreation, bloodline, genealogy, and social bonds.

Other social and cultural processes in Porong also serve as instruments to create connections among the population with the same consubstantial effect as bloodline and genealogy kinships. The *Bari'an* tradition is one the social and cultural processes. Under this tradition, people get together, exchange, and share their food. Through sharing and

eating the food produced by the land and commonality, the children or grandchildren of immigrants may be fully integrated into the kinfolk. It is the intersubjectivity or mutuality of being that creates a coexistence among the people as stated by Sahlins (2011):

In brief, the idea of kinship in question is 'mutuality of being': people who are intrinsic to one another's existence – thus 'mutual person(s)', 'life itself', 'intersubjective belonging'.

Another customary practice that gives meaning and value to a place is ritual. The ritual could be a viewpoint on how the place is constructed culturally. Porong society continues to perform communal and life-cycle rituals. Communal rituals usually involve almost all residents and become part of communal ceremonies such as *Bari'an* and *Ruwat desa*. Meanwhile the life-cycle rituals are usually performed by households such as those related to weddings (*syukuran*) and funerals (*selamatan*).

Ritual is important because it is able to shape people's perception of a place and contributes to the creation of the notion of place. Through symbolic actions, a ritual may be regarded as human action in creating a place of living. Furthermore, the idea of place is subject to change over time and could influence the way in which people create a place of living. For example, people in East Besuki, one of the villages affected by the mudflow, used to perform a traditional agricultural ritual to honour the earth or land, sedekah *bumi*, at a paddy field but now the ritual is performed in a mosque. A shift in the venue of a ritual and the choice of a replacement venue also carries a meaning and value and demonstrates that a place is multidimensional in nature.

The term multidimensional refers to a place that consists of physical, social, and mental dimensions. It is related to the understanding that land as a meaningful place or space is no longer seen as a passive container but more as the dynamic interrelation of its physical, social, and mental dimensions. Therefore, space or the idea of space will always be open to the possibilities of a configuration of its dimensions. As a physical being, space can be recognised through its physical domain, but it is also socially constituted and bears a conceptual dimension in terms of the notion of space (Lefebvre, 1991; Knott, 2015).

I will take *Bari'an*, one of the rituals in Porong, as an example to give a clear picture of how space becomes a configuration of physical, mental, and social dimensions. The *Bari'an* ritual is an annual traditional gathering performed on a Thursday afternoon in the month of Suro at sacred places such as a crossroads, an area near the forest, or at the shrine/tomb (*punden/makam*). Villagers of all age groups can participate in this traditional ritual. During the ritual, people pray for the ancestors, village safety and welfare, and abundant agricultural products. Participants of the *Bari'an* will bring traditional snacks to the venue where the ritual is performed, exchange the snacks, and eat them together. The spatial structure or character of the preferred venues for the *Bari'an* ritual – crossroads, forest, tomb – becomes a non-neutral physical domain because people believe in the magical or mystical power of these places, making them perfect venues to perform sacred social gatherings.

Besides the configuration of its physical, social, and mental dimensions, the properties of space such as simultaneity, extension, and power will make space almost always open and dynamic. This is because the spatial is socially constituted. It is the simultaneous social relation that includes power in the space that flows over time (Knott, 2015). Consequently, it will provide the people with an agency to continually express in and through it that also can be perceived as a challenge for the Porong people as a human

agency to express their local and cultural knowledge in a web of social relationships with other actors such as the government and the company.

When the Lapindo mud engulfed this place, it disrupted these connections and broke the unity of the place, changing the people's values. It is no longer their space of living because they have sold it to the company and the government. They do not live in this place anymore. The Lapindo mud disaster also exposes the survivors to new mechanisms and values that are so different from the old ones embraced by the Porong people that they can be considered as antithetical. It can be seen from the way the problem was resolved, which is through a mechanism of sale and purchase of properties. Under the mechanism, the people were forced to standardise the form of ownership, which is private, that later on became a source of conflict and disappointment among the Porong people.

Even though its spatial structure and ownership have changed, the place remains meaningful for the people. They still relate to the place because it is their place of origin. Mentally, it is still a sacred place where their parents, grandparents, and ancestors are buried. People are obliged to visit and sow flowers to honour them. In fact, when the people heard that the government planned to build an eco-park in the mud dyke, they demanded that the government provide them access to a spot in the mud dyke to perform rituals for the ancestors. The local people, the government, and the company interacted simultaneously and exerted their power and knowledge in reconstructing this space. Furthermore, as a configuration of physical, social, and mental dimensions, the place will be reconstructed, and the people can assert a new meaning for it. The physical dimension of the place has changed so much that it demands a reframing in accordance with the people's knowledge and experience.

Furthermore, the people's effort to express their narration and meaning as a community cannot be separated from the Lapindo mud event as part of their experiences. During the commemoration day on May 29, survivors demonstrate and express ideas that are not only purely local but also contain regional, national, and international issues such as survivors' rejection of mining activities and their demand for civil rights restoration. From this example, we can see that the relationship among actors in this place also cannot be separated from the existence of power, including the power of resistance by the local community against others.

In essence, the Lapindo mud disaster has changed not only the spatial structure of the place but also has driven people to give different meanings to and develop different values for all their experiences. It is an individual as well as community trajectory in order to stabilise and continue a meaningful life. It will show the capacity, the process, and the outcomes of individuals and communities in becoming resilient. However, it is not easy to integrate the experiences and remake the place to reach positive outcomes while facing adversity. First of all, it represents the tension between negative and positive emotions. The memories of the place could evoke contrasting emotions for the local people; they might feel both happy and sad when they think of this place. They have to address many issues, including traumas, which have been caused by extreme experiences before they can reclaim their space and construct a new narrative. Secondly, it is also a contest between knowledge and power in constructing this place simultaneously. The local people could continue to think of this place as a sacred place where their ancestors, grandparents, and parents are buried, and it can also reflect a new meaning as the symbol of a fight against the unjust. Some of them also make a living in this new spatial structure. On the other

hand, the government and the company have different ideas about reconstructing this place as a geopark, a place for scientific and technological explorations and eco-tourism. This will be an interplay among the actors in remaking Porong's space and place.

2.3 BYPASSING THE SYSTEM

In this section, I will describe the role of agency in coping and adapting to environmental changes and the collapse of complex systems. It will highlight the actors' capacities and actions rather than the structure itself without eliminating the possibility of interaction between actors and structure. In fact, actors are constrained by but also reproduce structure as Giddens (1984, p.25) states that "structure is always both constraining and enabling". Furthermore, this section will often use the terms coping and adaptability for actors' responses to disturbances caused by the Lapindo disaster. This agency is an important topic because adaptability is the collective capacity of the human actors in the system to manage resilience (Walker et al., 2004). With this understanding, an actor becomes a dominant part that modifies or transforms the system to meet the desired outcomes or work in their trajectories.

In this study, coping and adaptive responses are part of efforts to respond to disturbances in order to stabilise and continue a meaningful life. It is an individual, household, and communal effort to work within this trajectory through action that is local, place-based, and strongly relates to the surrounding ecosystem. In this sense, coping and adaptation can be seen as "simultaneously a short-term (economic) and long-term (cultural) process of realignment to changing environmental conditions" (Pelling, 2011).

Furthermore, from several definitions of coping and adaptation, the fundamental difference between these two terms is transformation. Coping refers to the range of responses to a threat or the avoidance of potential impacts by using the prevailing system of rules, while adaptation is the ability of a unit to gradually transform its structure, functioning, organisation, or institutions (cultural norms, laws, routine behaviour) to survive under threatening conditions (Kelly and Adger 2000; Yole and Tol, 2002). In this sense, coping highlights the application of existing ways to mobilise resources as a response to a threat, while adaptation demands that actors change how they mobilise resources. As stated by Pelling (2011, p. 38):

...coping as the range of actions currently being enacted in response to a specific hazard context. These are made possible by existing coping capacity (which may extend beyond the range of coping acts observed at any one time). Adaptation describes the process of reflection and potentially of a material change in the structures, values, and behaviours that constrain coping capacity and its translation into action. Coping then is an expression of past rounds of adaptation. Both adaptation and coping will unfold simultaneously and continuously in shaping human-environment relations, they will interact, and, on the ground, they may be hard to separate as reflection and application occur hand-in-hand.

In the Lapindo case, there are some features that can be applied generally to all survivors. First, the radical and irreversible change has forced the actors to undertake both coping and adaptation to respond to the changing environment. For example, people have had to transform themselves in terms of occupation and settlement in order to survive. In other words, this transformation is correlated with the effects of inadvertently crossing

thresholds that made the local system collapse (Nelson et al., 2007). Thus, in the Lapindo case, transition and (forced) transformation were done first, before the people could cope and adapt to the radical changes.

Radical change is a concept offered by Burton et al. (1993) in this four-stage model that commences with absorption loss. In a final stage a radical change is reached once hazardous impacts can no longer be mitigated and major socio-economic changes are experienced, either through direct impact or attempts to minimise disaster losses. In addition, the local system collapsed because people lost their physical/economic and social assets as illustrated in Figure 7.

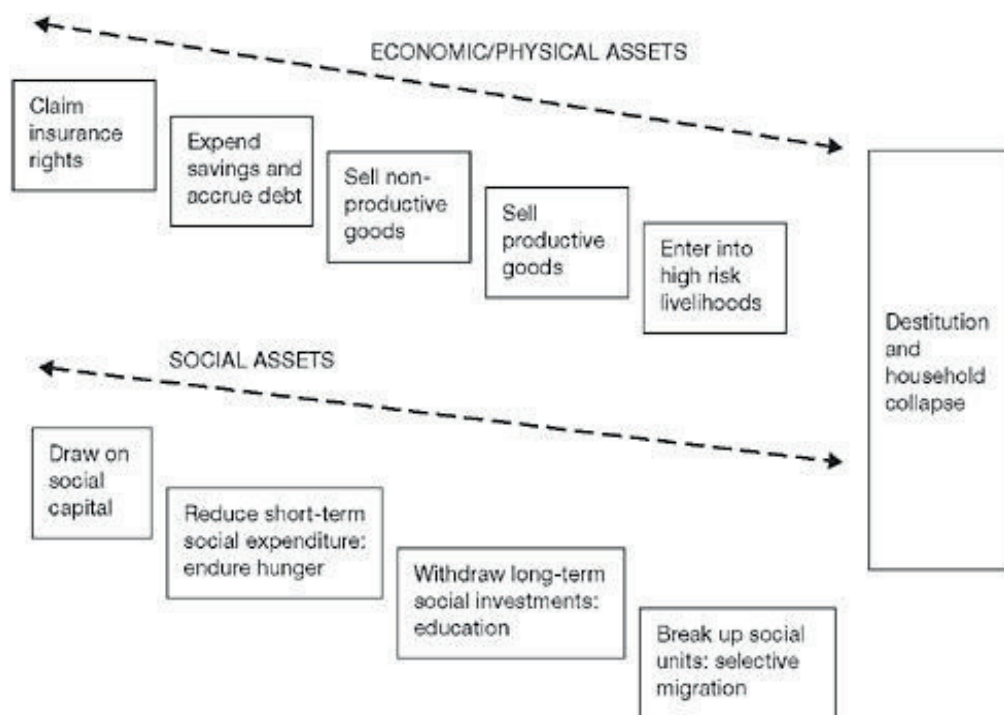


Figure 7. Household collapse
 Source: Mark Pelling (2011)

Secondly, in order to transform, there should be an opportunity besides adaptive capacity of the actors so they may take advantage of new opportunities (Berkes et al., 2003). In the case of the Lapindo disaster, the mud also provided tangible and intangible opportunities even though the opportunities were very limited due to the destruction of the environment. For example, in the first year of the disaster, some of the survivors managed to transform themselves into brick collectors by harvesting the bricks of the submerged houses. In the following year, the opportunities to earn a living through various jobs such as broker, tourist guide around the mud dyke, and provider of legal document services remained open.

Thirdly, in the Lapindo mud disaster, adaptation consists of reactive and proactive responses. It is reactive because the disturbance has already arisen, and actors have to choose responses to reduce the impact while at the same time addressing a future threat. In fact, people are often forced to trade off the opportunity to enhance their protection

in future in order to survive in the short term such as discontinuing their children’s education, selling productive assets, or spending all compensation money to avoid hunger or homelessness (Reser and Swim 2011).

Fourthly, flexibility turns to be an important factor in adapting to waves of difficulty brought by the Lapindo mud. Self-organisation through self-interest could happen quickly, but this organisation is mostly temporary and changes rapidly as conditions change in the vicinity. For example, in the first year, being brick harvesters was an opportunity to secure resources, but in the second and third years, such an opportunity was lost because all buildings had been submerged. Thus, the actor has to draw back into a transitional phase and is forced to seek other opportunities to survive. However, some of the survivors managed to maintain their previous employment status as coconut traders in the traditional market, tailors, or food vendors. Still, in this case, they have to start from scratch and look for new locations, suppliers, and customers. The topic of short-term coping and adaptation in terms of economic stability will be explained further in Chapter 4.

Lastly, the coping and adaptive responses are strongly related to place or to changes in place. It relates to a meaningful place that has been described in Section 2.1 above and also with place attachment as emotional and affective bonding between survivors and the environment. The mud has disrupted people’s attachment to place. Thus, in order to regain and maintain the sense of place, survivors have to address the issue of disruption of place attachment and to remake their place. People’s effort to cope and adapt can be observed from their place-related behaviours. In addition, the former place facilitated the people’s acquisition of resources and identity, and this place dependence and identity continues to become an issue that most survivors must address. This long-term adaptation will be discussed further in Chapter 5.

It is not easy to survive in an unkind situation, as people tend to develop maladaptive and traumatic responses such as the feeling of being trapped in a corrosive community and suffering from chronic stress (Gill and Picou, 1998). The character of this disaster could provoke traumatic reactions due to fast onset and maximum damage. Furthermore, the Lapindo disaster could also provoke chronic stress reactions because of its long-term duration. Based on Burton et al. (1993) on the dimensions of hazards, below is the description of the Lapindo mud as an event that will help us to understand what kind of situation the people might have to respond to.

Table 9. Two phases of Lapindo Mud Disaster

Magnitude	There is no exact comparison but Lapindo mud is the world’s biggest and fastest-growing mud volcano (National Geography)	Maximum	Minimum
Frequency	Asserts how often an event of a given magnitude may be expected to occur in the long run	Rare	Frequent
Duration	Refers to the length of time over which a hazard event persists. It may continue to spew hot mud for another 26 years	Short	Long
Areal extent	Refers to the space covered by a hazard event. The Lapindo mud could expel the equivalent of 56,000 Olympic-size	Limited	Widespread

	swimming pools of mud before it finally simmers down.		
Speed of onset	Refers to the length of time between the first appearance of an event and its peak.	Fast	Slow
Spatial dispersion	Refers to a pattern of distribution over the space in which it can occur.	Concentrate	Diffuse
Temporal spacing	The sequence of events. Some hazards	Random	Regular

As it shows in Table 9, red colour is phase one mostly experienced by survivors in the Affected Area Map (PAT) and occurred in the first year and blue colour is phase two experienced by all survivors from inside and outside Affected Area Map (PAT) after the first year. The red colour (maximum, fast, and random) is experienced directly by survivors in the Affected Area Map (PAT), while the blue colour (slow, long-term, frequent, widespread, and diffuse) is experienced by both survivors from inside and outside PAT. The magnitude of this Lapindo disaster has destroyed livelihoods and forced people to move from their land, Table 10 illustrates the possible consequences of this Lapindo disaster:

Table 10. Possible consequences of Lapindo Mud Disaster

Phase	Dimensions	Description	Possible consequences
The first phase (red colour in Table 9)	Magnitude: Severe destruction and loss	The loss of land, house, occupation, social networks, and relations	- The possibility to suffer a collective trauma “blows to the basic tissue of social life that damages the bonds attaching people together and impairs the prevailing sense of community” (Erickson, 1994).
	Fast onset: Abruptness	The sudden loss of everything without early warning	
	Random	Surprise	
The second phase (blue colour in Table 9)	Duration (long-term): Uncertainty	A corrosive process involving prolonged litigation and delayed compensation	- The possibility to experience a root shock: ‘the traumatic stress reaction to the destruction of all or part of one’s emotional ecosystem (Fullilove, 2004) - The possibility of suffering a chronic stress and corrosive community (Gill and Picou, 1998) - Long-term consequences of failed resettlement: loss of livelihoods; impoverishment; social and cultural alienation; increased morbidity; loss of access to common property resources; and conflicts and competition with hosting communities over scarce resources, such as land, food,
	Slow onset: Ecosystem degrading that possible in creating an ecology trap	Ecosystem degrading in terms of water and air contamination, landslide, frequent flood due to broken embankment or dysfunction of rivers	
	Widespread & diffuse: Ambiguity of threat	Forced displacement Unclear what caused the mud and when it will stop	

Phase	Dimensions	Description	Possible consequences
			fuel, water, and fodder for livestock (Jha et al., 2010).

If we look at Table 10 above, traumas threaten survivors from almost all directions as a result of massive uprootedness, scatteredness, and displacement. It is beyond the individual traumatic experience because it did not only damage someone's consciousness through having to experience the horrific events suddenly, but it also severed the collective ties of a community and uprooted them from a meaningful place. With these possible consequences, coping and adaptation constitute not only economic and cultural processes of realignment, given the loss of assets and change in environmental conditions, but also an effort to manage a state of emotional tension resulting from hostile conditions that leaves human dignity in question. In fact, the sudden loss of everything and the feeling of powerlessness and abandonment had caused mental turbulence that for some people was not easy to resolve and remains disturbing even today.

Furthermore, the possibility of suffering trauma could overshadow every step actors have taken in responding to the crisis situation and force people to endure hostile circumstances that may put their dignity at risk and in question. For example, being brick harvesters was one of the responses to survive, however this act actually forced the survivors to cross the normative boundary as human beings. For most of the population affected by the mud, the property harvesting activities were a condemned act because it was seen as disrespectful to the suffering to seize their property without permission. Secondly, it put people in a dangerous working environment when they had to act as scavengers that preyed on the ruined buildings. It blurred the boundary between victims and perpetrators because, driven by survivor instincts, many often had to prey on other survivors in order to survive (Pillen 2016).

Furthermore, a wide range of coping and adaptive responses could be activated to reduce this tension along with an effort to get resources and make sense of life. It can be part of cognitive, behavioural, or emotional strategies to minimise or manage this mental strain. For example, praying has become one of the coping strategies to address not only emotional conditions but sometimes as an attempt to modify an event by relying on greater forces to change its course. However, whether the effort to diminish the pressure will be effective or not usually depends on the skills and coping mechanisms of an actor. In fact, this will be the survivors' toughest struggle because the severity of the impact could be beyond the capacity of meaning-making schemes or conventional ritual practices to process (Pillen, 2016)

In order to survive and adapt to the Lapindo mud's severe condition, adaptive ability or capability becomes one of the qualities that an actor should possess. Lockwood et al. (2015) identify seven dimensions of adaptive capacity, which are: local networks; trust in government; reciprocity; human, financial, and physical capital; innovation; adaptive management; and information behaviour. However, a psychometric result of the study showed that the most important constructs are an actor's orientation towards change, which means that an actor who embraces change as part of daily life has the highest adaptive capacity. With this attitude, an actor is able to manage, adapt, and face challenges by adopting an alternative approach, access to capital, and creating innovation. Besides orientation to change, financial and labour resources also become an important dimension

in adaptive capacity. With higher financial and labour capital, an individual will be able to make the necessary changes and manage them for long periods of time.

The last important dimension is the capacity of communities to support an individual during times of hardship and the ability of local networks to help an individual improve their conservation practices and management. This dimension will be discussed further in the last section of this chapter. However, in the case of the Lapindo mud disaster, community and (new) local networks play an important role not only in supporting and improving an actor's knowledge and skills but also in shaping the actor's orientation and specific goals in changing the prevailing structure and system.

Posed by the same threat, impact, and devastation, some people managed to shape their own values and re-evaluated the system. For most of the people, the threat, impact, and loss have forced them to sacrifice everything to survive. However, for a few of them this collapsed local system offered a window of opportunity to reflect and learn other higher structures and revalue the norms. Under such circumstances, some of the people managed to generate a critical awareness important for giving feedback, to change policy and standards socialised by the structure. This becomes the (new) capacity of actors to alter the structure or social system. Pelling (2011, p. 88) states that:

without a critical awareness, adaptation is hostage to being limited to efforts that promote action to survive better with, rather than seek change to, the social and political structures that shape life chances ... people tend to adapt to poverty by 'suppressing their wants, hopes and aspirations' rather than attempting to change the structures that constrain their life chances.

Unlike the statement of Pelling above, Boonstra et al. (2016) added desires in addition to opportunity and ability in order to explain the actor's responses to ecological trap situations. Adopting several terminologies from previous researchers, they define desires as what the agent considers the best opportunities, options, and means that the agent can choose from and the ability of the people to seize opportunities (Boonstra et al., 2016, p 878). By combining these three aspects, they generate at least five response types on a continuum between conformation and resistance to existing opportunities. The typology includes the following five types of response: thick conformity, thin conformity, resignation, innovation, and rebellion as elaborated in Table 11.

Table 11. Typology of responses from (mis)matches between desires, abilities, and opportunities

Potential effects on SE traps	Response type	Description
Maintenance	Thick conformity	Actors have neither the ability nor the desire to change trap situations. This type of response is based on a deep cognitive acceptance of both the opportunities that are available and the actor's abilities. Moreover, the actors' desires also match abilities and opportunities.
	Thin conformity	Actors have the ability to change social-ecological traps but lack the desire to do so. In this type of response, the exercise of abilities is restrained, because people are in principle able to change a trap situation. However, they do not exercise this ability because they maintain desires that reinforce a trap situation.

	Resignation	Actors have a desire to change social-ecological traps but lack the ability to do so and accept that this is so. This type is characterized by a mismatch between desires and abilities to change opportunities.
Dissolution	Innovation	Actors have a desire to change social-ecological traps and have the ability to do so. Innovation is the type of action that is often described in relation to the dissolution of SE traps.
	Rebellion	Actors have a desire to change social-ecological traps but lack the ability to do so, and do not accept that this is so.

Source: Boonstra et al., (2016, p. 878)

With various reasons for their choice, survivors could be in the mode of maintaining their trap or survival condition. Some of the people who managed to end or change this condition have a very distinctive and different backgrounds and personal histories that have made them agents of change and enabled them to create novel social organisation.

Furthermore, while this typology could be useful in categorising Lapindo survivors' responses in dealing with the present situation, it is not sufficient to explain what, how, and why some actors could come out with different products or actions even though it is the same type of response. For example, even in this difficult situation, some actors manage to come out with responses that could be considered as innovative. But then, these innovative responses cannot be generalised because they have very different and specific manifestations. Some actors have emerged as social entrepreneurs with the goal of fighting for survivors' basic rights in education, health, and social welfare while other actors have grown to become entrepreneurs who seize income and revenue growth opportunities, or environmentalists who fight for a better environment and ecosystem.

The emergence of these distinctive responses, products, and actions is only possible when we also acknowledge their social networks or those with whom they interact. Actors who work in an egalitarian small group such as taxi drivers around the mud dyke develop ties with environmental organisations and give them the chance to upgrade their ecological and structural knowledge. In the end this has helped them substantially in their reflection, evaluation, and revaluation of their goals as a community and in seeking social and political change, while other groups that have a patron-client relationship background have developed ties with the company or the government and are becoming brokers or business people.

In brief, it is not only an actor's adaptive capacity and desires or their other characteristics that determine the type of responses, but also the influence of social relations or social networks who provide essential information for critical awareness and inform adaptive responses in seeking changes in social and political structures. This topic will be discussed in the next section.

2.4 CHANGING SOCIAL NETWORKS: BETWEEN BEING TRAPPED AND NEW OPPORTUNITIES

In this section, I will describe social networks as a structure that both constrains and enables actors because 'the structural properties of social systems are both medium and outcome of the practices they recursively organize' (Giddens, 1984 p.25). As stated in the

previous section, these social networks will be important for actors in supporting and improving their knowledge, practices, and management in order to cope with and adapt to an extreme situation. In the Lapindo mud case, the former social networks were severely broken mainly due to forced displacement and social conflict. Thus, social networks that will be discussed here are a kind of transformation from the former to the actual functioning social networks in the present.

As already mentioned in Section 2.1, the former social networks or ties are mostly based on kinship, without excluding other social and cultural processes that build bonds and mutuality between residents. This is built on specific values that encourage people to share, work together, and help others in reciprocity. These values are passed down through generations by means of traditions that make villagers accustomed to giving and receiving support. In addition, these values also govern and organise people's habits and daily practices. The pattern of relationships of the former social networks reflects that livelihood depends on social capital or people will invest mostly in social relations. In turn, these social relations will give benefits as a buffer that absorbs shock resulting from an impact or perturbation.

Furthermore, data in Section 2.1 above show that the former social networks are very dense because everybody knows everybody. It is because most of them were born and raised in the former place and rarely migrated to other places. In addition, they came from the same ancestors and most of the people have familial ties. They had strong ties because they were geographically close, with kinship relationships, traditions, and rituals that maintained the mutuality and bonding. Thus, it could be said that cohesion and strong ties in the communities affected by the Lapindo mudflow are mostly the result of cultural proximity and similarities among ethnic groups. In addition, centrality in the social networks usually relates to personal or group status in the community. Mostly, landowners, religious figures, and community or cultural figures play an important role in the community.

What changes in ties, connection, and distribution of nodes in social networks have the Lapindo mud disaster caused? First, the former social networks were scattered, dispersed, and no longer lived closely. Some groups managed to live closely geographically by creating or moving to the same resettlement. However, the similarity of current residence does not always ensure the formation of strong social ties, cohesion, mutuality, and reciprocity. However, as discussed in Chapter 1, compared with individual movement, moving together can help survivors to earn a fairly stable income because they do not have to compete with the host community, especially in businesses such as stalls or shops. Nevertheless, moving together to a new living space does not always ensure the establishment of trust and reciprocity among residents. In fact, there are indications of fragmentation and chronic social conflict between factions in some resettlements.

Secondly, there is a trend of social exclusion and abandonment by government representation and host communities in the new resettlement. Reasons for this exclusion range from administration problems, scarce resources, different habits and traditions, and social jealousy. This may inhibit the integration process between survivors and host communities besides other factors such as survivors' strong attachment to the former place and people. The phenomenon of social conflict inside resettlements and also public abandonment could be seen as a long-term consequence of failed resettlement and could also be related to the characteristics of a slow onset disaster that shatter a previously supportive community (Jha et al., 2010; Cline et al., 2010). Furthermore, the former social

structure could constrain survivors from changing their actions or routines as they continue to behave according to their former norms.

Thirdly, many new organisations were formed based on different goals and phases of the disaster. In the first year of the disaster, survivors managed to form a huge organisation namely GKLL (Gabungan Korban Lumpur Lapindo or the Coalition of Lapindo Mud Victims) to fight for their compensation rights. In the following year, this group fragmented into many smaller groups because GKLL could not accommodate the needs and aspirations of all survivors. Furthermore, the social organisation continues to transform into several different forms that not only address compensation and resettlement issues but also issues such as the rights to education, health, and social security as well as environmental and ecological issues.

Fourthly, besides the needs, self-interest, and actors' intention that prompted the formation of the new organisation, the transformation and formation of novelty in social organisations also occurred due to the involvement or introduction of new actors as a new node in survivors' social networks. These organisations range from the Lapindo Brantas company, BPLS as government representation, and nongovernmental organisations such as Walhi, Batam, and Urban Poor Consortium (UPC) that not only provided resources but also information, technology, and new knowledge to survivors. Later on, several groups of survivors have also connected with other organisations from other regions through boundary or bridging organisations (Cash et al., 2006). Thanks to this connection with new actors and due to the scatteredness of survivors, social networks with a hub among small groups continue to develop. These hubs connect different groups from different locations, including one at the mud dyke. Almost all Lapindo survivors' groups will access or use this location as a strategic place for making statements or staging demonstrations. These are social networks whose formation was made possible by the Lapindo disaster.

Fifth, in the former place, level of connectivity was high because nodes or people were mostly reachable (high reachability) and social networks were dense (high density), but the Lapindo disaster had transformed these networks into other forms. As stated by Janssen et al. (2006) high density implies high reachability, but in the new social networks of survivors there can be high density but still they are inaccessible or unreachable such as those in a new resettlement with many factions and internal conflicts. The other form is long distance or low density but accessible or reachable, for example scattered survivors connected through a hub in the organisational structure. This is the kind of networks with hubs. The last type is the one with low density and inaccessible. This type of social networks could isolate and alienate the people.

In a nutshell, the Lapindo disaster has changed the mode of connections and social networks among survivors. These have changed networks from dense and high cohesion to several kinds of connection that can be given the opportunity to grow, even though some pose risks and threats. People may easily find an opportunity in the networks with a hub because they could meet with various and different actors. On the other hand, when people end up in a place that has low density and cohesion, they may feel trapped and are prone to loneliness and alienation.

CHAPTER 3

WITHOUT SAYING GOODBYE

This chapter addresses the attachment of the Porong people to their former living place. It concerns a notion of the former living place that indicates the way in which the people attach meaning to their life. In Section 3.1, I will describe the last picture of villages before they were engulfed in the mud, the life cycle and community rituals, beliefs, and religious activities in the former living place. Besides rituals that signify an interaction between the people and the land, there is also a ritual for leaving a former place. But because the migration occurred rapidly, most of the people did not have enough time to prepare or perform the ritual to break away from the old social ties in order to enter and reattach themselves to a new social environment. ‘Without saying goodbye’ describes how the people tried to perform a ritual in their fragmented and scattered ties.

Sections 3.2 and 3.3 of this chapter relate to the effect of forced displacement on the people who formerly lived in the Porong area. To do so, I will discuss how the people moved arbitrarily and were scattered to different places, and how this movement has changed their living space and livelihood along with their social relations and networks. In this chapter, I will define social networks as a set of relations or ties among actors. Meanwhile, a household also represents an actor and social ties are described as the links between the household and its kin, neighbours or other Lapindo mud survivors.

In Section 3.2, I will discuss how the people left the original place in four waves of massive forced displacement. In addition, I will describe several important moments during this episode, especially in relation to their life in the refugee camp in Porong New Market (PNM). The last section shows that this forced displacement has caused social fragmentation and instability for footloose people (*wong mbambung*) who considered themselves as homeless, jobless, and having a meaningless life. As the final effect of this forced displacement, the survivors have to face uncertainty in their lives because they do not have a permanent place to live nor a regular source of income for daily living.

3.1 NOTION OF THE FORMER LIVING PLACE

The notion and model of attachment of the Porong people to the former place are influenced by the ways Javanese people interact and create or form a space. In general, Javanese people are known as an ethnicity that emphasises the regulation of space thoroughly, which results in a form of social stratification, spatial order, and rituals. This regulation or ordering is actually intended to make people understand their position, therefore enabling them to participate in maintaining a harmonious microcosm (the human world) and macrocosm (the world outside humans).

However, the Javanese way of managing space embraced by the Porong people has faced challenges with regard to changing geographic and demographic landscapes resulting from infrastructural developments, technological applications, migration, national policies, and even the inclusion of other cultures or ideas into Javanese culture. The Porong community must find solutions and ways to maintain its way of life amid

changing geographic and demographic landscapes. Before explaining further, I want to assert that the village and urban community affected by the mud is derived from, as Boomgaard (1991) said, an “original” village or corporate community with communal interest. Thus, the last picture of mud-engulfed villages reflects a series of transformations from an authentic village to one that had gradually changed into a (semi-)urban community.

A. The villages before being engulfed: a corporate village with a communal desire

Before the Lapindo mudflow disaster, villagers held on to the collective desire of a rural world, despite various interactions, influences, and changes that made the village profile different. In general, the pattern of relationships desired by the people is of togetherness (*guyub*). The word *guyub* is often juxtaposed with other words that more or less have the same meaning as mutual assistance (*gotong royong*). However, the meaning of *guyub* is more in the sense of living together in one place. It is literally a joint or a gathering that prioritises the necessity of clumping conditions or a get together. Mutual assistance (*gotong royong*) is more about working together in achieving a goal whereas *guyub* is more about a group of people getting together without necessarily involving working towards a goal. *Gotong royong* is more an active phrase than a nominal one, which reflects a certain way to accomplish something, whereas *guyub* is an adjective that describes a state of being together. When people are *guyub*, they are physically, socially, and mentally one association. Mutual assistance (*gotong royong*), getting along (*rukun*), tolerance (*tenggang rasa*) and various rules of interaction are used to achieve this *guyub* condition. With reference to the people’s narrative, the *guyub* condition in most of the mud-engulfed villages reflects strong ties and social cohesion made possible by the similarity of location or geography (propinquity), the similarity of status or characteristics (homophily), and transitivity (brotherhood).

In terms of village profile, these drowned and affected villages can be divided into three major profiles: villages that retained their village status, transitional villages, and villages that have been transformed into urban communities. The prominent differences between these villages are the composition of the population, economic and daily activities, administrative status, and efforts by the residents to present a positive image of their villages.

In first-profile villages, most of the population were native and relatively homogenous ethnically and religiously, with fewer immigrants compared to the second- and third-profile villages. In addition, their livelihood was still closely linked to the land because even though they worked in other sectors such as industry the people also spared time to work on farms. Relationships was mostly of patron-client based on the power and protection the upper class provided for common people. For example, common villagers would become peasants for landowners. Being native was important especially with regard to buying and owning land and working on it. People were cautious when they had to sell their land to outsiders and needed the approval of their relatives before selling land to a non-native. Most of these villages were located far away from the Porong highway. Among these first-profile villages are Renokenongo, Besuki, Gempol Sari, Pamotan, and Glagaharum.

I will take Renokenongo village as an example. Before it was engulfed by the mud, Renokenongo was home to 6,800 people, mostly graduated from primary and junior high school (80%) and around three-quarter of them were of productive age. The village had

two kindergartens, three primary schools, two senior high schools, and one village polyclinic (*polindes, poliklinik desa*). It regularly held various events, including cultural and religious ones such as village purification, which is a ritual to get rid of bad things from the village (*ruwat desa*), and praying together (*tahlilan*). The people were happy and willing to be involved in village activities. The costs of these events were covered by the village's expenditure budget and donations from shops and the community. People would also collect money for sick community members. The togetherness (*guyub*), the people claimed, made them a solid community. Most of the residents of Renokenongo village inherited their land from their parents. This allowed them to live near their extended family, with houses located next to each other. Land transactions were trust based, often without any written agreement, or at best the transactions were recorded in the village office's big book.

An example of a transitional village is Kedungbendo. The village enjoyed rapid economic growth, thanks to its growing home industry. One mark of the village's pulsating development was a large housing complex in the midst of local/native settlements. Kedungbendo had a traditional market to accommodate the needs of its large population, so they did not have to go to the Porong market. In addition, many local residents worked as a housekeeper or maid for the residents of housing complexes. Based on the survivors' description, I have an impression that Kedungbendo was a very dense settlement consisting of between 100 and 200 households in every neighbourhood unit, in addition to the dense housing complex in the middle of the village. This impression was verified by BPLS data that shows that Kedungbendo had the largest population compared to other mudflow-affected villages. This village had close relations with or was affiliated with the Ketapang urban community (that became a gateway to Kedungbendo village) and they had similar home industries that produced cigarettes, leather wallets, and crackers. The Kedungbendo population was also the main customers of various food stalls in areas adjacent to the village such as Gempol Sari. The Kedungbendo people often described their area as a horseshoe, because local settlements encircled the housing complex. Furthermore, there was a new housing complex between Kedungbendo and Renokenongo. This housing complex, developed by Haji Hasan, also accommodated newcomers in Kedungbendo.

Unlike the first- and second-profile villages, areas that had transformed into urban communities experienced a change in their administrative status. In addition, the composition of the population varied, such as some households embraced a religion other than Islam. The way the Indonesian government changed the administrative status of the villages seems similar to the way the Dutch government changed the administrative status of villages into a rural township in 1813 that made village heads government officials (Boomgaard, 1991). Apart from the status of village heads, the change in the administrative status of the villages also influenced their organisational forms. Some local, social and cultural activities would usually be nationalised as their financing became centralised. Meanwhile, the change in village status made some local traditions disappear. For example, *ruwat desa* was no longer a common traditional ritual in a rural community. However, some rituals and traditions unrelated to village administration survived and continued to be performed, like *bari'an*, a celebration similar to Thanksgiving. In addition, many occupations had shifted into industrial and services sectors. There were few lands left in these urban community areas since most of them had been sold for industrial

purposes. Even when land was available, it would be difficult to find people who were willing to work as farmers or farm labour because most of them preferred to work in industrial and services sectors. People in this type of villages were more familiar with formal land transactions because there were many factories and industries. The main road that passes through these regions, for instance, was built on land once owned by the local people. The villagers' familiarity with land transactions was made obvious by the local jargon they often used to address this kind of transaction such as "*landasan*" (which means a villager has successfully sold an area of land). This type of villages had also become a destination for many migrants looking for jobs. Most of these urban communities were located along the Porong highway. Among villages of this type are Siring, Jatirejo, Mindi, and Gedang.

Two examples of these urban communities are Siring and Jatirejo that were led by *lurah* (a head of village) who served as a government official. These regions had a lot of factories and home industries where people worked as labour. In contrast to first-profile villages (e.g. Renokenongo) and transitional villages (e.g. Kedungbendo), around 10% of the population of these regions were college graduates who worked in prestigious institutions such as government agencies, armed forces, and the police force. The development of these places varied according to the scale of their industries. Siring, for instance, was both a semi-industrial place and rural area. It was the hub of relatively medium to large-scale industries such as watch, liquor, and furniture factories. Siring was also known as the place where a female labourer was killed because she demanded a wage increase in 1993¹⁴. Jatirejo was a rounded area surrounded by paddy fields. From the survivors' stories, it seems that Jatirejo was a trading place. There were many shops, stores, stalls, and taverns that opened till very late at night for legal or illegal transactions. On the other hand, Jatirejo was also known as home to Islamic boarding school students (*santri*). A populous subdistrict, it was vibrant with religious activities and a trading atmosphere. Meanwhile, Gedang and Mindi villages were the closest areas to public facilities in Porong such as the Porong market, train station, district office, and Porong community health centre (*puskesmas* Porong). These villages also provided boarding places and canteens or catering for many shop employees.

The other difference between these villages and urban communities was in the way the people portrayed their villages. In this case, the influence of infrastructural and economic development was reflected in the villagers' description of the image of their villages. These villages and urban communities essentially had the same claim over the economic condition of their villages, which was wealthy (*sugih*) and prosperous (*makmur*). However, the way they described prosperity was different. To the urban communities, the wealth and prosperity of their villages were more associated with the existence of many permanent brick houses, complete public facilities, and a prestigious occupational status. Meanwhile, the villages described prosperity as the ability of their villages to organise

¹⁴ In 1993, Siring was hit by a monumental tragedy. Marsinah, a female labor activist who served as a negotiator for her co-workers striking over supplemental payments for food and transportation provided by the watch factory where they worked, went missing. Rumor has it that she was kidnapped, tortured, and killed by the factory's security personnel with assistance from members of the Armed Forces and Police Force. Her body was found in Nganjuk three days later. This sparked labor movements and large-scale demonstrations demanding that the government bring those responsible to justice.

rituals involving almost all villagers, creating an atmosphere of liveliness and abundance. Here is an illustration of a woman from Renokenongo concerning her village image:

I lived a very happy life in my now non-existent village. When I was little, foods were available in abundance [because] people held a celebration (selamatan) almost all the time. Before they planted the rice fields, they would do celebration. When the paddy plants turned yellow, they would hold another celebration, usually with cone-shaped rice as the main menu. When they finished harvesting [the paddy fields], they would hold a thanksgiving celebration (syukuran) in which all villagers participated. One household made one cone-shaped rice, and grilled chicken was also served. We were prosperous and fortunate, with foods in abundance.

The economic and infrastructural development also affected the way they organised social interactions. While the desire to maintain togetherness remains strong in all types of mud-affected villages and urban communities, their social organisation and mechanism have begun to shift. In its original form, *guyub* reflects the spontaneity of the population to participate in any household and communal event. They would immediately and voluntarily come and provide material, financial, and advisory assistance, among others. The assistance was selfless and unconditional because they took it as a moral obligation and would feel guilt or shame if they did not get involved in communal activities and togetherness.

However, such spontaneous provision of unconditional assistance was wearing thin among the urban communities because the change in occupational structure and fixed work schedule had made it difficult for them to gather together. To allay the guilt of failing to participate in social and communal activities, they usually donated some money. Only in some parts of the rural communities did such spontaneous assistance persist. For instance, people who lived near an ancestral grave would clean the surrounding area, and prepare mats and banana tree leaves as soon as they heard that a household would visit the grave. Based on fragments of the survivors' stories, such togetherness continued on a smaller scale, such as in hamlets or among adjacent neighbourhoods. With a formalised communal organisation taking shape in most of the urban communities, their spontaneous gathering was replaced by scheduled meetings.

In addition, the role of social values in managing and organising mutual assistance in a community had been institutionalised. Originally, social values such as *soyo* and *jakno* (*jalukan/dekean/numpangi*) were the backbone of the functional life of a village. *Soyo* manifested in the effort of villagers to voluntarily help a fellow villager who was building a house, especially in making the foundation of the house. The owner of the house would not pay the neighbours, only provided them with meals and drinks. Similarly, *jakno* manifested in the effort of villagers to voluntarily help a fellow villager who was holding a wedding party, such as covering the cost of renting a canvas shelter or entertainment. Over time, the recipient of the assistance was morally obliged to return it with something of equal or nearly equal value. This tradition, which values trust and threatens dishonour to non-adherents, remains extant in some villages and usually involves one or two neighbourhood units. It is different from the forms of mutual aid mechanism that were common in urban communities, such as *arisan* (social gathering) and the co-operative. A co-operative is a formal organisation with a management board that plays a major role in organising, collecting, accumulating, and distributing funds to its members. It seems that

people in urban communities do not only rely on social values but also the management board of an organisation to ensure that mutual help works.

Furthermore, even though the village and urban community profiles are different, the imagery of the mud-affected villages and urban communities still highlighted its communality with mutual cooperation as its social mechanism. However, it does not mean that these communities did not face any conflicts. They did face conflicts and contradictions, which, as in other societies, are inevitable. They were usually triggered by money and love affairs within and between households and neighbours. However, before the mud disaster, the prevailing mechanisms of the villages were effective enough to solve any arising problems. For instance, the row between two neighbouring households in Kedungbendo over an alleged love affair between the husband and wife of the two households was successfully reconciled by the village chief at the village hall. This suggests that the imagery of togetherness should be construed more as a means to overcome conflicts and problems than an absence of them. In this instance, the values and mechanisms at play were living in relative harmony with one another (*rukun*) and consensual agreement (*mufakat*) with or without discussion or deliberation (*musyawarah*). In this case, they prioritised compliance or conformity over personal interest or opinion to reach an agreement or consensus.

B. Spatial order and spatial segregation in Porong

As stated above, spatial order is necessary to make the people understand their position and allow them to participate in maintaining harmony. Spatial arrangements occur from a household level to a village level. To understand the spatial order, I will use the survivors' statements about what they missed from the former places because they were unavailable or could not be performed in the new places. Generally, men and women expressed what they missed from the former places differently. To most of the men, they missed the old social interactions and hangout routine and complained that the people of the west and east side of the Porong highway rarely opened their doors and windows. To most of the women, they missed the old neighbourly easy going nature, such as unhesitantly asking the neighbours for spices for daily cooking needs, and the presence of relatives. They also complained about how they had to rent and pay catering services for ceremonial activities (*selamatan* or *kenduri*), while in the past they could just ask their neighbours for preparation and cooking.

Using the Javanese spatial order, some insight could be gained into why the men and women had different complaints over the new places. In the Javanese worldview, the balance between rights and obligations often lies in space. It is not only applied to the arrangement or organisation of social events and interactions but also to the arrangement of a house. The Javanese house, whether it is the kampong house (*omah kampung*) type or the *joglo* type, always has two spaces: front and rear areas. The front area is outward-oriented, open, connected with the external environment, public, formal, and sacred. The rear area is more inward-oriented, enclosed, protected, separate from the external environment, private, intimate, and profane. Even though it is not absolute, the front area of the house is usually managed by the man who upholds or represents the family prestige, while the rear area of the house, or the domestic realm, is usually the territory of the woman, who has the capacity to control and maintain domestic affairs and is entitled to this rear space (Wismantara, 2012).

For Lapindo mud survivors, the openness of the front area of their houses was represented by their habit of opening the front doors and windows every day and by the presence of wooden or bamboo benches on which they sat when hanging out (*cangkeruan*). Furthermore, even though the general layout of a Javanese house highlights public interactions in the front area, to the survivors, informal social relationships and interactions and instrumental support also take place in the rear area, which is the kitchen. Women can ask for or borrow spices and other necessities from their neighbours, including receiving instrumental help in cooking for a household ceremony. This is made possible by cohesion through blood relations or long-lasting relationships. With this house layout and arrangement, it makes sense that changes in place and space will affect and be felt differently by each gender. The women lost instrumental support in maintaining the daily living while the men could not find an arena to connect them with the external environment. However, both of them felt trapped inside the house, or “wedged” as the survivors put it. This topic will be discussed further in Chapter 5.

Furthermore, villagers often use cardinal directions in order to explain the position of people/villages and also to highlight differences in customs and traditions in places such as the east and the west. The use of cardinal directions in explaining one’s position is known as *mancapat* or the concept of Javanese space that is a centre that leads to the four main cardinal directions. When applied to the spatial order of the villages, four other villages in the four main cardinal directions will cover a village centre. Another example is crossroads position. Before being engulfed in mud, some of the villages used crossroads as a sacred location to hold *rumatan* or *barikan* on the night of Suro. To them, crossroads represent the existence of frontier space or the boundary between the human world and the cosmic world. In addition, the existence of a shrine can also be the basis for the determination of the spatial boundary of a community. In this case a group that has a different identity from other groups because of different descendants and ancestors, such as the people of Tangunan differing from the people of Siring and the people of Gunting differing from the people of Gempol Sari. However, in subsequent developments, there has been a shift in villager’s perception and mapping of a place. They tried to incorporate or refer to new building structures such as highways as a new boundary that is central in identifying a place. Thus, it could be said that the idea of a spatial order with regard to the villages is not only regional, geographical, or administrative in nature but also symbolic and flexible.

Furthermore, a spatial order in villages seems to be related to social stratification as well as practical or pragmatic reasons. An example is the spatial arrangement of Eastern Besuki village, which used to be a part of Mbesuk or Besuki. Based on spatial mapping, it can be seen that the distribution of people in the former village was related to social stratification because the neighbourhood on the left side of the map was mostly of lower-income households whose members worked as farm labourers for landowners who, according to the village map, mostly lived in the central neighbourhood whose residents were mainly religious figures and landowners. Furthermore, most of village facilities were located in the centre of the area. However, a pragmatic reason for this village spatial division is because the area on the left was near the river, which was very important for the households there because most of them did not have an in-house bathroom.

Furthermore, this village also had informal spaces that were formed organically and naturally as the result of social interactions and dynamics. For example, bamboo benches

on the porch or in front of a house were prepared to facilitate an informal friendly conversation and could be accessed by men and women. Likewise, coffee/food stalls and patrol posts were common and public places that were widely accessed by men to hang out. However, certain spaces that were not prepared for public assemblies such as fields or vacant lots at crossroads had naturally developed into places where people gathered to play chess, joke around, and discuss village politics. This natural place was a more open space and became an outlet for lower-income people to talk about village politics and other village issues. Formally, the BPD (village consultative body), which is widely represented by village elites, is responsible for discussing and resolving village issues. However, informal conversations and negotiations between classes on village issues and interests could occur in this organic space.

However, a full reconstruction of spatial order and mapping in this village is rather difficult because in the 1980s the Besuki village was split apart due to the construction of the Surabaya-Gempol toll road (1986-1993). Although administratively these two regions are within the same village administration, the term “Western Besuki” and “Eastern Besuki” began to emerge. Renokenongo village was also split by this toll road into Renokenongo and Isolated Renokenongo (Renokenongo Mencil). Several years back, some urban communities, which are Siring, Jatirejo, and Ketapang, also had been split due to the construction of the Porong highway.

With regard to this spatial segregation, some of Besuki villagers told the tragic story of the toll road development that separated Besuki village. Besuki villagers were not familiar with the term toll road and thought that the government intended to build the main road. Back then, the villagers were happy and accepted the idea because it could give access, mobility, and economic development. They were willing to sell their land, on which a school, small mosque and settlement stood, for this purpose. Eventually, when the road finished, they realised that they could not access the road and could only watch rich people in their expensive and luxurious cars passing by every day. They did not gain any benefit from this road development and must bear the consequence of family separation because of the toll road.

In this case, they had difficulty in following the joint activities because they were separated by this toll road. Even though a bridge had been built to connect Western and Eastern Besuki, it was not practical and optimal. For example, religious activities were usually held once a week in turns at the homes of residents in this village. After the toll road, *Diba'an* that traditionally takes place during the night had to be stopped because the women were afraid to cross the bridge in the dark of the night. Some of the residents took the initiative to dismantle the barbed wire fences so they could directly cross the toll road. However, in 1995 the government built a concrete fence that made the shortcut of crossing the toll road no longer possible. The residents used the bridge for a while before they dismantled the concrete fence to facilitate the crossing (Novenanto et al., 2013). At first, they were trying to attend religious and other social activities even though they had to cross the toll bridge or toll road, but eventually the frequency of attendance decreased, and they finally created separate activities according to their respective locations.

In sum, spatial order in Porong could be influenced by the Javanese culture but it also could take form naturally in accordance with the dynamics of the village. However, the people tried to maintain their cultural narrative in the face of changes in geographic and demographic landscapes. Togetherness continued to be an image and framework for

action and behaviour as people and a community. However, the scope and size of this communal group could shrink. Infrastructural development had become a barrier that gave rise to a spatial and social distance between people in some villages. Such togetherness could still happen on a limited scale and people tended to bind to smaller or closer communities or neighbourhoods. Furthermore, the people could still uphold their local identity and involvement in local social activities.

C. The bond with the land: *tanah leluhur, kampung halaman, tanah kelahiran*

An understanding on the Porong people's attachment to their former place is gained through various statements made by the survivors concerning their mud-engulfed houses and villages. Additionally, their experience living in the former place is reconstructed through a variety of narratives, memories, stories, and sometimes village maps.

The survivors' perception of their former places can be categorised into three statements. The former place is meaningful because it is the land of birth (*tanah kelahiran*), homeland or native land (*kampung halaman* or *tanah tumpah darah*), and ancestral land (*tanah leluhur*). Judging from these statements, one could argue that the meaning of land is related to their existence as an individual, collectively, and as a generation because it reflects the place where a person was born, raised in a certain community, and lived for generations or descended genealogically. Furthermore, it appears that their attachment to a place is not only the result of their experience living in a certain physical landscape but is also relational. How this relational aspect occurred can be ascertained through blood ties and reconstruction of experiences. In this regard, various social, ritual, and religious activities play an important role in shaping their conception of space and place.

Based on the people's stories, three traditions and rituals play an important role in the process of binding their existence with the land. The first ritual concerns the lifecycle of an individual, the second ritual is collective or related to a certain group, and the last ritual recreates a generation of people and is timeless because it includes the past, present, and future of a group of people. Despite differences in purpose, group size, and event location, these three types of rituals have the same characteristics, namely forging and strengthening a relationship with the land or earth through procedures and rules signifying their initial contact with the land or earth.

An example of the first ritual that continues to be performed up to now is the ritual of burying the placenta of a newborn in the courtyard to establish his/her existence on earth. Old beliefs dictate that during pregnancy the placenta, membranes, umbilical cord, and blood are considered the siblings of the baby. At the beginning of birth, while blood and amniotic fluid already spilled onto the earth, the placenta should be united and protected by the earth through ritual. Commonly, they will put a placenta in a clay bowl together with items required for the ritual. There is also a procedure of burial for the placenta. A man will lead this ceremony and they will usually bury the placenta in the front yard. The reason it has to be buried in the front yard could be related to the way Javanese people divide and symbolise the space. The front yard is considered more sacred than the backyard. However, this Javanese spatial order will be discussed further in Subsection D. Furthermore, the items put inside the clay bowl will protect the baby's sibling and also reflect or symbolise the parents' expectations of the baby. For example, some parents will put a few pieces of paper and stationery inside the bowl in the hope that the child will grow into an educated and smart person.

Secondly, a collective ritual that signifies human interactions with the earth is called alms to the earth (*sedekah bumi*). Through the ritual, the people pay homage and show gratitude to the earth that has provided them and other living things what they need. This ritual is traditionally performed by farmers at a rice field and villagers before building a house. In the distant past, house building required a series of rituals, such as the ritual of selecting and cleaning the wood that would be used for the house, the ritual of determining the direction of the house and a good day to start building the house and installing its foundation and four main pillars, the ritual of roofing the house, and the ritual of digging a well. Today, the house building ritual has been reduced to a group of people staying awake the whole night (*melek-melekan*), followed by a ceremony (*slametan*), sometimes with an offering (*sajen*), before roofing the house (*naik atap*). This ritual signifies an interaction between a household and the earth, as well as a gesture asking for protection from the earth.

The alms to the earth ritual performed by farmers at a rice field is usually a communal ritual involving the whole village. However, this ritual has been changing over time. According to Mbah Jalal, one of the elders/doyens of Siring, farmers used to treat the paddy with care and respect. They would hold celebrations during the stages of rice cultivation such as sowing rice seeds, transplanting, harvesting, putting rice into a barn, and mashing rice with a pestle. However, this tradition has not survived to the present day. Mbah Jalal attributed the demise of the alms to the earth tradition to the New Order era under President Suharto that replaced the local rice with the rice imported from Japan, which resulted in a shorter harvest period from six months to three months. Meanwhile, some of the elders of Besuki attributed the demise of the alms to the earth tradition to Islamic influences. Under Islamic teachings, the offering is forbidden, and the religious leaders moved the venue of the ritual from a paddy field to a mosque and told the farmers to be grateful to God, not the earth.

In the distant past, in the planting season the farmers in Besuki used to perform the ritual of bringing a cone-shaped pile of rice to the paddy field as an offering. Similarly, in the harvest season they would bring a cone-shaped pile of rice to the paddy field to show their gratitude to the ruler of nature for the grace and fortune bestowed on them. In the harvest season, the farmers not only brought a cone-shaped pile of rice to the paddy field, they also picked rice stems that came into contact with other rice stems and displayed them in the living room. However, many years later the ritual shifted from bringing a cone-shaped pile of rice to a paddy field to bringing it to a small mosque and asking the religious figures to pray for fortune and a good harvest. Over time, this thanksgiving ceremony has been disappearing in Besuki. People now treat the paddy disrespectfully, such as selling unripe rice from non-harvested rice fields.

The last ritual was performed to mark their ancestral relationship. This ritual reflects a linkage between the people and their ancestors through the blood of their parents and grandparents and also signifies the establishment of collective existence through the first settler (ancestor) as the person who made the first contact with the wilderness. Upon exploration, it was found that kampongs or villages such as Renokenongo and Gempol Sari or urban communities such as Jatirejo and Siring consist of two to four satellite hamlets (*dusun*), each of which claimed to have different ancestors. For example, a majority of the Siring people claimed that Mbah Sari was their great ancestor who cleared the forest for settlement (*babat alas*) and was the first settler in Siring. However, there is a small group

in Siring that claimed to have a different genealogy and ancestry. They call themselves the Tanggunan people with Mbah Katut as their ancestor. Both of the groups have their own ancestral shrine (*punden* or *pasarean*) for worship.

The naming of this ancestral relationship ritual may vary. For example, the people in Gunting hamlet call it *barikan/ bari'an*, but other village has integrated it into the alms to the earth ritual and *rumat desa*. Gunting hamlet, a part of Gempol Sari village, continues to perform this ritual. Usually, the *barikan* is performed after the direct descendant receives an inspiration (*wangsit*) such as being visited by his ancestors in a dream. This will be followed by elders meeting to decide when the *barikan* will be performed. *Barikan* consists of procedures such as offering, eating, and praying together in an ancestral shrine. Besides the communal ritual, households perform a ritual at an ancestral shrine when they ask for blessing, fortune, and protection. In some villages or hamlets, there has been a change in the venue where this traditional ritual is performed. While the people still gather, eat, and pray, now they do it in a mosque or village hall rather than at an ancestral shrine.

Besides the ritual of visiting their ancestral shrine, the survivors also are morally obliged to visit the graves of their parents and grandparents. People usually visit their parents' graves (*ziarah* or *nyekar*) every week on a Wage¹⁵ day, one day before the fasting month (*bulan puasa*/Ramadan), and several days before Eid al-Fitr. While the purposes of visiting a graveyard may vary, mostly they want to take care of their parents' graves, give respect, and send a prayer to them. Of all the mud-affected villages, Jatirejo, East Besuki, and Pamotan are villages whose graveyards remain unaffected by the mud. From these three villages, an insight can be gained into how they manage to maintain the relationship with their deceased parents. On a religious grave-visiting day, the people wear their best clothes, often religious clothes, and bring flower petals to be sprinkled over a grave after they pray. Here is one of the pictures on a Wage day at the Jatirejo graveyard (see Figure 8).



Figure 8. Visiting parents' graves on a Wage day in the Jatirejo cemetery

Through these three types of rituals the bond is established between humans and land. Furthermore, the rituals described above could be intended to maintain a vertical relationship that connects humans and the macrocosm (the force or world outside humans). Besides the earth or land that represents the macrocosmic element, they also used yellow cone-shaped piles of rice in most ceremonies that symbolise a mountain as a sacred place where ancestors and other spirits stay and live. In sum, these rituals open up a dimension of space other than the physical or material one. It gives a spiritual dimension to space and place and creates a meaningful relationship between humans

¹⁵ Wage is the name of a day in Java calendar system. One week is called Pancawara consisting of 5 days, which are Paing, Pon, Wage, Kliwon, Legi. According to this system, the best day to visit the graveyard is on Wage day.

and land, which is sacred and meaningful for the existence of an individual or a group of people.

D. The psychological and spiritual aspects of the place and space of Porong

The feeling of being at home or at ease (*kerasan/betah*), peaceful (*adem ayem*), and tranquil (*tentram*) seems to be the outcome the Porong people enjoyed for successfully maintaining harmonious vertical and horizontal relationships. The ways in which these people were bonded with the land and behaved according to spatial arrangements and moral community were able to influence their psychological and spiritual condition. In addition, the atmosphere of the villages may contribute to providing a deep-rooted experience of place and left a memorable impression on those who had lived and experienced life in these former villages. Despite changing spatial and social conditions due to infrastructural and economic development, the people remained in good social relationships as reflected in their social behaviours such as hanging out with the neighbours in the afternoon and this habit could create a comfortable atmosphere for living. As many have expressed that they yearn for their former places because neighbourly relationships there were so nice, which the neighbourhood described as crowded (*rame*), cheerful (*ceria*) and boisterous (*seru*).

Furthermore, this formation of space created a sense of safety and security, a frequent occurrence of social contact that allowed an exchange of instrumental, emotional, and moral support. The last is the formation of a strong sense of attachment or a sense of belonging that forms their local identity. In addition to the types of relationships and values, communal and ritual activities play an important role in creating feelings of security, social connectivity, and attachment to the place. Apart from joint activities, rituals provide a community the opportunity to maintain a balanced world that is free from catastrophe, such as through *rumat* that is aimed at casting out or appeasing evil spirits.

Thus, the relationship of the Porong people with this space and place used to create an emotional, affective, and spiritual attachment. The space that formed through the interactions between the people and the land is sacred because it relates to ancestral spirits. The earth or land is also a macrocosmic element. Porong people believed that space formed through the interactions between macrocosm (nature) and microcosm (human). Humans have to arrange or manage these interactions in order to maintain balance and harmony that sustains human life. These rituals provide space with physical, psychological, social, and spiritual values and meanings.

In this light, the meaning of a place for the Porong people is constructed through social and cultural processes. Furthermore, this rootedness to the land and communal bonding creates a deep affection for the former place that money or better things in their new place cannot replace. The statements such as “I prefer living there although my house was very ugly” is a kind of evaluation of the former place (that was not very good) but does not reduce the level of emotional attachment toward the former place. People often found it difficult to explain why they are so tied to their former place. All they could say was that their former place was a place that made them feel at home (*kerasan*), peaceful (*adem ayem*), and tranquil (*tentram*). This *kerasan* or *betah* means that people feel at home, at ease and happy living in a certain place and space. This emotional state cannot be created instantly, or at least it cannot be forced. There need be affection and emotion in order to

build this secure place attachment. The following statement reflects this emotional attachment: “the level (of emotion) is different and indeed it cannot be forced. For instance, we’re supposed to blend in the mosque in Pangreh (the host community), but my heart cannot accept it, so I continue to perform Friday prayers in Besuki (the former place). So, it cannot be forced.”

E. Without saying goodbye: leaving the homeland without a proper & decent ceremony

Migration and leaving the homeland is not new for the Porong people. Many of them have voluntarily migrated to pursue higher education, seek a fortune, or accompany their spouse who lives in faraway places. Around the 1980s, villagers had to leave their kampong, or commuted to Sidoarjo Regency to pursue higher education because at that time high schools and colleges were not available in the Porong area. Moreover, some people from Jatirejo, Siring, Kedungbendo, and Renokenongo moved to Surabaya, Jakarta, and Kalimantan to work in the entertainment, construction, and plantation sectors. However, after years living elsewhere, they managed to keep the habit of sending money to the folks in their hometown and visiting or returning to their homeland. This habit of visiting a homeland is called homecoming (*mudik*). Furthermore, these people would return to their homeland to get married, build a house, and live permanently in their parents’ land.

There is a custom performed for the safety and security of someone who leaves the homeland or returns to it, especially when they leave or stay permanently in certain places. This tradition is called *syukuran* or *selamatan* (a ceremonial banquet). In this tradition, people cook and send food to their neighbours. They also invite some people to their house to pray together and ask for goodness in new places. This tradition can be considered as a way to say goodbye to the homeland and ask for wellbeing in the new land. In the Javanese society, *selamatan* is highly recommended as the proper way of moving to a new house or place, in the hope that the inhabitants are blessed with prosperity and a tranquil life in the new place. Furthermore, this *selamatan* event is also accompanied by eating good meals in the relevant place, or the meals are distributed to the neighbours for better neighbourly familiarity and relationship.

In light of this custom, almost none of the survivors had the chance to perform this traditional ceremony before leaving their homeland. One village that was able to hold a village or communal ceremony before leaving their kampong is East Besuki during the fourth wave of displacement. Before the villagers left Besuki forever, the community held the last *rumat desa* and *kendurian* to ask for safety in the new places. They made some cone-shaped piles of rice and other meals then prayed and ate together for safety and wellbeing. Besides the Besuki village community, some of the survivors from other villages could only hold a ceremonial meal at their households. I had the opportunity to witness and help one of my informants who was moving from Gempol Sari to Randegan at the end of 2015. The process took several days, from choosing the day, preparing the meal, spreading the invitation to old and new neighbours, and informing *mudin* (a religious head in the kampong) who would lead this ceremonial meal event.



Figure 9. Preparing the meal in the soon-to-be-left house with the old neighbours (left) and a ceremony in the new house with the old and new neighbours (right)

During this time, there were 14 out of 119 households in neighbourhood 10, Hamlet 2 (RT 10/ RW 2) Gempol Sari village, Tanggulangin sub-district that had not moved. These 14 households did not leave their damaged houses because they had not fully received the instalment payments from Lapindo Company. Some of these households also had a problematic land status. After experiencing mud flood due to the broken mud embankment several times, in September 2015 they finally received the payments that were enough to buy a new house. This household consists of a couple and their two daughters, one son-in-law and four grandchildren. In the former place, they had three houses located side by side and a piece of farming land behind their houses. However, the compensation was only enough to buy one house in Randegan for all of them.

From the process, this tradition or ritual becomes a way to catalyse or facilitate the process of transition from one setting to another or as a bridge to bring together people from the old and new place. It is obvious that the social networks from the former place still play a major role in supporting the household in terms of preparing the meal, distributing it, and attending the thanksgiving ceremony held in the new house. Even though the former neighbours did not stay there anymore, they were summoned by my informant to help them cook some dishes for a whole night outside the former house. In the morning (Figure 9 on the left side), they were wrapping the dishes with a plastic bag to be distributed or given to the people that would visit them later in the new house. In the afternoon, they moved to the new house, which was located around 8 km from the old house (Figure 9 on the right side). After that, with the help of relatives and former neighbours, they prepared the meal for the ceremony. Later on, the new and former neighbours came to join praying activities. After praying, people ate and took home a big plastic bag containing a meal, biscuits, and bottled juice.

From my observation, the awkward situation occurred in the kitchen when the new neighbours came through the back door to help the household. Actually, relatives and former neighbours already took on this role. Even though they finally shared the work, obviously there were differences in the habit and style of preparing this meal that created a more awkward situation. However, despite the awkwardness, people started to introduce themselves and to get to know each other better.

In sum, forced migration has robbed the people of the opportunity to say goodbye appropriately with their land and the people. However, some households managed to

perform this ceremony even though it was difficult and costly. In the end, this ceremony could mediate and moderate the transition process, giving people time to untie and then reconnect with new people. In the case of the Lapindo survivors, it could also be possible for people from the former networks to meet with the people from the new networks in this ceremony and create overlapping social networks.

3.2 FORCED DISPLACEMENT: EXPELLED FROM THE HOMELAND

The Lapindo disaster was caused by mudflow that continues to spread and threaten the environment surrounding the bursting point. As described in Chapter one, the trial and error to stop the mud and the fragmented solution to countermeasure this disaster has created waves of migration. The event referred to the physical phenomena that could be harmful to the environment and population such as mud blow-up, a collapsed embankment, and the explosion of a pipeline gas. The solution was related to the way the government and the company dealt with the matter at hand, such as how mitigating the mud has forced a large number of the population to relocate from their villages.

As a consequence, this migration would affect the community, households, and individuals in different ways according to the conditions they faced. For instance, the experiences will be different for people who moved the first time the mud erupted, because they had been physically chased by the mud, compared to people who lived side by side the mud for a period of time before they finally left the contaminated place.

A. Four waves of dispersal from homeland

Since the beginning of the Lapindo mudflow in 2006 through 2013, the disaster-affected people had abandoned their homeland in four waves of massive forced dispersal. In the first wave of forced displacement, the people had to leave their villages because of the initial mud blowout on 29 May, 2006. During this time, they had to move to various places such as the village hall, the homes of their relatives, and finally the Porong New Market (PNM). No fewer than 11,000 people were forced to abandon their homes in the first wave of migration (Richards, 2011).

The second wave of migration was triggered by the explosion of Pertamina's gas pipeline on 22 November, 2006. Around 28,000 people were forced to abandon their homes. Most of them (around 16,000 people) stayed at the PNM, while others stayed with their relatives, or rented a house at their own expense. After a couple of months, Lapindo provided allowances to the people from the first and second waves for renting a house and daily living. However, some of the survivors refused the allowances and chose to stay at the PNM until they could move together as a community.

The third big wave of migration, which occurred from 2009 to 2011, was prompted by Presidential Decree No. 48/2008 and Presidential Decree No. 40/2009 on mudflow mitigation efforts and the need to vacate the affected areas, which were considered non-liveable (the green and blue areas in the map in Chapter 1). During this time, 5,589 people, followed by another 3,037, had to abandon their homes. Before finally leaving their homes for good, a number of families from Besuki, Kedungcangkring, and Penjarakan villages had to stay temporarily in emergency tents established by the Social Affairs Agency along the Surabaya-Gempol toll way cut-off. They had to stay in the tents because the mud from

the broken-down embankment frequently overflowed into their villages over a period of weeks.

The fourth big wave of migration occurred from 2011 to 2013 following the issuance of Presidential Decree No. 68/2011. During this time, around 3,000 people were forced to abandon their homes. Two other presidential decrees, Presidential Decree No. 37/2012 and Presidential Decree No. 33/2013, also prompted an unspecified number of people to move out of their homes. We can assume that if one neighbourhood unit (RT) consists of at least 100 people, and according to the decree there were 66 neighbourhood units that had to move out of their homes, then the number of people during the forced displacement in 2013 reached a total of 6,600.

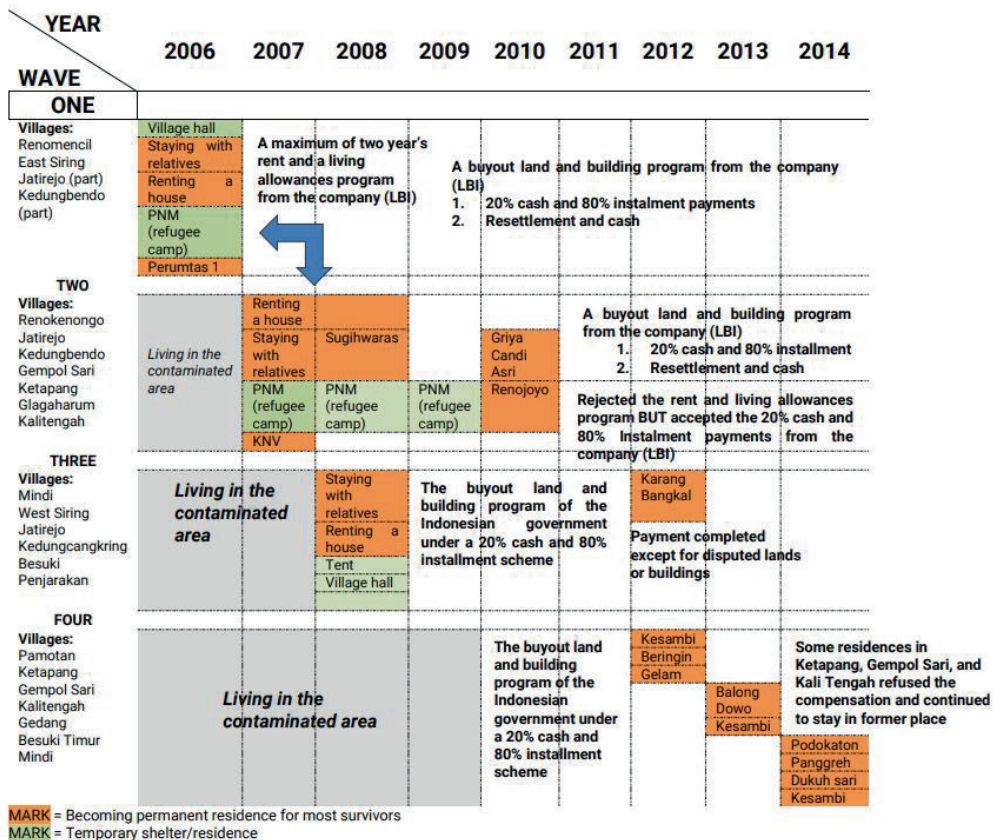


Figure 10. Forced displacement waves

Figure 10 shows the displacement of people from the impacted villages to a temporary shelter before finally moving to permanent housing between 2006 and 2013. The new resettlements in Figure 10 (highlighted in orange) are the current residences of the survivors participating in this study. However, there are many other temporary or permanent resettlements besides those in Figure 10. The resettlements above represent the four types of resettlement mentioned in the introduction, namely those provided by the company (KNV), those created by the survivors, a formal settlement (Perumtas 1 and

Griya Candi Asri) and a kampong settlement. Furthermore, each of the new resettlements is placed in a given year based on the longest duration of stay of the participants.

There are significant differences between the first and second waves of displacement and the third and fourth waves of displacement. The first and second waves of displacement/resettlement were the responsibility of Lapindo Brantas Inc., while the responsibility for the third and fourth waves of displacement/resettlement was taken over by the Indonesian government. Apart from the period of time required for the survivors to abandon their homes, the first and second waves of displacement were marked by the survivors' response. As shown in Figure 10 above, most of the people of Renokenongo rejected the social assistance offered by the company and preferred to stay at the PNM until the company met their demands of 100% payment for losses and 30 hectares of land for community relocation. However, since the company turned a deaf ear to their demands, they had to find another way to realise them.

Besides the company-arranged compensation, the survivors of the first and second waves of forced displacement experienced the abruptness of the disaster. The first-wave people witnessed the initial appearance of the mud, while the second-wave people witnessed a gas pipeline explosion that caused massive panic among the people who lived near the mud embankment. Even though most of the population in Sidoarjo was in shock when they knew that mud had come out of the earth, it was the people of the first and second waves living near the site of the disaster who felt the terror directly. The abruptness of the disaster left the people in a state of shock, and confusion, as described by a 46-year-old woman of Siring: "In the darkening afternoon the smell of gas wafted across the village. We didn't know what it was, but they forbade us to light a fire." Instead of an explanation to clear up their confusion, the villagers received various instructions from the local government or company representatives, including temporary evacuation to the village hall before moving to the Porong New Market in Juwet Kenongo, Porong, Sidoarjo (around two kilometres from the Siring urban community) because the mud began to submerge their village.

B. Temporariness of living

These waves of migration have created a temporariness of living among the survivors. The temporariness of living is reflected by several aspects, including living in the shelter or refugee camp, living in the contaminated area before frequently moving from one place to another until they finally settled in. Below is Table 12 concerning temporary shelter and frequency of movement:

Table 12. Temporary shelter and frequency of movement

Categories, duration & frequency	Migration wave		Total household
	1 st & 2 nd waves	3 rd & 4 th waves	
	<i>n</i>	<i>n</i>	
The Porong New Market			
Less than 1 month	1	6	7
1–6 months	64	3	67
More than 6 months	31	1	32
Renting house			

Categories, duration & frequency	Migration wave		Total household
	1 st & 2 nd	3 rd & 4 th	
	waves	waves	
	<i>n</i>	<i>n</i>	
1 week–1 month	1	4	5
1–3 months	4	0	4
3–6 months	6	0	6
More than 6 months	18	1	19
Other shelter			
1 week–1 month	2	2	4
1–3 months	8	0	8
More than 6 months	7	1	8
Stay in a contaminated area			
Less than 6 months	16	7	23
6 months–2 years	28	4	32
More than 2 years	13	64	77
Moving frequency since disaster			
Once	144	249	393
Twice	31	16	47
Three times	29	3	32
More than three times	14	2	16

Most of the survivors experienced living temporarily at the crowded Porong New Market (PNM) that was officially closed as a refugee camp in 2009. As many as 106 participants involved in this study claimed to have lived temporarily at the Porong New Market. Refugees who lived at PNM are usually the survivors from the first and second waves (Table 12). Based on a statistical test, it is most likely that the people from the first and second waves of disaster would spend more time at PNM than those from the later waves.

According to the former Coordinator of the Sidoarjo Disaster Countermeasure Executive Unit (*Satuan Pelaksana Penanggulangan Bencana*), it was he who had come up with the idea to use the newly built market in Porong, Sidoarjo, which is later known as the Porong New Market (PNM), as an evacuation centre. To use the market, which was then under construction (with a completion rate of 85%), as a refugee camp, they needed to set up and complete essential facilities such as wood partition, electricity, and sanitation for refugees to live in. After 24 hours, 230 people arrived at this facility, and the population sharply rose to 2,600 people at the end of June 2006. Besides PNM, three other places used as a refugee camp were Ketapang, Kali Tengah, and Renokenongo village halls. No fewer than 800 households were evacuated to the village halls. As the number of refugees rapidly increased by the day, places such as an overlay between villages and the mud dyke overtopping were used as evacuation centres. At the end of the first wave, the number of displaced people reached 11,000.

A reduction in the number of refugees began in August 2006 when LBI Company gave IDR 2.5 million in allowance to each household each year for renting a house, IDR 500,000 for moving, and IDR 300,000 per month for six months to each person to offset cost of living. This method successfully reduced the number of refugees, and in mid-October 2006 the PNM was cleared from refugees. Along with this, all partition and other temporary facilities were dismantled. Unfortunately, one month after clearing the PNM, on 22 November, 2006, the gas pipeline exploded and triggered a new wave of

displacement with the total number of refugees higher than the previous wave. The former Coordinator of the Sidoarjo Disaster Countermeasure Executive Unit stated that he had to handle more than 16,200 refugees at the PNM. Besides the higher number of refugees, he stated that the duration of stay at the PNM was longer compared to the previous one that was only five months. In the second waves, refugees were staying at the PNM from 2006 to 2009. He added that the second-wave refugees were ruder and more violent compared to those of the first waves of displacement even though both of them showed strong emotional reactions such as irritability, becoming angry easily, outbursts and sometimes seeming furious.

For the survivors, living in the Porong New Market was one of the most difficult moments. They had to live together with others in cramped rooms with limited facilities. In this case, they had to live in a 3 x 4 m² room with multiple families (around 3 to 4 families). The bathrooms were also inadequate, and they had to stand in a long queue to use them. The food was bad due to camp mismanagement. Below is an excerpt of the story told by a 40-year-old woman of Renokenongo who lived nearly four years at the Porong New Market with her family:

The market stalls had no partition. They were separated by cardboards [that signify] 'this is my place, that is your place'. For three years, just cardboards. In the last year, white fabrics were provided to be used as partitions... How is that, living with husbands and children without partitions.

The Porong New Market is the place where people were expected to melt down. In addition to suffering a total loss, they also had to endure uncertainty, limited resources, and cramped space which forced them to adopt a combative stance to survive:

The Porong New Market had a heated atmosphere. We wanted to protest nonstop. A lot of people were angry, a lot of people cried. Many staged demos. Even worse, we were hostile to our own friends. Hub, some received a contract [allowance], some received 20% [cash], we rejected the contract or the 20%. Fellow refugees attacked each other, abused each other, there were fights. Sometimes we did these to our family/relatives. Throwing closed-fist-punches... Things even worsened when aid came, [we were] scuffling.

Testimonies by both the management of the refugee camp and the survivors give us a clear picture about what an unpleasant place to stay the PNM was and that its abject condition could certainly harm the survivors physically and mentally, as well as take a toll on their humanity. A housewife from Renokenongo told her story about her mother:

... My mother had suffered from a heart disease since 2008 [the second wave of migration that brought them to the PNM]. Two heart attacks and then in 2009 she passed away. During the first attack, we brought her to a puskesmas [a community health centre], then to hospital. Well, back then at the refugee camp [she] could not sleep, could not rest, and was often shocked when there was a demonstration, yeah [she was] an old person.

In the next chapter, the experience of living at the PNM will be taken into account as one of the factors that influence the physical and mental health of individuals. In addition to

the PNM as the main refugee camp, the survivors also stayed at other temporary shelters. From Table 9, we generated a distribution table that consists of information about the types of shelters and how long the survivors stayed there. As we can see, 20 participants stayed at village halls, with their relatives, at official houses and other facilities such as a car or tent as their temporary shelter. Furthermore, the survivors from the first to later waves experienced staying at temporary shelters. However, Table 12 indicates that the survivors from the first and second waves stayed at various shelters as refugees longer than those from later waves. It is understandable that the survivors from the first and second waves had to move because their houses had been engulfed by the mud, while most of those from the later waves could continue staying at home by withstanding contamination in their areas.

Contrary to the first and second waves of forced displacement, the later waves usually had to live in contaminated areas for some time. A contaminated area is defined as an area whose water and air has been affected by mud overflow. Collapsed embankments and mud-overflowed settlements forced the people to evacuate several times to village halls or other places. In fact, some people of Besuki, Kedung Cangkring, and Penjarakan refused to return to their homes and chose to live in evacuation tents even though BPLS managed to repair the dyke and stopped the mud overflow.

Furthermore, since water from the wells in the contaminated area could not be consumed, BPLS had to provide them with clean water. Mud was also damaging rice, resulting in crop failure. Some farmers and farm workers had to look for other sources of food and income to survive. From Table 9 we can see that 132 people who got involved in this survey had lived in the contaminated area for periods ranging from less than 6 months to more than two years. The statistical result proved a significant association between the migration wave and the duration of stay in the contaminated area; the survivors who lived in the contaminated area would likely be people from the later waves.

The people chose to live in the contaminated area because of several reasons. Most of them (42.3%) stayed in the area because they did not have other places to live. However, the more interesting reason is because they felt at home and were still uncertain about leaving the former place (11%). The difference from the previous wave is that they could actually postpone the moving process until they were ready (see the appendix 1, attached titled 'The reasons for staying in the contaminated area').

Based on these multi-response data (see Appendix 1), we can say that material/compensation and the lack of housing (27.6%) were not the only reason that made people choose to stay in the contaminated area. Uncertainty about leaving their former house, and their attachment to it, made the people reluctant to move even though they had to face dilemmatic situations (4.3%). On the other hand, even though it was difficult for them to be separated from the former place, the physical environment of the former place was no longer adequate for healthy and comfortable living. This nostalgic attachment to the former place and anxiety of what is to come in the new place will be discussed further in the next chapter.

As people who rarely migrated anywhere before the disaster, the continuous displacement is one of the worst impacts of the disaster on the survivors. As the data collected from the participants of this study show, some of them had to move twice or more, even though most of them just moved once. It is obvious that the frequency of migrating was higher after the mudflow, for the people from the first and second waves.

However, the people from the third and fourth waves lived in the contaminated area for a longer period of time.

In sum, there are two types of forced displacement i.e. immediate and delayed. The survivors who belong to the first type of forced displacement typically stayed temporarily at the Porong New Market until they received a social allowance to rent a house and later bought a house in a kampong, formal settlement, or special settlement that the company provided. Meanwhile, those of the second type of forced displacement did not abandon their homes because their houses were submerged by mud but because of concerns over the possible collapse of the levees and environmental degradation. These were the people who lived around the mud embankment. They had experienced a shortage of drinking water, been beset by the fear that one day the rain would make the levees collapse, had suffered from crop failure, and had lived constantly in the environment with a strong sulphuric smell for five years. After an assessment, the government declared that the area was dangerous for habitation and evacuated the residents.

C. Fragmented and dispersed social networks

In terms of social relations and networks, this forced displacement has physically divided the villages, neighbourhoods, and even households. In the first and second waves, the fragmentation mainly occurred due to survival and practical needs such as the need to escape as soon as possible from the mud and finding a temporary safe place to stay because the mud had engulfed their former place. The displacement was undelayable, spontaneous, and fast without too much consideration except for safety and security. The following is how the Jatirejo-Kedungbendo couple described their successive process of parting with their family due to the rapid movement of the mud:

When we just got back from my brother's wedding party in another town, we found out that our house in Jatirejo had been submerged by mud around 80 centimetres deep. My mother panicked and tried to rescue our belongings. At that time, my wife had just given birth to our daughter and it would not be good for her and the baby to live at the Porong New Market. So, my wife, the baby and I moved to my mother-in-law's house in Kedungbendo while the rest of my family stayed at the Porong New Market. But not long after, Pertamina's pipeline exploded, which scared my wife to death. At that time, we went by motorcycle to the home of my wife's sister in Gempol Sari as fast as we could while the rest of my mother-in-law's family stayed at the Porong New Market. But then the mud reached Gempol Sari but luckily my mother's relatives were willing to lend their house in Perumtas 1. We stayed there for two years before moving to another rented house in Candi and stayed there for two years. After that we rented this house because it is near my parent's new house.

In the first and second waves, separation from neighbours and family was necessary to survive. However, the disintegration of villages, neighbourhoods, and families was unavoidable even when no mud was chasing them, as happened to the survivors from the third and fourth waves. Even though these village folks were not under pressure and were not in a rush to find a shelter, having enough time to discuss, choose, and decide, they still failed to avoid disputes that finally divided their chosen destinations.

As shown in Figure 10 that details forced displacement waves, Pamotan village split into two big resettlements in Kesambi and Beringin, whereas Besuki Timur split into three

settlements in Podokaton, Pangreh, and Dukuh Sari. Even though each of these villages had initially agreed to move together, none of these mud-affected villages from the third and fourth waves managed to move together to the new places. This was mostly driven by villagers' internal conflicts over housing preferences.

As said above, internal conflicts finally split Besuki Timur (East Besuki) into three resettlements. These villagers had initially organised themselves to move together to Pangreh. They learned from first and second wave survivors the importance of selecting carefully the destination place and housing developer. In this case, they chose a place far enough from the mud (around 4 km) with basic facilities such as school and health clinic. They also agreed to choose a developer with a good reputation. However, in the process, conflict arose that divided the villagers into three groups. The first group stayed in Pangreh and was led by people with abundant capital who bought the settlement from the developer. The second group followed their religious leader and moved to Dukuh Sari. Meanwhile, the third group was a farmers cooperative group banned from staying in Pangreh and had to stay with the people of Besuki Barat (West Besuki) who had moved to the Podokaton settlement (developed and owned by the developer) three years before. Such a separation could befall a household merely because a member of the household had different preferences, networks, and cliques. For example, a family was separated because the parents chose to follow a religious leader to Dukuh Sari while their son preferred to live in Pangreh.

To give conclusive evidence, the survey data are provided to analyse whether this forced displacement could change the physical and structural ties, in this case kinship ties. In this research, kinship ties are defined as a blood relationship. Further, most of the mud-affected villages can be considered as villages of origin where the physical structure was developed along with the population. This physical structure became denser mostly because of the increasing size of the local or native population. Only several places, mostly those that are close to the Porong highway such as Mindi, Gedang, and Jatirejo, whose population development was also affected by migration flows. So, it was common to find an area or a neighbourhood whose inhabitants were related by blood.

To see what changes had taken place in these physical and structural ties, each household provided data on the number of their relatives who lived in the same neighbourhood in both the former and current residence. I used Likert scale from 1 to 5 for categorising the household response which are almost entirely (above 80% of neighbours are relatives), largely (80–50% of neighbours are relatives), partly (around 50% of neighbours are relatives), a small part (below 50% of neighbours are relatives) and none. Here is the histogram that illustrates the number of relatives who lived in the same neighbourhood before and after the disaster:

Figure 11 shows the changes in the number of relatives who lived in the same neighbourhood with their families. For example, before the disaster 70.78 percent of the households from the first and second waves ($n = 155$) had a large proportion of their relatives, if not all of them, living in the same neighbourhood, while after disaster only 30.23 percent of the households from the first and second waves ($n = 65$) had some or all of their relatives living in the same neighbourhood. We use a non-parametric test to compare the median to check whether these changes are significant enough. A Wilcoxon Signed-Ranks test ($Z = -9.663, p = .000$) indicated that the number of relatives living in the same neighbourhood after the Lapindo mud disaster (mean rank = 90.49) was

statistically significantly lower than before the disaster (mean rank = 134.33). It means that the Lapindo mud disaster has physically scattered the closely-knit kinship networks and changed them into more loosely-knit networks. Furthermore, the chart shows that the first and second waves of migration comprised households with more closely-knit kinship than the third and fourth waves, but after the disaster the proportion of households living in a place without their relatives is higher among the survivors from the first and second waves than those from later waves. So, it can be concluded that the households from the first and second waves were more fragmented and dispersed than the later waves. In addition, the way they settled in the new place could also become a factor that determines this condition. For example, there was a trend among the survivors from the third and fourth waves to build and move together to the same resettlement with people from the same village. This could possibly help them to preserve the density of the networks and proximity (closeness) in their kinship ties.

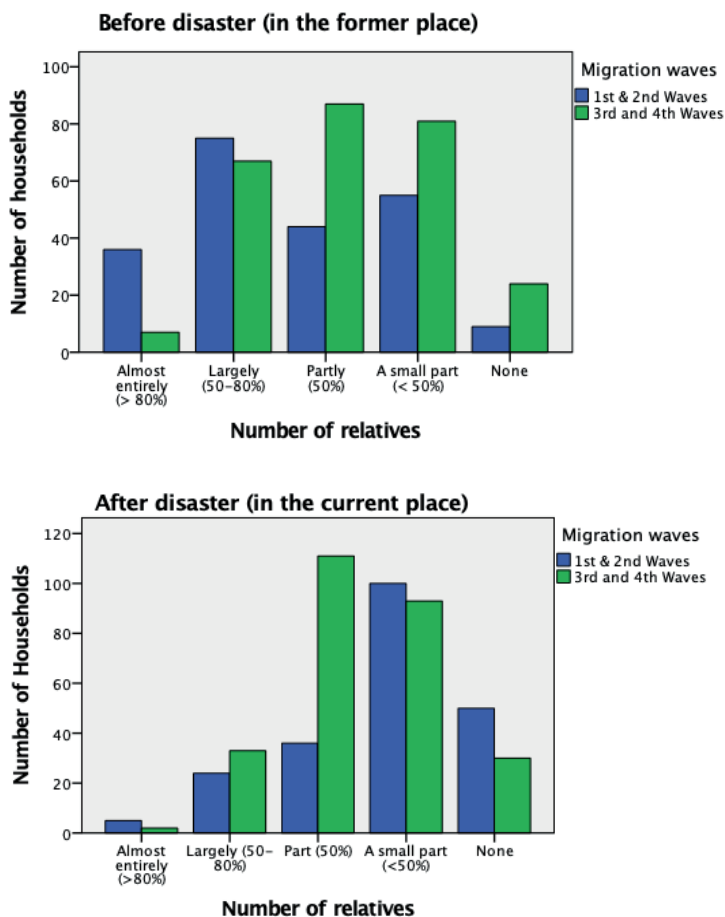


Figure 11. The number of relatives who lived in the same neighbourhood before and after the disaster

In light of this separation, the survivors made some effort to reunite with their family and relatives several years later. However, some of the people failed to reunite with their family and relatives due to lack of resources or family conflicts. The worst scenario befell the survivors who could not afford to buy a new house. They were vulnerable to being trapped in continuous migration due to a lack of resources to buy a house such as this household from Jatirejo:

I initially planned to buy a plot of land but because the money was not enough, I rented a house instead. I received about IDR 300 million in compensation, excluding the deductions. If the compensation were in cash, not in instalment, I would have been able to buy the land. Because it was given in instalment, the money was quickly spent. When I have money, I just want to buy a house. It's okay if I have to sell my business to buy a house. Business can wait. What matters is to have a house of my own. I still rent this house for IDR 7 million per year... Hence, when anyone said, "there is a disbursement" [a money transfer from the company] I would turn a deaf ear to them and pretend to be calm, but my heart was actually crying. I used to have a house, which is lost to [the] Lapindo [disaster].

Even though most of the survivors could build or buy a new house, some of them still faced uncertainty over a dwelling. This topic will be further discussed in the next section of this Chapter 3.

3.3 THE LOSS OF LIVELIHOODS

A. The loss of subsistence environment and friendly public place

Subsistence living can largely be associated with the ownership of a large yard where the people could grow their own food and sometimes raise livestock. Besides this self-sufficient household lifestyle, they also had neighbours that could be asked for help and support on daily affairs. Even though it was not purely a subsistence living (because money as a means of exchange was already commonly used here) the moral economy still played a significant role in coping with daily life. However, the new resettlements mostly replicate a modern housing estate with a precisely specified size of land only fit for building a house. In addition, some of the resettlements have a regulation that prohibits residents from growing or raising livestock for their food sources. In some settlements, raising livestock is still possible despite complaints from other residents because of the smell and noise. However, it is very difficult to grow food in a residential area because of a limited yard as well as strict regulations. As a simple illustration, there has been a decrease in land area and also a change in the number of livestock kept by a household prior to the disaster as shown in Table 13 below:

Table 13. Land and building size

Assets	Before the disaster	After the disaster
Land ownerships (m ²)	61,445	49,979.75
Livestock		
Buffalo	6	5
Cow	3	0
Goat	36	27
Chicken	892	248

Duck	214	30
Others	0	4

The number of chickens raised as livestock dropped by nearly four times after the disaster. From the case, we can see that these changes in land ownership can influence the sustainability of living in terms of occupation and lifestyle:

My brother-in-law in Jatirejo had a duck farm, in which there were around 800 to 1000 ducks. He also had a construction material store. But when he moved to Candi [his house, store and 1,000 m² farm were engulfed by mud], he could not sustain his farm because the land is too limited [200 m²] and only suitable for a small house. So now he does not work and is dependent on his son for his daily needs (Woman, Mindi)

Furthermore, this type of livestock (chickens) is generally aimed at meeting daily needs and for thanksgiving events (*syukuran/selamatan*). In this sense, this is part of a strategy to deal not only with food insecurity but also with the additional expenses related to the obligation to perform rituals or ceremonies. Therefore, the survivors' ability to be engaged in subsistence activities and develop a subsistence lifestyle is hampered by the lack of a large enough plot of land, the new layout and habits of the people in resettlements:

I was really happy in my [former] kampong, I had some activities such as making the best use of my land. In this housing complex, people made a fuss just because I planted a mango tree. It's not like in my kampong, where I had star fruit trees, so I didn't have to always buy everything. As to the livestock, I raised several chickens for their eggs, which sometimes I mixed with herbal medicine. I once raised chicken [in the new settlement] but people protested against it because of the smell (Woman, Jatirejo).

The layout and setting of the place as well as the lack of social ties and neighbourly support are the factors that have made subsistence living difficult, if not impossible. In the former village, they used to have very helpful neighbours and they were always ready to provide reciprocal support in dealing with daily affairs. They cannot have this relationship in their new environment where neighbourly ties are weak. As discussed in the previous chapter, survivors who live in the same neighbourhood will support each other in meeting daily needs, such as providing cooking ingredients like spices when needed, or providing emotional support to those who suffer misfortune. When the needs are more specific, they are not reluctant to undertake an errand to another resettlement to meet with a person or neighbour that they believe can fulfil the needs.

B. Wong mbambung: homeless, jobless, and aimless life

I feel so hopeless...I lost all hopes when mud hit my village.

A man spontaneously gave vent to his frustration when I visited one of the Besuki Timur resettlements in Pangreh Jabon in 2015. When the mudflow reached his village, he felt his life became meaningless and he did not have the desire to do anything. He and other

people in the village were paralysed by hopelessness and depression in the face of a bleak and uncertain future. As a woman from Renokenongo stated:

It was the most confusing [moment]... when we had to leave our home to stay at the Porong Market. Children were crying and begging us to bring them home. They cried almost every day because they wanted to go home, meet their relatives and friends. My husband is unemployed, our status is not clear [not yet included in the Affected Area Map].

Mbambung or *wong mbambung* refers to a person whose life is uncertain and unstable because he or she does not have a stable job and purpose in life. People use this term to describe a psychotic person who wanders and loiters around without a clear purpose or a footloose person who lives an adventurous life and is free from any bond or commitment. This expression is often used by the survivors to describe their unstable and uncertain life because of the mud.

In the first and second years of the Lapindo mud disaster, the survivors faced uncertainty and instability because their living and working places had been submerged. As described in the previous section, the survivors were used to working near their homes, whether they worked on farms or at factories. To most of them, losing their homes meant losing their occupations. For people whose workplaces had not been submerged by mud, they lost their job because they often had to miss work to take care of their family and respond to compensation related matters.

However, first I want to discuss how the unavailability of living space and homes led to the survivors' instability. In the earliest phase of the disaster, all the survivors lost their homes to the mud. Therefore, the compensation and resettlement program was launched to help the survivors buy new houses and create new homes. However, some households still do not have permanent residences after nine years of the mud disaster. Here is the cross-tabulation data that reflect the distribution of the residential status of the households by migration waves on Table 14:

Table 14. Distribution of house ownership status by migration waves

House ownership	Migration Wave				Total	
	1 st & 2 nd Waves		3 rd & 4 th Waves		n	%
	n	%	n	%		
Own the house	193	87.7	256	94.8	449	91.8
Do not own the house	27	12.3	14	5.2	41	8.4
Total	220	100	270	100	490	100

Table 14 shows that 41 (8.4%) households do not own their residences. They still rent ($n = 25$), borrow ($n = 5$) or stay with their relatives ($n = 11$). Furthermore, the households from the first and second waves have a lower house ownership percentage than those from the later waves¹⁶. In addition, the difference between the households from the first

¹⁶ Based on the chi-square test result, there was a significant association between migration wave and residence status $X^2(1) > 7.942, p = .005$. This means that migration wave and residence status are not independent from each other or in other words, there is a relationship between them. However, $\phi = -.127$ and Cramer's $V = .127$ means the correlation between these two variables is weak and there must be other factors contributing to the relationship between these two variables.

and second waves and those from the later waves may lie in the compensation payer, scheme, and suddenness of event that did not give the survivors from the first and second waves a chance to plan the relocation process carefully. As discussed in Chapter 1, in the middle of the 2008 global financial crisis the company was unable to meet its target to pay 80% of compensation in two years and thus suggested alternative schemes, including instalments of IDR 15 million per month. However, the company often reneged on its promise and paid only IDR 5 million every 15 months. As a result, the survivors from the first and second waves could not pay off their house mortgages [the survivors usually use 20% of their compensation payment for a house down payment and pay the rest depending on the company's transfer]. Some of the mud survivors were engaged with moneylenders or loan sharks to pay their debt or make ends meet. As a guarantee, they would give their ATM card to the moneylenders, who thus had access to their upcoming instalment (the survivors borrowed IDR 3 million in cash for IDR 5 million in upcoming instalment). The following illustrates how the compensation helped a household to own a house:

My son here has taken Perumtas [a house mortgage] and has paid it with the transferred money [from the Lapindo company] but now it [the company's transfer] has been discontinued so he cannot pay it [the mortgage]. He received the third warning this month. If he cannot pay the mortgage, the developer will evict him from his home. I feel so sorry for him. How is he going to pay the mortgage when he earns only IDR 6,000 [per day] from being a motorcycle taxi driver, and with six kids? If Minarak [the company] continues to pay [the instalment] he can pay the mortgage. He has to provide food [for his family]. But the [company's] instalment has been discontinued, so now he has to think of how to provide food, fulfil the children's needs, and pay the [house] mortgage. ...In 2013, he used his motor vehicle ownership certificate (BPKB) as a guarantee for a bank loan, which he used to pay the [house] mortgage... We thought the bank loan would be enough to stop the warning letter from the developer, but it is not. Now he has to pay off both the bank loan and [the house] mortgage.... This is so confusing. How is he going to get money to pay all these debts?

Besides inability to buy a house or pay off a house mortgage, the other prominent problem is related to the availability of a house ownership certificate. Even though 449 households now live in their own houses, they still face the house ownership problem legally. During the fieldwork, 2,500 survivors from the first and second waves who received houses in KNV (Kahuripan Nirvana Village) from the company under a resettlement scheme did not receive their house ownership certificate. To secure the certificate, they staged rallies and organised themselves into routine activities called "the Friday meeting" led by their hamlet head. After the Friday prayer every week, some heads of the households in Hamlet 07 would assemble and go along to the developer office to ask for their house ownership certificate. They held the mass gathering for around a year, but the issue remained unresolved. To show their relentless determination, they again staged another rally on January 11, 2016 (Figure 12).



Figure 12. Survivors demonstrated in front of the developer office in KNV

Other resettlements also face the house ownership certificate problem. Most of the resettlements initiated by the survivors were built on the land designated for cultivation. Most of these people only have the deed of sale and purchase of land (the deed of sale and purchase) as proof of ownership but do not yet have a building construction permit (IMB, *Izin Mendirikan Bangunan*). As a result, around 300 households in Renojoyo could not certify their house. This was because 2.8 out of 10 hectares of the sugar cane field that had been converted to Renojoyo settlement actually belonged to Kedungsolo village, the host community, under the status of village treasury land (TKD, *Tanah Kas Desa*) and should not be for sale. The people responsible for this transaction, including the chairperson of the Renokenongo association (Paguyuban Renokenongo), were arrested and sent to prison in 2016. However, the

status of the houses built on this illegal land remains unclear and the land dispute has prevented the owners from certifying their houses.

Furthermore, as shown in Table 14, the survivors from the third and four waves also had difficulties in having their own house. Besides the compensation scheme, factors that made it difficult for the households to have their own house include the ownership status of the former land, how the people chose their current settlement, resettlement types, and household characteristics and dynamics. For some families, the compensation had to be divided among them, but the money received was not enough to buy a new house. In the village type area, the land was owned by families. Thereby, the rightful recipients of the compensation were many households that lived in the same plot of land. With this framework, a 20% instalment received must be divided with three to five households, the amount of which was often not enough to buy a house or land. Another factor that prevented a household from buying their own house was because they used or lent their compensation money to help their poor relatives. This type of social relations that obliges the households to support and help their relatives or kin ultimately compromised their ability to buy a house. The following is the story of a household which has lived in a rented house for years:

I chose the cash and carry scheme for my compensation, and I received it in full in the first payment, but the money did not turn into something worthwhile [house]. At that time, I was the only one among my relatives that received the money while they did not get any, so they borrowed some money from me and promised to return it when they received their instalment. And now, I don't have any money. I have lived in this rented house for seven years which I paid using my compensation money in the first year and using my own money in the following years. When I realize I don't have a house [of my own], I'm sad. I used to have a house. I have always wanted to have my own house but how can I get it? I once tried to buy a house under an instalment plan but failed because of my age. I'm 50 years old.

Furthermore, massive migration increased demand for houses, whose prices also rose accordingly. However, the flourishing housing demand led to the emergence of various fraudulent practices against the survivors. The following illustrates how con artists preyed upon vulnerable survivors through the mouth of a religious section head (*modin*) in the Gedang urban community that had been deceived by a bogus house developer:

I live in the small room behind the Gedang urban community office. The former head of the urban community office let me stay here with my family. Actually, I planned to buy a house with my compensation-sharing money I had received from my family. But then I was fooled by a fake developer. I had paid 16 million rupiahs to the developer as the initial deposit and I got the receipt. But then the developer fled and took my deposit money away with him. This receipt is useless now.

Furthermore, the Lapindo mud disaster has not only created instability in residential status but also fluctuation in household income. Land, factories, and other sources of income have been engulfed by the mud. The survivors had to abandon their previous occupations and looked for new ones to make a living. This transformation of sources of income among households can be seen from the change in the occupations of their breadwinners. The Table 15 below shows the change in occupational status before and after the disaster, especially the higher unemployment rate years after the disaster.

Table 15. Change in the occupational status of heads of households

No.	Occupational status	Before disaster	After disaster
1.	Student	8	0
2.	Looking for a job	11	8
3.	Housewife	12	13
4.	Pensioner	4	11
5.	Unemployed	12	33
6.	Odd job	2	6
7.	Farmer	8	6
8.	Petty trading	16	14
9.	Breeder	0	1
10.	Craft/workshop	8	9
11.	Stall/shop owner	11	12
12.	Civil servant	24	18
13.	Factory worker	194	185
14.	Entrepreneur	43	42
15.	Driver	15	36
16.	Hodge	14	4
17.	Private employee	56	50
18.	Builder and collie	19	19
19.	Fish scavenger	5	4
20.	Others	13	4

There have been several changes in the occupational status of heads of households before and after the disaster. Some of these changes have not always been driven by the disaster but because of age development especially among school-age people and pensioners. As

shown in Table 15, the number of school-age people decreased (from 8 to 0) because they are supposed to have finished school education and have entered the job market. The number of civil servants also decreased due to retirement (from 24 to 18).

The interesting change that could be related to the mud disaster is the decrease in the number of day labourers on farms and at fishponds (from 14 to 4), among farmers (from 8 to 6), in petty trading (from 16 to 14), at factories (from 194 to 185) and among private employees (from 56 to 50). These changes could be related to the loss of productive land and factories where they used to work. On the other hand, the number of unemployed people (from 12 to 33), drivers (especially motorcycle taxi drivers from 15 to 36), and also those taking on odd jobs (from 2 to 6) increased to compensate for the decreasing number of workers in other sectors mentioned above.

People who earned a larger income from selling their land, such as farmers, usually would use their money to buy another block of land for farming, while others would use it to open a shop and start other businesses using their abundant capital. On the other hand, the labourers on farms, at fishponds, or factories who did not get enough capital from compensation and lost their jobs usually would end up doing odd jobs, being motorcycle taxi drivers at the mud dyke or unemployed. Furthermore, the number of people who stated that they were looking for a job after the disaster (8 heads of households) actually can also be included as unemployed or doing odd jobs. It is because these people belong to an age group that can be considered too old (between 40 and 68 years old) to start a new career in a formal workplace such as a factory. To further analyse occupational status, here is the cross tabulation between migration waves and the occupational status of heads of households after the disaster.

Table 16. Distribution of occupational status after disaster

Occupation after disaster	Migration wave				Total	
	1 st & 2 nd Waves		3 rd & 4 th Waves		<i>n</i>	%
	<i>n</i>	%	<i>n</i>	%		
Regular waged	131	60.9	139	51.5	270	55.7
Temporary waged	3	1.4	22	8.1	25	5.2
Owner self-employed	50	23.3	73	27	123	25.4
Non-owner self-employed	3	1.4	4	1.5	7	1.4
Semi unemployed	5	2.3	15	5.6	20	4.1
Total unemployed	23	10.7	17	6.3	40	8.2
Total	215	100	270	100	485	100

In Table 16, 20 types of job found in the survey have been transformed and divided into three categories of occupational status, namely wage employment, self-employment, and unemployed. The determination for the categories is based on the income received by heads of households. Furthermore, the wage employment consists of factory workers, civil servants, pensioners and private employees as those who receive a permanent or regular income. The semi-permanent wage employment is one comprising heads of households who have income from a temporary job such as working in a building project. Self-employment develops business and trading to generate income. The difference between owner and non-owner is in their possession of workplace and instrument. For example, a shop, store, or stall owner could be considered as the owner of business while a man who works in a parking lot or a man who angles or catches the remaining fish in

other people's ponds after the harvest can be considered as a non-owner. The last category of the totally unemployed consists of people who stay at home or look for a job. Furthermore, people who do odd jobs and housewives have been categorised as semi-unemployed. Housewives have been categorised as semi-unemployed because they still have domestic responsibilities to fulfil every day even though most of them do not have an income.

Table 16 shows that most of the survivors who participated in this survey have permanent wage employment, mostly factory workers. However, the rest of them are still struggling with their business or still looking for a job. The first and second waves have a higher unemployment rate than the third and fourth waves. Furthermore, there has been a significant correlation between migration wave and occupational status ($X^2(5) > = 19.028, p < .002$) with Cramer's V value = .198 have a medium effect size. We can conclude that there is a relationship between migration wave and current occupational status. In addition, the different processes and dynamics in these two kinds of migration waves could likely determine the survivors' current occupational status. Besides the suddenness of forced displacement and uncertainty in compensation, there are some factors that could influence the capability of heads of households to restore their occupational status such as old age, lack of sizable land and work instruments, and loss of labour. The following illustrates how they failed to retreat and stabilise their occupational status:

My son worked in a factory but now the mud engulfed the factory, and he lost his job. He is too old to apply for a new job in other factories and now he works as a motorcycle taxi driver at the mud dyke (woman, Jatirejo).

Besides uncertainty in housing and occupation, this footloose (*mbambung*) status is spreading to other sectors such as political rights and access to the social and healthcare assistance provided by the government. This commonly has to do with the unclear civilian status. They have been removed from their former place but have not been accepted by the host community (administratively and socially). With this unclear status, it has been difficult for them to access various facilities and assistance provided by the government. In addition, most of them have lost their right to participate in political elections because of their unclear status. So, even though they have received compensation to build or buy a house, they are not yet free from this footloose (*mbambung*) status.

3.4 CONCLUSION: LEAVING HOMELAND AND FACING WAVES OF SUFFERING

Most of the mud-affected villages appear to have communal features and characteristics. These communal festivals and rituals play a role in constructing place and space as a simultaneously physical, psychological, social, and spiritual entity. Even though infrastructure, administrative, and economic development has tampered with Porong's place and space, the society retains its communal orientation towards regulating village social life. On the other hand, some of the rituals have undergone simplification in their steps and villages' social organisations have become increasingly formal and schedule-based. However, spatial segregation is one of the hardest things to respond to because it has torn down the landscape, disturbed routine social activities, and created a spatial and social distance among villagers. However, to most of the villagers, the mudflow has

become the ultimate and biggest event that has eternally divided and separated families, friends, and neighbours physically and spatially as well as socially, psychologically, and spiritually.

The ultimate separation came in waves of displacement. In general, these waves of displacement have held the survivors in a transitional condition for a long time. They cannot go back to the original place nor settle in the new place. Rather, each household has to move frequently from place to place. Further, in this Lapindo mudflow disaster, there are two main types of forced migration with different characteristics, processes, dynamics, and impacts on the people in terms of house ownership and occupational status. In both of the waves, the people were separated from their relatives and homeland. Furthermore, the people lost their homes, occupations, and subsistence environment. Even though all Lapindo survivors suffered nearly the same losses, their current position is generally different from one another due to their former status and capability in restoring their social networks, status, and position.

The survivors from the first and second waves experienced greater difficulties than those from the later waves. In the former place, they had denser social networks compared to the survivors from the later waves. In the process of forced migration, they also had to live longer at the temporary shelter and mostly resettled individually, without their village folks. The last disadvantage is the type of compensation that forced them to respond to the Lapindo Brantas Company that has delayed the payments up to nine years. In the end, people from the first and second migration waves continued to face an unstable and vulnerable position years after the disaster.

Evidently, the survivors from the first and second waves faced a greater challenge than those from the later waves in terms of livelihood. The suddenness of the event, the way the society handled these Lapindo mud related problems, and the level of destruction of the kinship networks, physically (in term of proximity) and socially (in term of conflict) have hampered or blockaded the capability of the households from the first and second waves to restore their livelihood and meaning of life. The survivors from the first and second waves had to stay longer in PNM that was harmful to their physical and mental condition. They also had to frequently migrate and finally most of them had to stay in the resettlement provided by the company or blended in the formal settlement.

CHAPTER 4

THE REMAKING OF PLACE AND SPACE

This chapter discusses how survivors resettled after they were expelled from their homeland. Various aspects that will be discussed include infrastructure and social activities in resettlements as well as their experience living in the new environment. This chapter also discusses many attempts to create a new place that resembles the one they lost. However, such an effort has led to a shift in their livelihood, prompting them to combine the old coping strategies with the new ones to compensate their loss.

In Section 4.1, I discuss the types, processes, and executions of the new resettlements, which more or less have contributed to further fragmentation at household, community, and village levels. I also discuss the physical condition of the new home and neighbourhood that has directly and indirectly influenced household interactions in the new neighbourhood, and the interactions between households and their host communities. This section reveals attempts by the people to remake a meaningful place despite a change in social relations that has influenced their social involvement and connectivity with their surroundings.

The last section reveals the consequence of forced displacement especially in terms of household economic burdens, responses to the perceived burdens, and the role of assets in the deployment of coping strategies by the households. Sections 4.2 and 4.3 show general and specific consequences of forced displacement for social relations and networks and provide a review of how people try to respond to it.

In this chapter, we will try to understand household resilience through their response to the Lapindo mudflow disaster and subsequent crises, especially how the households withstand, recover from, and/or adapt to shocks. As already mentioned in the introduction, resilience of a household is assumed to be derived from assets, capitals, opportunities, access to credit, the coping capacity of households, and household demographic characteristics that can contribute to their adaptive capabilities (Alinovi et al., 2010; Suri et al., 2021; Islam and Maitra, 2012; Greiving, 2006; Vincent, 2007).

4.1 REBUILDING COMMUNITY: WHERE DO WE GO FROM HERE?

While it is inevitable that Lapindo mud disaster survivors find a new place to stay after being evicted from their hometown, they need to consider several aspects in choosing a new settlement and remaking it, including whether it is possible for them to meet their household's primary needs in the new place. Otherwise, it will aggravate their instability and may create new problems. In this section, we talk about how survivors try to remake their new home and neighbourhood and how this dwelling type influences their capability for stabilising their life, acquiring resources, earning a living, developing connectedness, and feeling at home. This section also describes how people live in the new resettlement and how they rebuild their communal life.

A. New place: thrown in strange social networks or follow familiar networks

In the earlier phase of the Lapindo mud disaster, the local communities had the preference and tendency to choose housing or resettlement that facilitates proximity to families, relatives, and village folks¹⁷. However, only Renokenongo, a village with 500 households, that succeeded in making their own settlement called Renojoyo (Richards, 2011). Other households had to end up in resettlements provided by the company, formal housing estates, or resettle in other villages or kampongs. The desire to move together with their close-knit networks (*bedol desa*) became stronger in the later migration waves, as reflected by many new resettlements built by and for the people from certain mud-affected villages. This trend was followed by the tendency to choose a housing location that is close to their former place. The people of Pamotan village, for instance, moved to a neighbourhood that is still within the village and not far away from their former place. It is a problematic decision because in order to retain their status as Pamotan people, they have chosen an area close to the mud dyke, and therefore have put their lives at risk as the mud dyke may overflow. Besides the preference to move to a location that allows them to be close to their former networks, the stigma and stories of unpleasant experiences told by survivors from the first and second waves of migration to new faraway resettlements have strengthened the desire of most of the later survivors to move together with their village folks.

Besides the social reasons and preference to live near family and relatives, several factors that the households need to consider before moving to a new place include house prices, access to public facilities and daily needs, and the size and layout of the houses as well as the atmosphere of the neighbourhood. To illustrate, I will use the following story by a young woman from Jatirejo who is married to a man from Siring:

So, we got a house in Japanan but I didn't feel at home. It was so quiet, and I didn't like the environment. I lived there for two years, and then moved to Wangkal till now, where I feel more at home. It is a kampong, with village atmosphere. It's different from Japanan, which is more like a housing complex, with a lot of new arrivals and so withdrawn. We rarely got out of the house when we lived in Japanan, not like here in kampong. And it was difficult to find daily needs in Japanan, and they were more expensive.

This story reflects not only the reasons behind one's choice of a housing type and location but also can give us an insight into the process and complexity of resettling and remaking the place. The comfort of living in one place cannot be measured only by the facilities it offers. It has to be a place that provides the congruent or integral experience that connects value, interaction, atmosphere, and the material world. The stability of a place to live is not only related to the availability of a house as a physical structure but also concerns the whole environment or ecosystem that makes it comfortable to live in. Further, people who do not feel at home living in a place will be motivated to move to other places where they will feel more at home. As an extreme example, some survivors from Glagaharum

¹⁷ Rachmawati, Deguchi and Yoshitake, "Gap between Victims' Preferences and Housing Compensation Schemes after the Mudflow Disaster at Sidoarjo Indonesia." *Proceedings International Symposium on City Planning* (2009). Quoted in Richards, J.R. *Report into the Past, Present and Future Social Impacts of Lumpur Sidoarjo*. Humanitus Sidoarjo Fund, 2011.

returned to the location of their former houses in one of the neighbourhoods that BPLS (Sidoarjo mudflow agency) had torn down because they did not feel at home in their new place and were not familiar with their new neighbours. It was also an attempt to preserve the bond and emotional attachment with the former environment. However, the action was illegal because the houses had become state property and it was dangerous because the houses were located right behind the mud dyke.

Actually, I've chosen Dukubsari to live in because it is near my former village (Besuki), which is emotionally still existent. So, I continue to visit Besuki once a week, in the morning or afternoon. We're still strongly attached emotionally to our village (Besuki), keeping the memory of it and what we used to do daily there afresh.

The preference for certain types of dwelling among survivors can be categorised into three types of settlement: a resettlement that the company provides, a settlement that the survivors initiate and build, and a new settlement that is part of an old settlement in a housing complex or a kampong. The settlement provided by the company is offered by LBI Company as a substitute for cash compensation. This settlement is located in Sidoarjo sub-district and has become the biggest resettlement for the Lapindo survivors. Survivors who choose this settlement usually desire to have a home immediately. Although their village folks label them as traitors because they support the company's scheme that is in opposition to the presidential decree and local aspiration, they feel the need to have a permanent residence. On the other hand, a settlement that is initiated and built by survivors is the one that supports local aspirations and is motivated by the need to have a resettlement that facilitates proximity to the former social networks. There are diverse reasons for people's choice to live at a formal settlement or a kampong. Some want to have a settlement with kampong ambience while others are looking for low-priced houses that are located near public facilities and their places of work.

In summary, there is a trend among the survivors to move together with their close-knit networks and to live near their places of origin. It suggests that the people want to rebuild the place into one that not only provides them with a physical place to stay but also makes them feel at home. Even the most recent settlement option is one that seems to neglect safety and security for the sake of maintaining social and mental wellbeing. At this point, a sound mental state is as important as, or even more important than, physical safety and security.

B. Village life inside a housing complex: infrastructure and facilities

Despite the survivors' attempt to recreate the condition of their former villages, including by establishing their own settlements and moving together with their village folks, they did not completely succeed in replicating their former villages. Some of the resettlements tried to preserve the bonding with the former places by partially naming their resettlements after their former villages to convey their geographical identity such as the people of Renokenongo who named their resettlement Renojoyo (literally means glorious Reno), and the Mindi people who named their resettlement Mindi Baru (literally means New Mindi). However, the public do not see these resettlements as villages; they see them as housing complexes that they call *kawlingan* (plots of land).

As appendix 2 concerning resettlement profile shows, we understand that some of the resettlements can be exclusive and consist of people from the same village such as Karangbangkal, Beringin, Pangreh and Dukuh Sari while others consist of Lapindo survivors from different villages such as Podokaton and Ngering. The rest can be a mix of survivors and common residents such as Perumtas. Further, this study shows that the biggest resettlement for Lapindo survivors so far is Kahuripan Nirvana Village/KNV (with a population of 4863) and the smallest is Dukuh Sari (with a population of 90). However, an average settlement consists of around 400 households that will be divided into several neighbourhoods. Administratively, one neighbourhood consists of three blocks and each block has around 40 houses facing each other. Most of the resettlements are located in Sidoarjo Regency and spread in three sub-districts that are Tanggul Angin, Porong, and Jabon. However, Ngering and Karangbangkal settlements are located in Pasuruan Regency. Even though one type is different from another, the layout of these resettlements resembles modern housing in terms of arrangement, division of land size, and building type. For example, the residential area in KNV is divided by blocks and each block consists of 36 small houses facing each other. The resettlement initiated by the survivors also has the same layout as a generic housing complex. The difference between the company's resettlement and survivors' resettlement is that the former allows the people to get land and houses from the company but in the latter the people usually buy a plot of land from a team (*panitia* or *pangnyuban*) on which they build their house by themselves. The general public in Sidoarjo call this division and the sale of land as "*kanlingan*" (plots of land), and they interchangeably call the survivors as "*Kanlingan* people", "Lapindo people" or "mud people".

Furthermore, each type of settlement has a different background in terms of development and the availability of infrastructure and facilities. The old settlements have adequate infrastructure and facilities, which were built before the disaster. In other words, a mixed or blended settlement that is a formal housing complex or a kampung usually has adequate infrastructure and facilities such as roads, electricity, school buildings, and a cemetery. However, these facilities are not always accessible to the survivors due to their non-local status. Most of the survivors still hold resident status of their former villages due to incomplete instalment, and other administrative problems. This has raised problems for the survivors. For example, in 2008, it was difficult for the survivors to bury their deceased family members or relatives because the host village did not allow the survivors to bury their dead in the village's cemetery. Some of the villages allowed the survivors to use their cemeteries with a retribution charge of around IDR 1,500,000 (115 euros), in spite of the Sidoarjo Regency's call for host villages to allow the survivors to use their cemeteries. This prompted the survivors to postpone the burial for a couple of days or buried their deceased family members in the backyard.

On the other hand, these types of settlement built by the company and the survivors can be considered new settlements because they were developed from scratch. In the case of the company's resettlement, LBI company is responsible for providing it as part of the compensation for the survivors who opt for the cash and resettlement scheme. In collaboration with PT Mutiara Masyhur Sejahtera, the company provides KNV (Kahuripan Nirvana Village) resettlement in a modern and huge housing complex located in Sidoarjo sub-district around 11 kilometres from the centre of the mudflow while in survivors' type of settlement, the survivors built their own resettlement. Usually, they form

a team that is responsible for preparing the land and buildings including hiring a developer if necessary. Most of these settlements are located not far from the mud dyke area (around 3-5 km). Nevertheless, this survivors' resettlement is built upon cultivated land far away from the main road, traditional market, hospital, and school and people need more time, energy and money to meet their daily needs.

Furthermore, resettlements such as Renojoyo, Pangreh, and Mindi Baru that can be classified as survivors' initiative resettlements were developed based on the idea or aspiration of communities or villagers. To follow up the idea of a joint settlement or moving together (*bedol desa*), they formed a committee that organises and executes land purchases. When the land had been purchased, the committee divided it into various plot sizes and determined by lottery who got which plot. This process sometimes brought the committee into conflict with the rest of the survivors. Some survivors would accuse the committee of cheating because all members of the committee received strategically well-located plots of land, such as in front of the resettlement. Such cases occurred in Renojoyo and Pangreh.

The initiative to build resettlements for mud survivors such as Beringin and Dukuh Sari also came from personal rather than communal aspirations. Some rich survivors invested their money to build a resettlement and then persuaded their relatives, neighbours, and village folks to buy plots of land in the newly built resettlement. The initiative to build a new resettlement could also come from developers who seized the opportunity of high demand for new houses. This situation created many amateur and bogus developers. An example of this kind of resettlement is Ngering and Podokaton. Based on its purpose of development, such a resettlement was exclusively developed for survivors from a certain village or to accommodate those from several determined villages. However, over a period of time, these exclusive resettlements started to open up to survivors from other random villages. The exclusively developed Renojoyo settlement, for instance, has accepted survivors other than those from Renokenongo to fill its empty plots of land.

Facilities and infrastructure in these company and survivors' types of settlement can be considered underdeveloped because most of the housing investors only provided plots of land and houses without public infrastructure and facilities, leaving their development and availability in the hands of the residents. For example, people in several resettlements such as Renojoyo and Mindi Baru had to live without electricity for months before they had access to PLN (Perusahaan Listrik Negara or National Electricity Company) providing electricity. Especially in Renojoyo, there was a dispute between the team/committee (Paguyuban Renokenongo) and some of the residents over house construction. Even though the team decided to collaborate with Bank Jatim (East Java Bank) and a housing developer to build all the houses in Renojoyo, some of the residents refused this idea and insisted on building the houses by themselves. As a consequence, the developer did not give them access to electricity and the road unless they agreed to an extra charge of IDR 16,000,000 (around 1,230 euros) for these facilities. However, the residents who built the houses by themselves managed to contact PLN, which finally agreed to provide them with electricity under the standard tariff scheme.

Besides roads and electricity, these company and survivors' types of settlement also do not have a burial or cemetery facility. These cemetery problems can be resolved in settlements provided by the company when Sumpul Village, as the host community,

allowed survivors to use their public cemetery. However, it remains a prominent problem in most of the settlements initiated and built by survivors. Survivors from Pamotan who live in Kesambi must bury their deceased relatives in Pamotan village's cemetery because Kesambi village as the host community did not allow them to use their cemetery.

Furthermore, infrastructure within the survivors' type of settlement varies, depending on the agreement with the developer and the capability and willingness of its inhabitants to build shared or public facilities. However, there have been many disputes between committee/team, developer, and residents related to the poor quality of houses and water, the extra cost for land and house certification as well as the lack of public facilities and poor infrastructure. In addition, the narrow land and layout of the houses that are attached to one another have made rural lifestyles such as cattle breeding and cultivation impossible. Factors contributing to this poor infrastructure and lack of public facilities include the exclusion of these facilities and infrastructure from the development agreement, or where they were part of the development agreement but the developer failed to deliver the project.

To overcome the lack of infrastructure and public facilities, residents in these settlements worked together to develop roads and public facilities such as small mosques and security posts using their own resources or looking for other sources of funding such as donations. They also used salvaged materials from the former place, such as the Pamotan people who brought paving blocks from the road in their former place to be used in their new place in Beringin. In addition, residents urged the developer or those responsible for providing them with the facilities to make good on their promises. Most survivors bought motor vehicles to support their mobility and to access public services such as traditional markets or hospitals. Thanks to their efforts, a place of worship became a must-have facility in these resettlements. However, the meeting halls in these resettlements are underdeveloped due to the lack of formal community management. In other words, community activities are planned and arranged informally by the active members of the community in the resettlements.

In summary, the challenges faced by the survivors in a new settlement include underdeveloped infrastructure, as well as administrative and civil status issues. For instance, they were denied access to a cemetery due to their non-local status. Survivors living in a resettlement had to respond to the lack of public services such as a hospital, traditional market, and school. They also found it difficult to process their new civilian status and to meet other administrative requirements for various purposes, such as to secure the legal status of their land ownership, which they had lost in the former place and which was not recognised in the new place. As a consequence, they were denied access to public facilities such as a cemetery at a village level, and a subsidy, health care services, and even voting rights at a national level.

C. Reconnecting and reattaching social relationships in a new settlement

This subsection discusses how survivors reconnect with the people in the new settlement. In the case of the Lapindo survivors, especially those who live in a settlement provided for them, they have had to adapt to village folk neighbours as well as to the surrounding host community. However, survivors who moved independently just had to adjust themselves to their host community. This being said, living in a resettlement always demands some sort of adjustment, even for those from the same village, due to a change

in the neighbourly layout. Furthermore, a change in public facilities and social organisation has had an impact on daily routine activities and interactions.

A new settlement may forge new informal and formal relationships. An informal relationship is usually spontaneous, occurring in open spaces among people from the same neighbourhood. In contrast, a formal relationship is usually more specific in terms of a meeting venue and the individuals or a group of people involved, with expected continuity of activities and interactions. First, I will address the survivors' involvement in informal relationships with their neighbours. In the former place, an informal relationship such as hanging out (*jagongan* or *cangkeruan*) was a way to spend time together in enjoyable and relaxing activities such as chatting, joking around, or gossiping. Sometimes these were accompanied by playing the guitar and singing, playing chess, drinking coffee, and smoking cigarettes. Besides leisure, this kind of engagement centred on gaining information about jobs and news about their fellow villagers and village politics. This type of relationship would usually benefit people with a semi-permanent or permanent job. In some villages, it was common for laborers to acquire information during these hanging out activities. News about fellow villagers and village politics can lead to further social engagement and initiative, such as helping fellow villagers whose family member died or who experienced hardship.

How is the people's relationship in the new place? I will first describe the informal relationship among the survivors in a resettlement before explaining their relationship with the host community. Some people found it easier to adapt when they moved together with their fellow villagers. One of the survivors from Mindi said, "*In kaplingan [land plots], a lot of people greet us when we walk down the road because we know each other.*" While this is true in some resettlements, it is not the case in the Renojoyo resettlement, where it is difficult for the survivors to familiarise themselves with their new neighbours and to have informal conversations.

Besides the difficulty in getting along, a tight working schedule and heavy workload are also factors that prevent spontaneous neighbourly engagement. Conflict is yet another factor that impedes participation in an informal gathering. A new type of conflict emerges along with the Lapindo mudflow disaster: friction. Friction among groups in a resettlement initially arose due to a dispute over a compensation scheme but later expanded to the decisions on the management of the resettlement. This conflict is usually concentrated on two groups: *tim pagnyuban* (the village association) as the management group, and the resistance group that usually represents the general residents. The friction between these groups makes people distrust each other and downsizes the groups. They will only interact with people from the same side. Furthermore, after exploring some cases, a blood relationship seems to be a factor that at least will guarantee neighbourly connectedness, except in a few resettlements such as Dukuh Sari where there was a neighbourly dispute among villagers with blood ties.

What follows is a discussion about the informal relationship between the survivors and their host community. In some survivors' settlements, the physical boundary between the migrants and the host is not especially visible because the entrance does not bear the name of their community, or their resettlement – usually small with 40 to 50 households — is located inside the village. However, an invisible social boundary between the host and the survivors exists, such as unfair administrative policies, a dispute over resources, and social stigma. This condition can be detrimental to the survivors because it deprives

them of the opportunity to obtain valuable information, such as information about job vacancies.

While one of the survivors' intentions in moving together with their former social networks is to ensure that they will have at least a familiar environment and social networks to support them, this is not always the case. For example, all villagers in (eastern) Besuki had to leave their village as mandated by Presidential Decree No. 37/2012. Although this community had made preparations for moving together, some of them were still worried whether they could find a job in the new place, especially those who worked in the informal sector or did not have a permanent job.

We didn't know what we should do [for a living] when we had moved. Not only me, my neighbours also panicked. After we had moved for a couple of months, we started to find a job. Some people managed to have a job similar to the one in the past such as cultivating crabs. But people like me who used to work at a paddy field couldn't have a similar job; we have to do manual labour. Only in Besuki could I become a farmer, not here. It's difficult here. I cannot make a relationship here, and the locals have enough labour force for their farms. In the early days of my moving here, I intended to rent a small plot of paddy field, which I later found impossible. In Besuki, [job-related] information was always readily available but here newcomers are somewhat restricted in obtaining such information. Maybe there is a plot of land for us to rent but information about it is only available to the locals.

As mentioned above, in the former place, people obtained information about job opportunities when they gathered with other people in their neighbourhood. This mechanism also works in the new place. When people want to get updated information about job opportunities in the surrounding area, for example, they should be willing to hang out with their host community. Survivors who have the courage to develop a relationship with their host community could find a job through this informal relationship.

In my experience, I managed to get a job because I often hang out at the local village stall. One of the locals asked me "are you unemployed? I often see you here." And I replied: "Yes, I am ma'am! And she said: "would you like to work at my house?" So that is how I got this job.

Survivors also need this informal relationship to remain informed of their neighbours' condition, as well as the condition of the host community so that they can respond according to local manners. However, some survivors do not find it necessary to interact with the host community and prefer to hang out with their fellow villagers. In addition to being more convenient to hang out with their fellow villagers, they are also reluctant to initiate a relationship with the host.

We admit that it's difficult to get information about the death of a local. Because we didn't know, we didn't come to offer condolences. All this time, we've just been interacting with our fellow villagers in this kaplingan (land plots) and we do not feel the need to interact with the locals. Moreover, I didn't know anyone who could tell me how to get to the house of the bereft family.

Unwillingness to engage in these informal activities could deprive survivors of any information that may create a bond with people outside their 'land plots'. Survivors need to know this information to develop reciprocity and maintain a mutual relationship with the hosts. Survivors' failure to respond appropriately to incidents affecting the host community will be perceived as a sort of exclusivity, leading them to think that "*the Lapindo people will only offer condolences to their own people*". Some members of the host community also perceived that they and survivors have an asymmetric relationship. For example, locals who know that a survivor has died (because of their use of a village cemetery) often come to the bereft family to offer condolences, a move that survivors often fail to emulate.

Besides being more convenient to hang out with their own people, a dispute, competition over resources, and social stigma are also factors that have prevented survivors from engaging in an informal relationship with the host. Survivors believe that this social stigma occurs because of stereotypes. Survivors who are former landowners could receive a high amount of compensation. However, society tends to generalise this condition to all survivors. Further, this social stigma could prevent both sides, the survivors and the host community, from engaging in spontaneous interactions and starting a relationship.

I really want to tell the local people to not refer to us as "the Lapindo people" because it is unpleasant to hear. We also want to let them know that not all the victims have money. So, when we visited the local figures — neighbourhood heads and village officials (pamong), we asked them why we didn't have a good relationship. They said they didn't visit us in kaplingan (land plots) out of respect. They saw us as the people who own nice houses. They also may feel embarrassed about the past dispute between our developer and village officials [related to the acquisition of local land to build the resettlement]. So, as if they did not want us to be around and they said things unpleasant for us to bear.

In some settlements, over time, survivors finally work together and interact with their hosts, as in the case of a survivor in Kemeranggan. After five years, survivors finally could rent a paddy field or work as a labourer at the host's paddy field. However, some survivors still experience exclusion and exploitation even after living side by side with the host community for a long time, such as in the case of the Ngering resettlement. In this case, despite the long duration of stay, the characteristics of the host could become a factor that influences their connectivity. Some host communities considered themselves peaceful people that are open to newcomers. However, some other host communities are not as peaceful. Several of them even have unique characteristics, such as the people of Ngering who are infamous for their penchant for quarrelling.

In summary, there are many walls that people have to break before they can enjoy and interact freely with fellow villagers and the host community. Perhaps only after these walls disappear can these people start to engage in formal activities. It seems possible for the people to develop a close relationship as long as the relationship is reciprocal and symmetrical. Such a reciprocal and symmetrical relationship is needed to make them willing to participate in social activities and to take a bigger role in society.

Further, we will discuss survivors' involvement in formal activities. Compared to informal engagement that is open to anyone willing to interact in a certain time and place, formal activities such as social, religious, political, and cultural activities are often

associated with, or restricted to, a certain group with distinct characteristics. For example, when it comes to religious activities, there are at least two significant religious groups in East Java, Nahdlatul Ulama (NU) and Muhammadiyah, with the former being the largest Islamic organisation in Indonesia. Further, the distinction or division of group can also be based on gender, such as religious activities that are specifically aimed at women or men. In order to be involved in these activities, people should have the characteristics the group requires. It also demands a commitment, as people who have become part of the group tend to develop certain kinds of affective ties and proximity-behaviour in order to maintain their membership. With this membership, a person could expect instrumental, emotional and moral support from each member of the group.

Furthermore, these social, political, religious, and cultural aspects can overlap. Sometimes one organisation or activities could contain several functions. For example, NU is a religious group that also accommodates traditions in their religious practices. In a formal and legal sense, it is also one of political parties in Indonesia. In this case, it is possible for people to have religious, social, and political involvement through a mere membership in the group. Furthermore, people do not have to register to become a member of the group or to be involved in these formal activities. However, to be associated or affiliated with the group of their choice people are required to have dedication, commitment, and willingness to attend the activities regularly.

In the former village, sometimes one organisation could be so dominant that it could dictate the type of formal activities to be held in one village with or without diminishing other activities of the role of a minor organisation. For example, the dominant religious group in Porong is affiliated with NU, which is natural as Sidoarjo and its surrounding areas are known as a NU basis. Nevertheless, every village will also develop their authentic routine and practices that will differentiate them from other groups inside or outside the village. This authenticity is determined by the closeness, depth, and strength of ties among its members. It also could be determined by belonging and group dynamics. Thus, even though almost all religious groups in Sidoarjo are affiliated with NU, they are different from each other, and that is why most of the people in the new resettlement insist on building their own places of worship such as a mosque or *musalla* because they want to organise their own activities, preserve their ties, and maintain their group dynamics. People feel a different level of emotional and affective ties, and it is not easy to remove this feeling when they have to engage in the activities of a different group, especially the activities of the host community.

The thing is the level of engagement is enforceable. In terms of mosque, for example, we are supposed to do our religious activities in a local mosque, but this heart doesn't allow it, so we continue to do our Friday prayer in the former mosque. My friend said: "you're here now, you'd better do your Friday prayer here. You're here but you go to your former place just to do your prayers, what would local people think? It'll make things so uncomfortable". It is true but my heart still doesn't allow it. I'm still learning. It doesn't mean we're rigid but we're trying our best to integrate with kampong residents. But we need to do it with a clear conscience. Even today, I still try to let go, how to arrange a new life, new activities, a new village, a new mosque. Such an acceptance is an ongoing process.

Survivors need time to process their transfer. Even if they succeeded in engaging themselves in an organisation or group belonging to the host community, they would still feel awkward and ill at ease when they had to participate or take a role in a local organisation. They are fully aware that the local people already have their own mechanisms and division of work, so their presence could somehow disrupt the established routine in the host organisation.

When it comes to cultural or religious assemblage, sometimes we're ill at ease in adjusting or assigning ourselves. For example, we want to make our own tablilan (a thanksgiving ritual), but the locals would do the same, and if we want to join in their tablilan, we feel uncomfortable. What makes it uncomfortable for us to join the local village's assemblage is difficult to say. Maybe it's for fear of what the locals would think about us. For example, if it was, we who read Yasin [a Quranic sura] the locals would think, "these newcomers are seizing control [of the assemblage] but if we refused to do it, they would think we couldn't read Quran. Even though the person who was in charge of the activity told us to do so, I still had to consider the feelings of the local people.

In the end, most of the survivors chose to establish their own places of worship in their own settlement or land plot. As a consequence, a place of worship is the most established infrastructure in survivors' resettlement, with regular religious activities being the most prominent activities and the kind of activities that the people in Dukuh Sari, and Podokaton do regularly. Some survivors who moved independently managed to integrate into the local organisation quickly enough. However, some of them still do not want to get involved in a local group and prefer to get involved in the social organisation in the former place if the organisation still exists.

Furthermore, cultural activities are more rigid and specific compared to social and religious activities. It is because these cultural activities could be considered as a local expression influenced by the character of the people and their environment. Villages in Sidoarjo, for instance, developed very different cultural activities even though they have the same Javanese cultural root. In this case, people need both land and people that have the same history and background with them in order to hold a ritual and other cultural activities. Some of the facilities where such a ritual takes place such as a cemetery or an ancestral shrine also become a bonding place. Therefore, the failure to find such people and place would make the cultural activities gradually disappear.

Being separated from our family, neighbours and daily cultural activities are among the negative impacts the Lapindo mud has on us. Before the Lapindo mud disaster, we held an activity to assist orphans and the poor every year. After the disaster, we stopped doing the activity for three years. After the payment process was completed, we relocated to different places, with some staying here. We manage to continue doing some of the cultural activities especially manakib and tablilan that are performed by women. However, diba'an and khataman, and the Banjari event are gone. We remain solid on performing manakib, and five to ten [survivors] from Pangreh, Kedungmules, and Podokaton resettlements still come here once a week, in addition to people from this kaplingan (Dukuh sari). All of them are the Besuki people.

Despite the setback in cultural activities, some resettlements managed to embrace national celebrations that did not exist or were not part of the main activities in the former village. The determination of formal activities in each settlement appears to be influenced by several factors, including the origin of the people, the composition of the residents, and the person or organisation that plays a central role in the settlement and its social networks. In KNV, for instance, it is common for the people to celebrate national holidays such as independence day and even Christmas. This is because unlike other settlements where nearly all the residents are Muslims, many of the KNV settlement residents are Christians. Another example is Pangreh, where some of its informal leaders have a close relationship with NGOs such as Walhi that encourages non-routine activities such as a workshop on various topics including health care and farming. Meanwhile the people of Renojoyo, who are mostly from Renokenongo, tried to revive the activities from their former place such as the celebration of the earth alms (*sedekah bumi*). Furthermore, using multiple regression analysis (see Appendix 3: Regression analysis of individual, household, and resettlement characteristics toward social engagement), we are going to analyse which factors or variables correlate or can predict a level of social engagement. For this reason, three multiple regression analysis were carried out on informal relationships, socio-religious involvement, and political-cultural involvement as variables that represent social engagement

Based on the explanation above, several factors that are likely to correlate with the social engagement include occupation, type of resettlement, and conflict. It shows that the level of informal relationships (mingling and hanging outs with neighbours) was significantly predicted by gender, the number of relatives in a neighbourhood, duration of stay, and settlement type. It is shown that survivors who are male ($B = .553, p < .05$), have more relatives in their neighbourhood ($B = .302, p < .01$) and have stayed longer ($B = .010, p < .05$) are found to have more values in their informal relations. However, those who stay in a company settlement are likely to have lower informal relationships ($B = -2.856, p < .001$). Second, socio-religious involvement was significantly predicted by the number of relatives in a neighbourhood, and type of settlement. The involvement in socio-religious activities will increase if there is a relative in a neighbourhood ($B = .295, p < .01$). Compared to the blended/mixed settlement, this socio-religious involvement is lower for people who stay in a survivor-made settlement ($B = -.794, p < .05$). Third, political and cultural involvement was significantly predicted by facilities, duration of stay, and resettlement type. Duration of stay ($B = .014, p < .01$) will increase political and cultural involvement. Poor facilities ($B = -.669, p < .05$) correlates with lower political and cultural involvement. Compared to the blended/mixed settlement, political and cultural involvement is lower for people who stay in a company resettlement ($B = -3.154, p < .001$). Furthermore, if we see the R^2 values, these factors give variability in informal involvement (48.7%) and political and cultural involvement (35.9%). However, it only contributes 7.1% variability in socio-religious involvement and there should be other sound factors to predict this socio-religious involvement.

In summary, individual characteristics play a role in people's involvement in informal relationships but it does not correlate with other types of involvement, namely socio-religious and political and cultural involvement. Further, the type of settlement consistently has an impact on these three types of social engagement. The company settlement shows a trend towards lower involvement in three types of social engagement.

Household characteristic has a correlation with both informal and socio-religious involvement in the presence of relatives in the neighbourhood.

D. The strange and silent neighbourhood: two options end up in one consequence

Survivors want to create a new residential image and atmosphere that is still associated with or replicates the former place. However, it is not easy to do so. There are factors that may hinder or complicate their efforts to have similar patterns of community relationships to those they used to have in the former place. The first factor is a change in the housing complex layout and infrastructure that is very likely to change the lifestyle of each household and the community as a whole. For example, a subsistence lifestyle can no longer apply because there is no land and there are not many close relatives or neighbours to help them cultivate the land.

Secondly, the emergence of acute and chronic conflicts within and between families and among fellow villagers will hinder the effort to rebuild a community in the sense of a united (*guyub*) community. For example, the Renojoyo people interacted only with their trusted neighbours in their block. They had to be careful when hanging out or gossiping because they believed that the committee (*paguyuban*) had put a spy in every block of neighbourhood to monitor residents' activities. This suspicion has created a distance between residents and hampers their ability to engage with the environment spontaneously.

Thirdly, because it is other people's land, not their ancestral land, it will be impossible for them to hold various ancestor-related rituals and spiritual activities. Different ancestors or genealogies can bring different traditions in the areas of Porong Sidoarjo. Today, mud victims rarely perform the rituals. Besides the fact that their *punden* (ancestral shrines) and cemeteries have been engulfed by the mud, the host community has different rules and traditions in performing such rituals. For example, mud victims that live in Kesambi cannot hold *ludruk* (a puppet show) while doing *rumat* (a ceremony to get rid of bad things), because the host community does not allow percussion instruments to be played in the village, and people in Kesambi village believe that *ludruk* will bring in the rain of snakes.

Even though people still have the dream and desire to create a corporate village and move with their fellow villagers, there have been many changes in infrastructure and socio-cultural activities in their new resettlement. This makes it difficult for them to replicate or create a living atmosphere that is friendly, welcoming, lively, and *guyub* (solid) like they used to have in the former place. The living atmosphere and social interaction could be quite different from one block to another or from one resettlement to another. In sum, it takes time for them to bring about a socio-cultural condition that resembles their former village.

4.2 SHIFTING PLACES, SHIFTING LIVELIHOODS

Major changes in the physical environment caused by the mudflow have had great impact on the Porong people's livelihood. It is because most of the Porong people tend to rely on their surrounding environment to fulfil their needs and earn a living. For example, some of them were farmers or farm workers who depended on extensive land to earn a

living. Some of them were factory workers who earned a living from working in the industries around their area. Moreover, there were people that depended on natural resources such as a river, forest, or grove as the main source of income. In this case, they not only sold raw material to get income, but some of them also developed the knowledge and skills to process this raw material into products and consumer goods.

Furthermore, damage in social networks also had an adverse impact on them, especially in gaining access to job opportunities. As explained in the previous section, the Porong people rely on those they know well to gain access to employment. In addition, occupations that rely on customers such as trading and services were severely affected, requiring them to rebuild a new market and gain new customers. Survivors often say “we have to start everything from scratch” to reflect the challenges they face in regaining their livelihood.

A. Household profile

In this subsection, we examine the household profile in each type of settlement in order to see the distribution of household characteristics by settlement type. A household’s socioeconomic status can be a determinant of resilience. As show in the previous research, household demographic characteristics such as education, income diversification, and age-dependency-ratio can contribute to household adaptive capabilities (Vincent, 2007; Salignac et al., 2019). The following is Table 17 on household characteristics that also contains data and information on house ownership and migration waves at the very bottom of Table 17:

Table 17. Distribution of household characteristics by settlement type

Household characteristic	Type of settlement						Total
	Provided by company		Survivors’ initiative		Blended at formal settlement		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Number of households	102	20.7	291	58.9	101	20.4	494
Average of household size	2.98		3.27		3.23		
Average of number of household member within the productive age (15–64 years old)	2.69		2.49		2.52		
Gender of head of household							
Male	101	22.1	270	59.1	86	18.8	457
Female	1	2.9	21	60	13	37.1	35
Highest education in household							
None	0	0	2	100	0	0	2
Elementary (SD)	0	0	16	64	9	36	25
Junior high (SMP)	1	2	34	68	15	30	50
Senior high (SMA)	98	28.1	185	53	66	18.9	349
College (D3)	1	7.7	10	69.2	2	23.1	13
University (S1)	2	3.9	45	88.2	4	7.8	51

Household characteristic	Type of settlement						Total
	Provided by company		Survivors' initiative		Blended at formal settlement		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Household wealth status ¹⁸							
Lower	0	0	1	.4	0	0	1
Middle	98	98	230	87.1	65	87.8	393
Upper	2	2	86	12.5	9	12.2	44
Income per month							
< IDR 1,777,701 (€137) ¹⁹	0	0	81	28.1	57	68.7	138
1,777,701–5,185,133	101	99	183	63.5	25	30.1	309
5,185,134–8,592,566	1	1	21	7.3	1	1.2	23
> IDR 8,592,567 (€661)	0	0	3	1	0	0	3
Migration waves							
First and second	102	45.5	44	19.6	78	34.8	224
Third and fourth	0	0	247	91.5	23	8.5	270

Table 17 shows that households in the resettlement that the company provided are smaller compared to that in survivor initiatives or formal resettlement. The resettlement that the company provided is also dominated by male heads of household while in the mixed/blended resettlement and the resettlement built by survivors, the percentage of female heads of household is higher. In terms of education, the highest level of education in most households in the resettlement provided by the company is senior high school, while in other resettlements it is junior high school and there are two heads of household that never had formal education in the resettlement built by survivors. In the resettlement provided by the company, most of the household members work as a private employee or in the factory and count on a regular wage while in other resettlements the occupation and source of income vary. The mixed/blended resettlement has the highest number of unemployed people and the highest number of household members who do not own a house.

If we consider the history and social development of this company-provided resettlement, one could argue that this housing is only fit for small families or young couples with a regular income and those who at least they went to high school in order to be able to work in the formal sector. In the first year, around 2007, different types of households from five mud-engulfed villages had been moved to this resettlement. However, gradually some of the households, mostly those that do not have a regular income, lack formal education, and comprise extended families could not survive daily living and finally had to sell their house and moved to a kampong around Porong. The

¹⁸ Wealth status is an index constructed out of four main elements, which are house ownership, house characteristic, access to public utilities (water source, access to electricity and cooking fuel) and consumer durables. By applying principal component analysis (PCA), the result is the Kaiser-Meyer-Olkin measure of sampling adequacy, which was .704 and Bartlett's test of sphericity was significant ($\chi^2(171) = 3916.28, p = .000$), while the first factor (an index) explained 21.8% of the variance.

¹⁹ The first cut point location (IDR 1,777,701) is based on the Indonesian's average of income of labourer in 2015 (BPS-Statistics Indonesia, 2015).

reasons were mostly because the house was too small to accommodate a large number of family members, the neighbourhood was too expensive, they could not find a decent job, they could not raise livestock or do farming, and they could not find the right atmosphere that made them feel at home (*betah/kerasan*). In sum, a social process is at play in selecting which residents better fit a certain character of resettlement.

Another interesting fact from the data above is the economic situation of each household. While the survivor's wealth index can be considered good, the income data reflect a different condition. There are 138 (29.2%) households with income below the national average. Further, the income gap is even wider if compared with Indonesia's GDP in 2015 that reached IDR 4,000,000 (EUR 308). This could mean several things. First, it reflects and affirms that there is a gap between public opinion and survivors' statements. The general public and some government officials may assume that Lapindo mud survivors are rich and do not need a subsidy or other social support from the government because they have received much compensation money, have a good house, and own other luxury goods such as a motorcycle. However, some of them actually still earn a low income because they are unable to find a steady job to support their daily living and to preserve their assets. In the long run, they may lose these assets to make ends meet. Further, based on occupation, income, household size, productive age, and labour size, we create the household types of Lapindo mud survivors and restrict them to pre-determining four categories with distance likelihood as cluster method. Here is the result in Table 18.

Table 18. The household types of Lapindo mud survivors

Type of family	Small steady	Steady intensive labour	Downward spiral	Critical
Number of households (percentage)	183 (40.3%)	88 (19%)	111 (23.9%)	78 (16.8%)
Occupation of head of household	Regular waged	Regular waged	Owner self-employed	Total unemployed
Income	IDR 1,777,701– 5,185,133	IDR 1,777,701– 5,185,133	< IDR 1,777,701	< IDR 1,777,701
Number of household member within the productive age (15–64 years old)	2.24	3.48	2.51	2.17
Actual earning (labour size)	1.27	2.01	1.75	1.17
Household size	2.83	3.95	3.41	2.97

The first household type of Lapindo mud survivors is a small family with a regular average income. Even though not all productive members can earn a living, this family still can have a total income that is equal to the national average. The second household type is a bigger family that is productive and has more than one family member who earns a living from a regular job, and they can accumulate an income that is equal to the national average. This type of household can be called as labour-intensive (*padat karya*). The third household type is a family that has an unproductive business, or it has a productive business but it is small-scale and low profit. However, this type of household has many family members to feed. Further, not all productive members could earn a living. The last household type is critical because productive family members cannot generate enough income. This type of household has a family of average size whose productive family members cannot find a steady job or do not have a business to generate income. From all those household types, one with a small, steady and labour-intensive family has the highest chance of economic survival. However, the downward spiral and critical household types are those that may end up using up the family assets or fall into in debt to make end meets. Further, those with a high degree of dependency, such as households who have children, the elderly, or unwell members of households are the ones who are likely to have less adaptive capacities (Vincent, 2007).

B. Mobility as additional expenses

After the Lapindo disaster, some of the households complained about their economic burden while other households were of the opinion that their burden had not significantly changed or even decreased. However, the Lapindo disaster contributes to this economic burden, which is closely related to the changes in the people's livelihood due to a decrease in their income and an increase in their expenses. In terms of income, issues are related to the loss of occupation that leads to a decrease in income, or people holding the same job, but without sufficient income to cover higher expenditure. Furthermore, factors that contribute to higher expenditure include resettlement, lifestyle, and debt trend. In terms of settlement, the remoteness of a resettlement area will increase expenditure on transportation, or on cost of living if the resettlement is in the middle of the city. Furthermore, their lifestyle is closely related to their house infrastructure and facilities before and after the disaster. In the former place, a household used 450 watts in installed electricity capacity but in the new place a household uses 900 to 1300 watts in installed electricity capacity. Among other factors, the change in installed electricity capacity may reflect how they spent their compensation money. Some households spent the money on electronic appliances that they never had before, such as a washing machine, which increases the need for higher installed electricity capacity. A change in lifestyle could also affect a household's dynamics. In this case, they need to spend some money on family gatherings or reunions intended to resolve conflict among family members and relatives. The last expenditure is on monthly house mortgage and instalments for a motorcycle. Even though the amount of debt before and after the disaster cannot be calculated due to incomplete data (some of the survivors declined to reveal their debt), there has been a change in the purpose of securing loans. Before the disaster, people borrowed money for developing business, children's school expenses, daily needs, medical expenses, and agricultural expenses. After the disaster, in addition to the above-mentioned purposes, they secured loans for house construction and purchasing a vehicle to go to work. People

perceive an economic burden when there is a significant gap between income and expenses. Table 19 shows how the survivors who participated in this study perceived their current economic condition.

Table 19. Distribution of perceived economic burden by settlement type

Current economic condition	Settlement type						Total	
	Provided by company		Survivors initiative		Blended or mixed			
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Better	0	0	16	5.9	6	9.5	22	5.1
Same as before the disaster	43	42.2	79	29.4	7	11.1	129	29.7
Worse	59	57.8	174	64.7	50	79.4	283	65.2
Total	102	100	269	100	63	100	434	100

Based on Spearman's rank correlation test, there was a positive correlation between the current economic condition and resettlement type ($r(432) = .099, p = .040$), that is, people who stay in the survivor resettlement type would more likely perceive an increased economic burden (worse condition) than those from other resettlement types. Furthermore, in the resettlement provided by the company, a household might perceive the same or worse condition but none of them perceived better condition. This differs from other resettlement type in which some of the households perceived that their economic condition was better, the same, or worse.

However, in the regression analysis (see appendix 4: Regression analysis of factors that will predict economic burden) we can see that resettlement type can only have a significant correlation with economic burden if it interacts with how people perceive changes in daily expenses (the former place compared to the new place). It is true especially for the people in the company resettlement. Further, actual expenses, labour size, livestock, wealth index, and the perceived change in daily expenses have a significant correlation with economic burden. However, income does not significantly correlate with economic burden. Further, labour size ($B = -.116, p < .05$), livestock ($B = -.157, p < .05$), and wealth index ($B = -.089, p < .05$) correlate negatively with economic burden. It means that when labour size, livestock, and wealth index decrease, economic burden increases. It is different from expenses ($B = 8.653, p < .05$) and the perceived change in daily expenses ($B = .372, p < .01$) that have a positive value, meaning when expenses and perceived change in daily expenses increase economic burden also increases.

Based on the regression result, we can make some inferences. First, labour size will predict how a household experiences economic burden. In a situation where people sense instability and uncertainty in their environment, accumulated resources such as income are not sufficient to address economic burden. Labour size is more significant than accumulated resources. In this sense, the more resources people can gather, the more they are able to sustain the household. This might imply that in unstable conditions, a group of labour forces with varied abilities, skills, and characteristics will increase the ability of the household to take advantage of opportunities or even widen the range of opportunities. As described in the previous chapter, in an unstable and uncertain environment, resources can easily deplete due to decline in the environment. To be ready

to seize new opportunities, households should have a stock of heterogeneous labours forces, to increase the change that one of them will be compatible with the opportunity. It also could relate to how diversity absorbs disturbance. Interference will often be experienced due to an unstable environment. In this situation, it does not take a single earner with a high income but several average breadwinners who can compensate whenever a household loses one of its sources of income due to changes in the environment.

The description above also applies to the role of liquid assets versus fixed assets. Fixed assets such as wealth index and livestock could better predict economic burden than liquid assets such as income. However, this is possible only if these fixed assets are also productive assets and people could use these fixed assets to seize opportunities. A relationship can therefore be developed in terms of reducing expenditures. In this case, the wealth index consists of four elements, which are house ownership, house characteristics, public utilities (water source, access to electricity and cooking fuel), and consumer durables. It means that if people do not have these assets and facilities then their burden will be higher. For example, if people do not have access to free clean water, then they have to buy it daily. It also applies to house ownership. People who do not have a house might have to spend money regularly on a rental house.

C. *Gali lubang tutup lubang*: debt to make ends meet

Gali lubang tutup lubang is an Indonesian proverb that means digging a hole to cover a hole. This proverb illustrates a person who secures new debt to cover existing ones. This is a common practice among the people of Porong in response to their economic problems. Further, people responded differently to escape the economic burden. These responses vary and sometimes involve several strategies. This survey has identified eight responses that people usually have to economic hardship. These are securing loans, earning additional income, working overtime, efficiency, financial management, social support, saving up, and doing nothing at all. Additional income is earned through a side job or by working overtime. Social support is received through financial assistance or donation by family or relatives. Efficiency is maximised by reducing expenses. Financial management involves setting priorities and careful planning over the limited household budget. The last response (doing nothing at all) is more an act of resignation than a meaningful response, seeking divine intervention and other efforts that do not correlate directly with solving the economic problem. Some households drew only one of the strategic responses, while other households combined them. Here is the tabulation of multi-response data on households' efforts to respond to economic burden:

Table 20. Distribution of households' responses to economic burden by settlement type

Responses toward economic burden	Type of settlement						Total	
	Provided by company		Survivors' initiative		Blended or mixed			
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Debt (borrow money)	0	0	13	59.1	9	40	22	7.9
Additional income	13	14.9	52	59.8	22	25.3	87	31.2
Overwork	2	9.5	13	61.9	6	28.6	21	7.5
Reduction	25	23.4	75	70.1	7	6.5	107	38.4

Financial management	8	34.8	14	60.9	1	4.3	23	8.2
Social support	0	0	5	71.4	2	28.6	7	2.5
Saving	3	25.0	7	58.3	2	16.7	12	4.3
Non-direct coping	21	31.3	32	47.8	14	20.9	67	24
Total	59	100	172	100	48	100	279	100

Further, these responses can determine the three main coping types namely active, passive, and non-direct. The active coping strategy can be defined as an effort to gain more cash and increase the liquidity of household cash flow. This effort is signified by the willingness to do a side job or work harder. Survivors often summed up the effort through such expressions as “I am looking for additional income” or “regardless of time, I will work day and night.” Further, seeking a loan or borrowing money could also be included in this category because it adds cash to the household budget. Parents asking their children for an allowance or financial support also fall into this category. In short, all efforts to gain cash through trading, providing services, and exchanges of goods or assets based on trust or ties can be included in this type of coping. On the other hand, the passive coping strategy is defined as the intentions, activities, or actions of a household to manage its accumulated cash. This response can include saving, budget management, economising or tightening belts, reducing food consumption, and other efforts to manage limited resources efficiently. The third coping strategy can be defined as non-direct coping such as praying, acceptance, or doing something that does not correlate directly to solving the economic problem. Although in reality one household could apply several strategies in order to survive, our next analysis of coping only measures the main coping strategy most frequently used by households. Here is a tabulation of household coping strategy by settlement type (Table 21).

Table 21. Distribution of household coping strategy by settlement type

Household's coping	Type of settlement						Total	
	Provided by company		Survivors' initiative		Blended or mixed			
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Active (outward)	12	20.3	61	35.5	25	54.3	98	35.4
Passive (inward)	26	44.1	81	47.1	8	17.4	115	41.5
Non-direct coping	21	35.6	30	17.4	13	28.3	64	23.1
Total	59	100	172	100	46	100	277	100

In Table 22 below, we will try to assess the importance of capital in household coping strategies. The categorisation of types of capital is based on the five types of capital that can be used in the livelihood's framework, also known as household livelihood portfolios by Frank Ellis (2000). The five types of capital consist of human, physical, natural, financial, and social capital. Human capital can be education, skills, and other individual conditions that contribute to the productivity of labour. Physical capital can be infrastructure, equipment, livestock or crops, and other capital items produced by economic activity. Natural capital is the land as well as other biological resources such as water. The financial capital refers to income sources, access to financial resources, and wealth. Social capital can include social relationships, close social bonds, community groups, collaboration and other reciprocal claims on others, and linking via which

resources are accessed (Ellis, 2000). Using nominal logistic regression, we found that in general the most important common predictor of active and non-direct coping is household members aged 14 ($\beta = .635, p < .01$) and below ($\beta = -.459, p < .05$), wealth status ($\beta = .645, p < .01$), labour size ($\beta = -.615, p < .05$), and type of resettlement ($\beta = .644, p < .05$). This test is significant (found ($X^2(34) = 86.166, p = .000$), with prediction explaining 37.4%.)

Table 22. The importance of capitals in household coping strategy

Capital	Active/outward		Non-direct	
	β	<i>p</i>	β	<i>p</i>
Human capital				
Head of household education level				
Male	-.360	.244	-.104	.767
Female	.361	.178	.325	.296
Labour size	.206	.441	-.615	.035*
Household members				
< 7 years	-.459	.029*	-.389	.094
7–14 years	.635	.004*	.329	.180
15–17 years	-.147	.430	-.118	.533
> 18 years male	-.062	.771	-.119	.625
> 18 years female	-.267	.239	-.173	.485
Physical capital				
Livestock	.645	.124	.656	.134
Productive asset	-.095	.715	.167	.520
Natural capital				
Land	-.331	.569	-2.605	.662
Financial capital				
Wealth status	.615	.008*	-.090	.651
Government subsidy	-5.688	.	-5.429	.
Social capital				
Number of organisational memberships	.013	.947	-.061	.762
Percentage of relatives in resettlement	.248	.259	-.041	.864
Type of resettlement	.644	.008*	.151	.537
Number of moves	-.147	.683	-.214	.548

In the case of the active or outward coping strategy, defining capital (or lack thereof) are household members aged below 7 and between 7 to 14 years old, wealth status, and type of resettlement while in the non-direct coping the most important capitals are labour size. To elaborate further, having or not having children aged 14 years old (or younger) will most likely determine whether the coping choice is active or passive. An interview reveals this has to do with the need to take care of children and also as a form of educational investment. In addition, wealth status, having or not having four components in the wealth status, will also determine whether the coping choice is active or passive. In this sense, we can assume that two important components in wealth status, namely house ownership and consumer durables, could differentiate the coping choice. Some survivors who do not have a house have the obligation to pay rent every year, while consumer durables could be an important factor to implement the active or passive coping strategy because some of the survivors use these consumer durables as productive assets, such as

those who work as a motorcycle taxi driver or those who lease their sound system. Furthermore, the option of non-direct or passive coping is determined by whether a household has or does not have income-earning members. With this information, we can conclude that a household chooses non-direct coping because it lacks income-earning members.

D. What shut the door of fortune: unclear status and *sungkan* (reticent)

Based on household responses to the economic burden, their coping mechanism is obviously activated after the disaster. None of the households has health and education insurance or other coverage before and after the disaster. The way they prepare for unforeseen circumstances is through saving, mostly in the form of gold jewellery. They are not quite familiar with the banking system; some of them borrowed or saved money in a cooperative in their former village.

However, it does not mean that survivors do not try to insure or protect their future. One can argue that they insure through relationships, or they invest their time, energy, and money in relationships that are expected to keep them financially and socially secure in the future. In other words, if you are good to your neighbours, they will be good to you. Further, they use the old tradition to create networks that will secure their future, such as *jakno* or *jalukan* (helping cover a neighbour's wedding cost) that has been discussed in Chapter 3. Through these relationships, people also can access resources and other job opportunities. Villagers of lower social status usually expect protection and assistance from their fellow villagers who are rich landowners. Under this clientele relationship, the landlords provide a job to poor villagers. These patron-client relationships still apply in such kampongs as Besuki and Renokenongo where most of the people are farmers. However, this kind of investment and insurance is only possible through proximity, cohesiveness, and trust. Without these factors, people cannot access or lose access to social insurance. Nowadays, people have lost this proximity, cohesiveness, and trust. They have to find other ways to protect their future, including gaining access to social security and other insurance platforms provided by the government. However, it is not easy for them to receive a subsidy, health care, and other social facilities due to their unclear civilian status that prohibits them from exercising their rights.

Other social problems that make it difficult for survivors to improve their living condition is their reticence when it comes to opening a business such as a stall or a store in the new place. They embrace a low-profile to prevent them from attracting too much attention. As newcomers in a new place, they have to look common or normal. From the previous section about a social relationship, we can see how this reticence plays a role in survivors' efforts to develop contacts and relationships with their new surroundings. They did not want to be perceived as dominant and in control nor did they want to be underestimated by the local people. In sum, the local people's opinion is important for them, and they considered avoiding competition and conflict as a priority.

The tendency to be careful also applies in choosing a new source of living. Most of them do not want to be perceived as people who seize other people's fortune or to compete with the host community to earn a living. For example, a couple from Ketapang chose to buy a cane press machine and sell sugar cane water in front of their former neighbour's house who happened to live near a traditional market in the Kali Sampurno area (around 4 kilometers from their house) rather than opening a small stall in front of

their own house. At the beginning, they planned to open a stall but later chose the sugar cane business because they did not want to compete with their new neighbour who happen to own a stall in their neighbourhood. Some of the survivors who could not find another source of living or a new business just passively waited for a job offer. They restrained themselves and did not want to create a source of income that could be offensive to their host community. Reluctance prevented them from trying to do something to improve their life. Only a few survivors could break free from this restrained tendency, with varied results. Some received a hostile response from their envious neighbours while others got a positive response. However, the people who most wanted to prevent clashing with their neighbours chose to return to their land and to their former social networks to earn a living.

The tendency to restrain themselves can be related to several things. First, it is a habit or a social norm that they must obey when they enter a new place. Second, it can also be considered to be the result or reflection of their experience. Some people said that when they lived in the former place, they would also feel displeased and offended if migrants suddenly acted too actively and took over some of their land and livelihoods. Third, this can happen because they perceived threats or less friendly responses from the host community. The perceived threats from the surrounding environment will be further discussed in Chapter 5.

E. Seeking fortune on my own soil

After years living outside of their village of origin, some survivors decided to return to their former place to earn a living. After looking for a job or developing some business and failed, they returned to their homeland in the hope they could regain their former livelihood. There are several ways of utilising their former place to make a living. First, they utilised the land that had been turned into a mud dyke or reused the land that had not been engulfed by the mud as cultivated land. Second, they reactivated the social networks and used these networks to get an income.

Survivors reused their land in different ways. First, they could cultivate and used the land for farming. For example, the Besuki people who stay in Dukuh Sari asked BPLS for permission to cultivate their former paddy field. After BPLS gave the green light, they divided the land and took turns to cultivate it. Second, they created a new and distinctive job in the village that had been turned into a mud dyke. Several kinds of jobs have emerged from this setting, including motorcycle taxi driver, parking attendant and portal keeper, photographer, CD player seller, mask seller, mobile food vendor, herbalist (*tukang jamu*), and tourist guide. It started in 2007 when some of the desperate survivors observed the public's curiosity about the mud dyke and seized the opportunity by providing them with mud dyke tour related services. After several years, they came up with a job division, rules, and even an organisation that bound them together as workers at the mud dyke. Parking and portal keepers are tasked with guarding the mud dyke, arranging and parking vehicles, and collecting the entrance and parking fees. Motorcycle taxi drivers, CD and mask sellers, photographers, and tourist guides stand by and wait for tourists at the forefront of the mud embankment. The motorcycle taxi drivers offer to drive the tourists to the centre of the mudflow, while the CD and mask sellers offer their merchandise to tourists. The CD contains a one-hour movie showing the pictures of their mud-engulfed villages. Further, the photographers offer their service to tourists who did not bring a camera and the tourist

guides are responsible for framing the scenery in a historical context. In addition, the mobile food vendors and herbalists sell food both for tourists and workers. The workers believe that working at the mud dyke is not good for their health, so the herbalists become very popular as those who keep the workers fit and healthy.

There are seven points of service, which are usually formed based on their kampong of origin and clique. For example, people from Siring are the majority in the point 21-mud embankment while people from Ketapang are the majority in another point. These people once decided to set up an organisation called “Paguyuban Ojek-Portal Tanggul Lumpur” (the association of mud dyke portal motorcycle taxis) as a platform to help each other such as providing financial aid through a cooperative. Unfortunately, their good intentions did not last long due to conflict and other problems, or its members were too poor to be able to pay the contributory fee.

The second way to generate an income in the former place is by reactivating and using the former social networks. This is possible because there are a lot of problems with regard to civilian status and compensation. In addition, while most of the people moved physically, they are still registered as residents in the former place, therefore they still have to report to their former hamlet or sub-district office. This has opened an opportunity for some people to offer their busy former neighbours the service of taking care of their administrative affairs. Other businesses that rely on these former social networks are food stalls, petty trading and even advocacy. When they tried to open a business in the new place and could not attract a fair number of customers, they just contacted their old social networks to offer their service or merchandise. For some people, this effort has been quite successful in increasing their income. These businesses, especially petty trading, require them to commute because they live far away from their workplace. Most of them get up early in the morning and then go to several resettlements where their former neighbours stay to deliver their goods and get home in the afternoon or at night.

4.3 CONCLUSION

Forced displacement and social conflict caused by the Lapindo mudflow disaster have changed kinship and social networks through a physical, social, and mental distance that has affected their livelihood. In the former place, most households relied heavily on family, relatives, and fellow villagers to earn a living and build a meaningful life. In that place, people had to maintain their involvement and relationship in order to get support and information that could benefit them. These people have constructed the physical environment into a meaningful place and practised social and cultural activities that strengthened emotional ties with the place and the people. In sum, Lapindo mudflow has destroyed and changed not only homes and villages but also the density, strength of ties, proximity, and reciprocity of their social networks that were important to make a living and made life meaningful.

Furthermore, we can also learn from the present life of the survivors that it is not easy to rebuild new contacts, relationships, and social networks. The households and communities are unable, or it is difficult for them, to restore their lives not only because they have lost their assets and their former networks but also because they have been excluded at regional and national levels. The stigma has hampered them from reconnecting with their neighbours and the host community. Even if they succeeded in owning a house, it would be difficult for them to improve relationships with their

neighbours and to access public facilities due to the vagueness of their residential status and the stigma. As a consequence, the lack of means and media to meet and recreate social contacts and ties has further excommunicated and excluded them. On the one hand, they are hesitant people; on the other hand, they perceive the threat of a new environment that prompts them to exercise caution in acting and behaving. This situation has prevented them from building new contacts, actively engaging in social activities, and improving their livelihood.

The inability to connect with the outside world and neighbours has prevented them from receiving the needed support to lighten their household burdens. Further, economic burden is perceived as the result of the Lapindo mud disaster that has changed their livelihood, occupation, and residence, leading to higher daily expenses and uncertainty or a shortage of income. The households have made various coping attempts to tackle this burden, but the main predictors for the coping forms chosen by the households are primarily related to household members aged 14 and below, wealth status, government subsidy, labour size, and type of resettlement. Collectively, they also make efforts to overcome the change in their livelihood by returning to their former land and villages to make a living. When they are isolated and have no chance to compete with the local people, they leverage the function of the mud dyke, turning it into a place where they can earn a living and reconnect with their former social world.

CHAPTER 5

LIVING WITH MISERY: CULTURAL AND PSYCHOLOGICAL CHALLENGES

This chapter discusses how people experience psychologically the shifting of place and space. It can be concluded from the previous chapter that some of the households continue to activate their coping mechanism in order to survive the unsettled livelihood. Thereby, in the household setting, the source of pressure is assumed to remain high, and they have yet to regain more control of their life. Furthermore, these struggling households are nests for individuals with problems of their own. This chapter aims to explain how people perceive their mental health conditions and how they respond to these circumstances.

The main argument of this chapter is that the local context plays an important role in shaping the Porong people's perception and experience of the event. In light of this, the severity of psychological disturbances the people are suffering has not only been determined by the duration and intensity of the disaster but also by the strength of the Javanese socio-cultural values and other forms of local wisdom that provide them with a framework and boundaries. These also serve as a guidance, protocol, and code of conduct in the process of assessing, experiencing, and acting against the losses while coping with the challenging situation.

This chapter also focuses on answering the implicit sub-question about the relationship between the notion of place and space and the manifestation of psychological disturbances. More precisely, it attempts to explore the extent to which the replacement of the people's former living space in Porong and the subsequent changes in the notions of place and space have generated individual and collective traumas or other psychological manifestations.

Based on qualitative and quantitative data, this chapter reveals how Porong people perceive mental health problems related to the Lapindo mud disaster and how their experience generates psychological disturbances and collective trauma that could hamper their efforts to adapt to the changing environment. In addition, it discusses the kind of mental health care preferred by the survivors in contrast to that provided by the government and the public. Finally, the discussion centres on efforts by the Porong people to take care of themselves amid the limited assistance from the government and the company.

5.1 COLLECTIVE TRAUMA: THE SCAR ON THE TIES

In 2015, one day before the Eid al-Fitr celebration, a Muslim or Islamic celebration, I visited the mud dyke to join some of the Lapindo mud survivors in the *Istigosab* (praying together). When I arrived at around four o'clock in the afternoon, some of the people had already sat down on plastic tarp as the respected religious leader from Siring started to greet the congregation. Then my informant invited me to sit with them. We joined the

group and sat on the plastic tarp, in the middle of the back row. I heard the leader recite Quranic verses. Shortly after together they chanted the *shabada* 'La ilaha illallah Muhammadur Rasulallah' (there is no god but Allah and Muhammad is the messenger of Allah) repeatedly. Slowly first, the *shabada* chanting gradually became more intense and then the facial expression of the people started to change. Their teary faces reflected sadness, bleakness, burden, and pain. Some of them tried hard to hold back the tears. But the leader broke down. With teary eyes and a shaking voice, he loudly called for God's compassion and assistance. Some of the people lowered their heads, others were sobbing. I could sense collective suffering.

This individual and collective suffering will be the main topic of this section, beginning with the discussion of how survivors perceive the psychological disturbances and problems caused by this disaster. This perception is based on local expressions and knowledge in interpreting the psychological consequences resulting from this extreme experience. Further, common or general psychological terms are used in order to understand their situation. Also discussed is the level of exposure to extreme experience and the notion of trauma the Lapindo mud survivors are subject to.

A. Perceived psychological problems

The Porong people are aware of the manifestation of mental illnesses this disaster has caused. According to the people, there are three main categories of perceived psychological problems caused by the drastic shift in their life. First, they believe that the sudden loss of belongings, the continuous mudflow and collapse of embankments, and uncertainty in the way the authorities respond to the event can make the survivors prone to *sakit saraf* (a neurological disorder that is likely to lead to a mental illness). This interpretation includes the term *setres* (stress), or the less tactful among them call it *gila* (insane). These derogatory remarks of *sakit saraf*, *setres*, or *gila* describe the Lapindo survivors who talk to themselves and stroll aimlessly searching for their lost homes. They also describe people who walk around with a calculator in their hand and repetitively count the compensation money that they will receive (which has been delayed at best or cancelled at worst). The people's description of this kind of mental illness seems to reflect a psychotic breakdown triggered by massive and abrupt change. Symptoms of this psychotic breakdown include confusion or dazedness, poor contact with reality, absentmindedness, nonsense self-utterances, and aimless behaviours. Below are some illustrations of how people perceive this mental illness:

When the mud came, everything was gone. People moved there [and] there, a lot [of people] died. There were also people who lived in difficulty like Mr. Sarto and me. No need to think about it too much, life was hard then people died. A lot of people died, were stressed, all people were stressed out. They were crying in the street, there were people who kept walking around. Well, I had a house, but then I lost it till now, I haven't been paid, [I have] not been paid for nine years, 660 [million rupiah]. I know people who died from stress, Mrs. Praya was stressed, and Mrs. Tanu suffered from hypertension, blood went to her eyes and then she died. S is stressed... Well, the bottom line is it is difficult now, not like the old times. There's a person who is suffering from acute stress. His name is S. He is stressed because he does not have a house, continuously renting a house. He was previously in Simo, now he has moved to Tanggul Angin. He does not work because of stress. It's the woman [his wife] that works,

selling cookies. He just stays at home, on medication for his nerves, with medicine from Sumber Porong [mental hospital]. He's suffered the illness since the mud started to erupt. He used to be a regular person, a married man with kids. His illness started when we were still in Jatirejo. When the mudflow started to hit, we were in the village hall and he kept pushing the motorcycle forward and continuously hit the picture of Mr. Harto. (Woman, Jatirejo).

Second, people believe that most of the survivors suffer from physical illnesses because they think too much of their problems (*kepikiran/mikir*). For example, there is an old woman who is suffering from heart disorders (a heart disease) because she is worried and cannot stop thinking (*kepikiran*) about the present and future life of her children and grandchildren, making her difficult to eat and sleep. These anxiety attacks resulting from thinking too much of (unpaid) compensation and life's hardships can deprive people of their diet and sleep routines, or tempt them to eat too much unhealthy food, putting them at higher risk of suffering various physical illnesses, including high blood pressure, diabetes, and stroke. However, some people also relate these physical illnesses with a traumatised condition. For instance, a man said that his mother died from stroke two weeks after she learned about mud flooding that was caused by the sudden collapse of an embankment. He claimed that his mother died because she was so scared and traumatised by the idea of mud flowing into her home. People's descriptions of mental illnesses seem to reflect severe stress conditions that are triggered by unsolved problems and hardships but also by being preoccupied with an actual threat such as a collapsed embankment.

The last interpretation of the psychological problems is represented by the term *nelangsa* (miserable) and *mati ngenes* (die in sadness or heartsick or the heart-breaking death). An illustration of this is people who have a lot on their mind (preoccupied with problems) but cannot do anything, have goals or aspirations or dreams but in the end lose hopes and slowly die (*banyak pikiran tapi tidak bisa berbuat apa-apa, punya cita-cita ini itu, tapi akhirnya putus asa, akhirnya mati pelan-pelan*). In sum, it is a sorrowful death. People's description of this mental illness seems to reflect a severe depression condition caused by the loss of hopes and helplessness in the face of endless hardships.

Based on the survivors' interpretations, there are several important aspects to the Lapindo mud related mental illnesses. First, the development of mental illnesses related to the Lapindo disaster can be chronic and acute. The acute condition reflects severity and abruptness of this event that could trigger a psychotic episode. Second, the chronic mental illnesses caused by long-term hardships manifest in many forms of disturbances such as stress and depression that could interfere with people's daily routine (sleep and eating patterns), making them grow sick and die.

Second, in most cases, people fail to distinguish clearly between physical and mental health issues. Based on their experience, physical/body and mental/mind constitute a unit that cannot be distinguished clearly. So, even though the cause of death is heart failure, stroke, and diabetes that from a modern perspective are physical illnesses, from their experience these physical illnesses will not manifest if they do not have so great a burden in their mind or think too much of their problems. This understanding will be especially important if we want to prove whether these mental illnesses constitute the impact of the Lapindo disaster, and it will also determine the treatment for the diseases that has to take into account the two aspects. In this case the aetiology of their physical and mental illnesses is understood to be more of social problem rather than a biological agent.

Third, this appraisal of the loss is related to how people value their belongings. This value is not determined solely by the prices of these belongings but also their relation, interpretation, and meaning to the people. For example, the Lapindo survivors from a housing complex perceived that their fellow villagers suffered a greater loss because it was their ancestral land. Most of the Porong communities regard the engulfed villages as their place of origin, which represents their identity and dependency. Thereby, losing the land forever is devastating and hard to respond to because of its meaning and their strong emotional attachment to the place and space. Similarly, some residents of the housing complex experienced distress when they could not save their ancestral belongings from the overflowing mud.

Lastly, mental burdens are not only caused by personal problems but also by concerns over the wellbeing of significant others. For example, most of the elderly people got sick because they were thinking about not only their personal problems but also about the wellbeing of their children and grandchildren. Further, this relationship does not only apply to the living but also to the dead. It becomes a deep sadness when a cemetery, a cultural landscape and symbol that could connect them with the deceased, is gone. For some people, losing the graveyard also means losing the connection to and chance to take care of and express gratitude to their deceased parents, grandparents and ancestors.

Furthermore, these mental illnesses are usually suffered by survivors from first and second waves of migration whose compensation is the responsibility of Lapindo Brantas Inc. The other important fact is that most of the people were convinced that a lot of survivors suffered mental illnesses, and some of the informants even said that an estimated 600 people suffered from a psychotic breakdown. However, there was no record of the cases at Sidoarjo and Bagil General Hospital (RSUD Sidoarjo and Bangil) and only a few cases were handled by a mental hospital in Surabaya and Malang (one case at RSJ Menur Surabaya). Nevertheless, this cannot become the reason to dismiss informant testimonies that many survivors experienced a psychotic breakdown. Based on the further investigation, there have been two trends on how people treat members of their family with mental illness. Firstly, they treat and handle these mentally ill people by themselves, sometimes involving the stocks if necessary (stocks are feet restraining devices consist of placing boards around the ankles known as *pasung*). Secondly, they will take them to a doctor or hospital (without hospitalisation) or a traditional healer (*orang pintar*). The cost of treatment seems to be the main reason for choosing the form of treatment and mental care. The last reason is definitely related to the labelling or categorisation of the illness. Based on the symptoms, the modern approach to health care determines or categorises the survivors' illnesses into physical illness and mental problems, in accordance with the development of the illnesses. In sum, even though there is no concrete evidence on the number of people suffering from these mental illnesses, it does not indicate the absence of severe mental illness. On the contrary, this may indicate a lack of professional care for survivors with mental illness because they could not afford the cost of professional treatment and care and chose other forms of treatment for members of their family with mental illness. Another possibility for the absence of mental illness records at hospitals or other formal health institutions is likely related to symptom expression. From the narrative above, the symptoms expressed were of physical illnesses even though they believed that the physical illnesses were driven by mental or psychological aspects. Thus, it is possible that the hospitals would record or report the

symptom expression as only related to physical illnesses and disregard the psychological aspects.

In order to better understand how people undergo this experience and how this extreme experience likely leads to individual and collective trauma, we need to discuss the type of exposure that gives rise to a certain kind of experience beyond an individual's capacity to comprehend and a community's ability to protect its members.

B. Stages of exposure to extreme events that lead to trauma

In order to better understand how this Lapindo mud disaster disturbs the people's psychological well-being, I will give a more detailed description about the level of exposure to unpleasant experiences. Several stages of exposure have influenced the psychological condition of survivors, namely physical threats, forced displacement, severe economic problems, and social conflicts or stigmatisation.

As described above, the mud eruption started quickly and abruptly, which could trigger a mental breakdown. Since this early experience, the people have been exposed to environmental changes that rapidly transformed into waves of physical threats. The life-threatening disaster and the fear of being trapped and engulfed by the mud as well as the sudden loss of their belongings became their dominant experience. At the same time, the lack of clear information about the threat due to the failure of the government and the company to mitigate and blockade the mudflow, exposed the people to a series of unexpected mud floods. Even in the beginning of the mud eruption, the social buffer of protection had collapsed and people had to rely on themselves to survive. It was the first time they had to let go of their ordinary life and were forced to embrace uncertainties as part of their daily life with no guarantee of their safety and no local community to hold on. Here is an illustration of how the people experienced the exposure:

We tried to survive individually, saving our own lives, it was when [mud] flood this high [making a hand gesture to the chest] [came our way]. I ran to Kali Tengab, I heard my friends cry, 'help... help....' [And I turned around and saw a woman.] She was spinning [she spun around, imitating the woman who was helplessly trapped in the mud]. We were trying to save our own lives, tried to reach the highway, because we were [trapped] in the middle, near the drilling site.... That was in 2006. We ran pell-mell, taking care of our own lives. Even when we stared at each other, being with our close neighbours, we felt alone. The bottom line is we were panic-stricken [and only thought of our own safety].

Most of the survivors from the first and second waves of migration were exposed to this kind of experience. Thinking the mudflow was temporary, they kept coming back to their villages. However, they finally stopped going back and forth from the refuge posts to their former homes when their houses were fully and permanently engulfed in the mud. It was the first time they were exposed to the loss and forced displacement experiences. However, people from later migration waves had to stay and live with this physical threat for a longer time. Even though the incidences of broken embankment and mud flood decreased over time, living adjacent to the levee and experiencing mud flooding several times made them more alert and anxious. Here is the illustration of how they experienced this kind of situation:

We are afraid when it starts to rain, as if [the embankment] will be full. We're afraid the dykes will collapse if they are full of water. In here [on the opposite side] is Porong River and when it rains, it [the river] is also full, so anxious, especially when it rains heavily. It rained heavily yesterday. We were worried and afraid of flooding if the river and the mud [dyke] were full. Our belongings are not here, but the people still live here. I cannot sleep when it rains heavily; I can only sleep when the rain has subsided. Before it subsides, I remain on my guard.

In sum, the initial mudflow incident knocked down the people's physical and non-physical protection, leaving them exposed to risks and hazards. There was no community protection to protect the people from the harmful experiences. The temporary success point against this exposure was when the people succeeded in securing their lives and possessions. However, it was only a pseudo success because the secured lives are no longer complete or integrated.

The next experience after surviving the physical threats is forced displacement. As described in the previous chapter, they had to live in a shelter that was unfit for habitation. Facing an uncertain future, they must be able to organise their daily activities, from preparing a meal to working and attending to their children's education. Under such circumstances, every individual has to endure the inconvenience of living in the shelter that is full of friction while safeguarding and sustaining their family and fighting for their rights. They did not have the opportunity to ruminate on their sudden losses. Under this condition, mental disorders begin to manifest themselves, ranging from stress to depression to psychotic symptoms, as expressed in the testimonies of the people who at that time lived in, or often visited, the shelter.

Forced displacement brought along uncertain status, economic problems, and delayed compensation. They had to move from one place to another in miserable conditions. In order to survive, they sometimes had to enter an area where they were treated inhumanely or forced them to act less humanely. There are stories about their being predators in order to survive and earn a living. While such dishonourable actions were taken to survive, they robbed them of their dignity and were condemned by the public for their unlawfulness and betrayal of public values. The actions were also degrading to them as human beings. Here is the illustration of the narrative:

It was really not good back then [because] [I did] not have money yet. [It was] quite far [to rent a house], [and I also] did not have any income yet. That's why I went cycling to look for bricks. Many houses were submerged [by mud] and [there were some of them that just slantingly collapsed, and I collected bricks from these collapsed houses. We brought hammers, wore hats so no one would know [recognized us]. Five to 10 bricks were collected using clothes. It [the house] was flooded knee-length at that time, so it was not easy. [We did it just because we] desperately wanted to eat. 1000 bricks were usually priced at IDR 100,000 [7.7 euros], so one brick was worth IDR 100. Then the IDR 100,000 were evenly split among four people...miserable; [we] worked collecting bricks every day and the result [the earned money] had to be split among four people... At that time, [as if we were] not human... Alhamdulillah (thank God) [we] are still alive...

The compensation actually helped ease their suffering. However, a delay in compensation triggered psychological problems such as severe stress due to pressure to repay debts they

secured to make ends meet and for mortgage payments. As mentioned in the previous chapter, most of the households lost occupations and did not have sources of income to meet their daily needs, let alone paying the mortgage. Some of the people also suffered from nervousness and restlessness as they endured a tedious wait for compensation payments. Even worse is severe depression that arises from endless suffering. They lived with these psychological problems, which needed to be attended to for the sake of their own mental health and of the people closest to them such as spouse, parents, or children. However, living every day with these problems did not make them experts in handling them. Some of the survivors took fatalistic approaches such as being submissive, praying, and seeking distractions so they were not preoccupied with their problems. However, this local way of handling problems was not effective enough to tackle a mountain of problems. On the other hand, they did not have enough money to get professional care. Here is the illustration of a survivor who has been waiting for his compensation payment for nine years:

In here [in his neighbourhood] there was a person who died [because he was so] preoccupied with that [Lapindo compensation]. He thought [incessantly], “why didn’t I receive that [compensation]?”. I scolded my wife: “Don’t think of that [compensation], we’re going to live with just what we have. Don’t think about that. It is our last problem. It is our right to receive it [the compensation]. When the time [has come for us to receive it], we’ll get it, yes, we will get it. What we have to think about is whether we have rice and side dishes. So, I just consider it [compensation] as my savings. I never think about it. If I were preoccupied [mikir], I’d get stressed out, so I don’t think of that. He [the neighbour who died from stress] was so preoccupied [mikir] that he forgot to eat, got a peptic ulcer then his liver [failed], and after 3-4 days he died. That’s the most common case. He was taken to the hospital and the doctor told the family, “this is [he’s suffering from] a peptic ulcer. Yea, that’s just typical poor people, we don’t have the money [needed for hospitalisation], so it became like that [died without proper treatment].”

Furthermore, forced displacement has exposed the people to a rupture in their place and space. Besides losing a meaningful place, they also had to frequently migrate. As discussed in Chapter 3, for the Porong people, space is created very carefully through rituals to assert and reinforce the meaning and existence of a person and a group of people in one place. In this context, it is not only they instantly lose their familiar, sacred, and meaningful place and space, but that they were also forced to interact with an unfamiliar land or places. For the Porong people, space is an integrally physical, social, psychological, and spiritual entity. It means that they will experience all these dimensions when they experience a place and space. The rupture in place and space manifests in many forms such as somatosensory and supernatural threats.

When the survivors had to explain this rupture, they just said that they did not feel at home (*tidak kerasan/tidak betah*). Rationally, they revealed various reasons for their unfavorability in terms of housing layout, poor infrastructure, transportation problems, or mismatching atmosphere. However, it is not only a matter of physical or tangible aspect of a place that can determine this unease, because after all the rational problems solved, they continue to not feel at home. Somatosensory sensations experienced by most of the

survivors represented this rupture of place and space that manifested in restlessness and sometimes sleeping disorder. Here is the illustration:

Since I moved hereup to now, I continue to feel that I am in Besuki when I sleep but when I wake up, I realize oh, I'm actually in Podokaton. I continue to feel I still live in Besuki. My wife, in the earlier periods of our moving here, didn't even feel at home, but what could we do? Whether we want it or not, we have to stay here. In the earlier periods, not only my wife, but also our children and I did not feel at home. We often woke up suddenly, sometimes at 11 p.m., and then we tried to sleep again but woke up again at 2. In Besuki, we never suddenly woke up like that. I don't why, but my wife said it was because she thought of the former house [mikir rumah yang dulu].

It is hard for the survivors to explain this unease, but they said it was because they were preoccupied [miki] with the former place. Furthermore, the unease also manifested in the haunted house phenomenon as the representation of supernatural threats. When recounting their experience of moving from one house to another, the survivors often came up with stories about their haunted new houses. Below are two illustrations of the haunted house narratives:

When I was looking for a rented house, I got a dorm house. I didn't know why, I just directly occupied the house. And in the night, I was frightened, haunted by a big tall man. After one year [living there], when I opened the back door, I saw a graveyard.

We rented a house [in Sidoarjo], but it turned out to be an ex-bajang child house [a bajang child is a dead baby who is not buried properly but is disposed of]. After one month in that rented house, my husband began to be haunted. So, when I was done with my job after zuhur [in the early afternoon] I didn't dare to be around the backyard. I locked the kitchen door because I was afraid. When I wanted to do some activities, I would ask my child to accompany me, even though I prayed [recited al-Quran] every day. So, it became obvious when I was sleeping. I had a dream, and in that dream, I saw a very big woman with a snake body, very beautiful. And then Pak RT [the head of the. Neighbourhood unit] told me that he had been chased by a very big snake. Not long after, my son, Rafi, got sick. And Fredi's four Bangkok chickens suddenly died without being sick. I thought it was Princess Blorong²⁰ [in her dream]. Then I asked Wwin [her daughter] to look for another house in Porong, at least a rented house. But in Porong it was the same. The [previous] owner of the house died. [The woman was] pregnant but her baby was gone. So, in less than 100 days, I was again looking for another house here in Perumtas. I said to myself 'why am I so unlucky?'

²⁰ Nyi Blorong is a Javanese/Indonesian mythological figure that is often depicted as a beautiful woman from waist up, and snake from the waist down. The common belief that this figure tempting people to do *pesugihan*. *Pesugihan* is a way to gain wealth without having to work hard like people work in general. It is a form of agreement between humans with supernatural beings. This *pesugihan* requires *tumbal* (sacrifice) to the supernatural beings as a substitute or barter for wealth. *Tumbal* on the request of the supernatural beings and the human must be able to fulfill it. Usually, the perpetrators of *pesugihan* are people who have despaired in their life to earn money in a lawful way and has been disclosed his/her heart so that even had to bear to sacrifice other people (source: Indonesian Wikipedia)

The two illustrations above, which were chosen because they were considered more complete, represent other similar stories about backyard ghosts by female speakers. The stories illustrate how a rupture in place and space can affect people's psychological states manifested in supernatural phenomena. This brings home several important points. First, space is presumably no longer sacred as it now contains distress and can cause illness because the initial relationship between people and the land or cosmos is not built properly, such as through a ritual (represented by the improperly buried baby). Second, the haunted backyard represents disturbance in space, where the women (under the Javanese spatial order) lost their role as they were denied access to their spatial right, the backyard. This may rob them of the opportunity to contribute to maintaining the harmony and balance of macro and micro worlds. Third, the emergence of inhuman beings in dreams represents the disturbed mental state of the survivors. Furthermore, inhuman figures, in this case, Nyi Blorong, often come when people feel discouraged by their miserable living conditions and offer them unethical and religiously forbidden means of achieving success, even by sacrificing others. In other words, it persuades the survivors to improve their life by any means. The last important thing is that ways that are usually effective to thwart supernatural threats such as reciting Quranic verses were found powerless. The psychological effect of this kind of experience is usually fright, tension, and anxiety because of distress in space. Furthermore, the people perceived an invisible danger in the new places. It may not merely mean that there was a real danger or threat, but it could also reflect their inner state of being uneasy, frightened, and scared, knowing their former world had shattered and fallen apart. In this case, they could feel the intrusion of another realm, not from their ordinary life, but a realm of disrespectful spirits and inhuman creatures as a sign of disharmony and troubles in their world or lives.

The existence of this kind of somatosensory, supernatural warning, and premonitions increasingly underline the presumption that it was difficult for the survivors to explain their extreme experience or a sense of 'not in the right place' with their ordinary language. Besides the fact that Javanese space also consists of micro and macro cosmos that allow for such supernatural narratives and explanation, it is possible that that kind of narration was a means for the survivors to convey their extreme experience. Such extreme experiences were too difficult to be framed in any realistic context and setting and thus they resorted to using, however unconsciously, folkloric and mythological figures such as Nyi Blorong as a metaphor to explain their misery. It is consistent with Pillen (2016) that this condition could reflect the potentially traumatic experience of survivors of extreme events that for Pillen could be described as carrying 'nonverbalized memory, an awareness of a parallel, incompatible world'.

Furthermore, the parallel awareness also reflects the phenomenon of a liminal condition. The survivors continue to relive their former place even though they now live in a new place. This symptom is still widely experienced by survivors even though they have parted with their former place. This fact motivates researchers to explore quantitatively to better understand this phenomenon, which will be further discussed in the next section. After living with the survivors for a period of time, it became obvious how these survivors live with a parallel awareness. The former place would just pop up in their conversation, stories, and dreams. It became common for me to hear the survivors say: "When I wake up, I just feel that I still live in the former place. But then I realize I don't live there anymore." Another common story is they often drive their vehicle to the

former place even though they no longer live there. It can be said that the body stays in the new place, but the mind wanders around the former place. This prompts us to consider the physical, mental, and environmental integrity in order to understand this situation. In other words, human beings constitute an extension of their space and place.

The last exposure is conflict and stigmatisation. The survivors had been divided by deep and wide conflicts for so long that most of the survivors said: “*we have been fragmented*”. They were deep because they involved betrayal, humiliation, disrespect, and hurting each other’s feeling, thus they were not easy to resolve. They were also wide because they arose within or between families, relatives, neighbours, village folks, and host communities. They were mostly driven by a dispute over resources and access to resources. While these conflicts, especially those within families and relatives, will be discussed in the next section, it is important to emphasise that these conflicts and disagreements have potentially hurt the conflicting parties mentally and also have created a social and mental distance between families, relatives, and village folks. On the other hand, there has been a longing to live side by side with families and village folks as they did in the former place. This contradiction could create a very distinctive condition such as a lot of cliques and fragmented groups in a resettlement area. They live together but they are fragmented. Individually, such conflicts could create isolation or the feeling of being isolated despite the fact that they live together with their village folks in new settlements. In later years, some of the families could use the available social mechanisms such as family gathering or Eid al-Fitr to forgive and restore their social connection. However, many survivors still could not make peace with their families and relatives. For some of them, living separately from relatives is the best way to avoid familial confrontation. To summarise, one survivor said that the mud disaster had turned her world upside down. She further said that what was in the head was different from what was in the heart. Not only mind, but also the inner world (*batin*) cannot be in peace. This issue will be further discussed in the next subsection on the notion of trauma.

C. The notion of trauma

The survivors have used the word ‘trauma’ to explain a particular situation. In this case, they often use the word trauma to express the state when they remember the horrible experiences in the past. For them, the horrible experiences can be the sudden mud flood, losing a meaningful place, inhuman treatment, and the endless suffering. These memories usually can be identified as the gripping, painful and unpleasant memories. It is not only the state of remembering the unpleasant experiences; survivors also try to process their situation or experiences in order to make sense of it. Here is the expression of Modin from Siring (the head of a religious division in the Siring urban community) concerning the notion of trauma:

Miserable (ngenes) to death. Don't be like that (ojo sampe kayak ngene). Scattering flowers is nice when there is a grave. On the feast day, we used to pray together. Now, we can't perform the Eid al-Fitr prayer together. What's the point of scattering flowers when you have to do it at the embankment (nyekar opo yang disekari harus ke tanggul) ... it used to be nice. Now in Mojokerto, Gresik, all scattered around. (mencar semua). In our own village, it was nice, but living in other people's village is difficult. We cannot move yet [change the residential status], the compensation hasn't been paid off. Just remember it... (Paused, he expressed

sadness and then cried). Remember, it was like that, when somebody dies, anyone of us, we can't bury them in the new village because we haven't changed [our residential status], it's confusing... Just don't move, just don't die, where are you going to be buried? If you want to move [change the residential status], the instalment has not been paid off. So traumatized when someone dies (Ojo pindah, jangan mate, nanti dikubur dimana? Kalau mau pindah, cicilan belum lunas. Jadi trauma kalau ada orang yang mati).

Furthermore, the context of trauma is not merely related to the suffering of individuals but is also related to the loss of cultural expressions such as visiting the graves of parents, grandparents, and ancestors, so they have lost the opportunity to get together with their relatives and village folks on festive days or sacred events such as Eid al-Fitr. The memories of losing a meaningful place could also be disturbing, and preoccupation of such memories may lead to suffering and illness. Here is one of the informant's statements that reflects the disturbing memories:

Yes, sometimes I talk about my former kampong but I never go to the mud dyke. I'm traumatized. I was there once when we were demonstrating. I'm traumatized yea... because it [my former kampong] was my birthplace, where I enjoyed happy moments. My grandpa, grandma, my parents... and since the mud [eruption], we've been separated from our family. We got together once, and it created a lot of memories.

Furthermore, the survivors believe that the abrupt uprooting from their place of origin and the resulting trauma have made them sick and die. In the previous section, a man said that his mother died because she was traumatised by the mud flood. As already explained, the people have the tendency to be preoccupied with the loss of their former place and feel unsettled.

My name is Supi'ayah and my husband is Pak Edi. He died in our rented house in Sidoarjo. The thing is, [we stayed] in Porong's new market [refugee camp] for three months and then we rented a house in Sidoarjo. After two weeks, he died. He was sick. He was sick because he was thinking too much about the former house. We used to live in our own house [the former house in Jatirejo], together as a family, but then we were evacuated [to the refugee camp]. After that we rented a house, and it was there that he felt sad and asked to return to our home [in Porong]. It was too late, we had rented the house for two years. And then a few days later, around ten days, he died. He died not because he had been sick [suffering from any physical illness] but [because he had been] thinking too much [mikir].

The people believe that all the problems caused by the Lapindo mud have shaken their inner world (*tidak tenang batinnya*). The mud survivors often use the word *batin* to describe the unease of the condition. *Batin* means the inner, inmost, inward realm of self (represented by the gesture of putting the palm on the chest or pointing at it). Moreover, the unease is a reflection of the disturbed inner/inmost self. *Batin* differs from the mind (*pikiran*). When their mind was shaken by the unpaid instalment (compensation money) they called the mental condition stress (*kepikiran*). *Batin* is deeper than the mind. It is of the inner (world) that seems to correlate with the feeling of being at ease, at peace, and tranquil (*tenang, nyaman, tenang*). It can be both spiritual and psychic. It denotes how they

feel at peace (*tenang batin*) when they feel at home or in harmony with their surroundings (place and people). It means that as long as people feel at ease, they will be able to resolve their problems or difficulties much more easily, or they can gracefully accept the problems or difficulties as part of their lives. Below is a statement that may reflect this condition:

In the past, working in a factory and getting paid 25,000 rupiahs [around 1.6 euros] [a day] were a blessing [baraka/barokah]. But now there is nothing, no blessing. In the past, [the daily wage of] 25,000 rupiahs made us feel at peace; [because] there were 25,000 rupiahs for tomorrow. But now, we have 1 million, 2 million, 500,000, 100,000 rupiahs but our life is not calm/peaceful [ga tenang idup]

The word ‘trauma’ is not only used by the Lapindo mud survivors who use it to express their suffering, it is also used by the general public to express their worry and fear of oil and gas exploration activities. For the general public, such trauma has become the main reason to reject oil and gas explorations in their region. For instance, in 2016, people of Kedungbanteng village (around 8 kilometres from the mud embankment) rejected the oil and gas exploration by Lapindo Brantas Inc. because they feared and worried that a similar mud flood accident would happen if this company did oil and gas exploration in their territory.

In summary, the notion of trauma is likely related to individual mental injuries because of exposure to problems that interfere with their physical and mental wellbeing. While communally it is related to the loss of the ability of a group of people to create and maintain cohesion in order to be a solid community. Culturally, it mostly relates to a rupture in place and space that makes them uneasy or unsettled. In addition, the in-depth and continuous exposure as well as the absence of serious handling of and attention to this condition have made the disorder sedentary, or even have worsened it. Inhumane treatment, omission, neglect, and even stigma are the basis for the emergence of trauma. As stated by Pillen (2016), trauma is an extreme experience that is difficult to process by making meaning available and can even pass the language skills to be able to accommodate such experiences. Survivors will be in the state of trauma when they remember and try to make sense of their horrible experiences.

5.2 FINDING OTHERS: LONELINESS, SOCIALLY DISCONNECTED AND MISSED HOMETLAND

After being scattered, the survivors had been trying to reunite and rebuild their community. However, being physically together in one place does not guarantee social connections and integration. Many survivors felt trapped, which is often expressed as being “wedged” or “isolated” (*terjepit* atau *terkucil*). It is because they were not connected to the outside world and could not find a space to participate in social activities. At the same time, they also have to resolve the issue of disruption to place attachment. In this section, we will see factors that contribute to this process of adjustment and adaptation to the change in place and space. To further understand the long-term adaptation process of the survivors, this section will explain and analyse three main phenomena: disruption to place attachment, passive tendency or social distance, and loneliness.

A. Disruption to place attachment: when body and mind cannot be fused

The disruption to place attachment has become one of the significant psychological consequences of the Lapindo mud disaster. It is experienced by the majority of survivors, difficult to resolve and still prominent even years after the disaster. To be able to understand this condition, first we have to comprehend the relationship between the survivors and their former place. As described in Chapter 3, for survivors, the former place is their place of birth, homeland, and ancestral land. From this fact, we can conclude that the relationship between the people and their place is not only based on affective and emotional ties, but it also implies identity and existence rooted in a specific community in a certain place. The former place is a symbolic and sacred object that connects them with their ancestors.

Furthermore, there is a component in the former place that represents the object that has a symbolic meaning and connects the people with the past, which Marcus (1992) calls a psychic anchor. For most of the survivors, this psychic anchor is their ancestor's shrine, tomb, or grave. It is important for them to maintain the existence of this object in order to establish their identity. For example, there is a story of the success of Jatirejo-based Abil Hasan Islamic boarding school students (*santri*) in protecting and preserving the grave of Kiai Anas Al-Ayyubi, the founder of the Islamic boarding school (*pesantren*). As soon as the mud that inundated the grave dried up and the grave reemerged onto the surface, a new building that enshrines the grave was set up, and people started to visit it in the hope of receiving God's blessing. In summary, the former place has been the source of identity for most of the survivors and a symbol of continuation of their meaningful life. It is therefore impossible to erase the former place from the mind of the survivors or separate them from it because it is part of them that connects their past, present, and future, as illustrated below:

The story of our village should not be lost. Although the village is no longer there, has been removed/ deleted, the story of it must be preserved for our children and grandchildren. Why? Because it is an invaluable history that cannot be measured by money or treasure. Don't lose it. It's why many people and I have refused to change our residential status [change their ID card], because it's part of our history that we can't eliminate. If we change it [the ID card] I think something is missing in here [she rested her left hand on her chest] (H, 34 years old, Siring)

I think it's important to keep in touch with our [deceased] parents and grandparents even though they're gone because we're still connected. Although they're now only dead bodies [in the grave] but it's important to keep them in mind as they are part of us. Even though I am Muhammadiyah²¹ [member], remembering my parents and visiting their graves are important to me. In addition, they are part of me that must be remembered. This is also to teach my children because [one day] I will die anyway, and I also want my children to treat and remember me [respectfully]. It's sacred. I just hope that the government is willing to take care of this Jatirejo graveyard. When the time comes, at least they can provide a plot of land as a

²¹ One of the Islamic organizations in Indonesia that does not prohibit Muslims from visiting graves, as in Islamic duties the activity is categorised as *Sunnah* (recommended but non-mandatory). However, visiting graves is especially forbidden if the purpose is to ask for help from the dead or turn this ritual into a cultism or idolatry.

replacement for this graveyard and arrange it in the exact same position, because this graveyard is important to us (S, 60 years old, Jatirejo)

The above illustration shows that the self cannot be detached from the family's genealogy and the village's history because the past is part of the shared identity of where they belong. Furthermore, it is more about keeping the connection alive than the sacredness of graves. Moreover, people need an anchor or chain to lock this connection and pass it through to the next generation. This anchor can be in the form of a graveyard or residential status (ID card), or sometimes gathering with people from the former place.

One of the reasons the people maintain a symbolic or sacred object is because it will determine the sustainability of their genealogy. However, the fact that they have lost this meaningful place has overwhelmed them with grief, sadness, longing, and homesickness. These are common emotional reactions among displaced people. This kind of evidence has reinforced scientists' claim that people-place relationships contain an affective element (Scannell and Gifford, 2010). In the case of the Lapindo survivors, I observed intense emotions such as sadness and grief when the people were talking about their former place. Further consequences of this disruption include depression and physical illnesses. As the illustration about trauma shows, people believe that losing their village can make them unsettled and overwhelmed them with grief.

These psychological processes and responses to disruption depend on the interpretation process of the degree of disruption and the meaning of the place for the people. The acceptance and adaptive response could be expected if people perceived a contribution besides the compatibility of change with the cultural and historical elements of society. Place identity and place dependence influence these interpretative processes as part of cognitive evaluation whether the change could enhance value and meaning of the place (Devine-Wright 2009; Mihaylov and Perkins, 2013). However, the most significant factor of place attachment that has a negative relation with accepting the disruption is place bonding. It means that an individual or community that has strong emotional and affective bonding with the place will display restorative behaviour to protect or preserve their place. (Devine-Wright and Howes, 2010; Vorkinn and Riese, 2001; Mihaylov and Perkins, 2013).

In the case of the Lapindo disaster, change or disruption has been interpreted as negative to place attachment because it is very destructive and forced people to move from their place. Most of the survivors perceive especially the negative impact of this disaster to their culture and history. In fact, it could hurt the ties between people and place. This capability to injure is only possible if this tie is a living being. As Tills (2012) conceptualised a city as *the oeuvre* constituted by its inhabitants through ongoing acts of making places. Fullilove (2013) highlights this *oeuvre* as closely related to the body politic or the system of a specific place. This is a living collective creation that is capable of being injured.

The act of preserving the place cannot be done in the case of the Lapindo disaster. However, there is a tendency to access whatever that left, including memories, dreams, and mud dykes, to maintain this relatedness to the former place. Even though the memories of the former place could evoke negative emotions, they could also trigger positive emotions such as peace of mind or happiness when they have to respond to various things related to the former place. Therefore, some people have embraced the

routine of visiting, talking, or conjuring the memories of the former place to overcome their longing while other people have tried hard to forget or avoid every single thing that would remind them of their former living place, because it could overwhelm them with sadness and make them sick.

When I remember my former place, I remember my house, every inch of it. I also remember my son, because his grave was engulfed by mud [paused and then with teary eyes and trembling voice she continued her story]. So, whenever I miss my home and him, I force myself to visit the dyke even though after that I get ill for several days because it makes me think too much about my son, our situation... My husband often forbids me from going to the dike, but I cannot help myself, I miss my house, I miss my son.

A further investigation shows that one of the aspects that determine the people's responses, whether they embrace or avoid things related to the former place, is their capability to manage their overwhelming emotions. For some people, this emotional arousal is sometimes so unbearable that they avoid things that may remind them of the former place.

As explained above, the people tried to cure their homesickness by accessing or conjuring up the memories of the former place. The memories expressed by the survivors can be categorised as episodic or autobiographic memories that reflect episodes in their life or how they experienced an event in a certain period of time in the former place. The process of remembering a certain event in the past can be intentional such as conjuring a specific memory and it can be unintentional such as it just popped up during a conversation or appeared in their dreams. Not only through remembering the memories, the survivors also made various efforts to maintain closeness with the former place and forge a comradely bond such as making a regular visit to the former place, moving together, or choosing a resettlement location that is as similar and close as possible to the former place.

The last important phenomenon that I observed is the presence of liminal experience in this disruption of place attachment. As already stated repeatedly, most of the survivors experienced living in two worlds as a survivor said in one of the illustrations above: "When I sleep, I feel I'm in Besuki; but when I wake up, I realize I'm actually in Podokaton." This liminal phenomenon shows that this disruption to place attachment is not merely the symptom of a mental illness but reflects the transitional process. The concept of liminality has been used to comprehend "a situation where individuals are between social identity" or a 'betwixt and between' world (Chamberlain and Johnson, 2018. p.4). In forced migration and other studies concerning asylum seeking, liminality or 'limbo' mostly connotes with living in the refugee camp and also has a close link to social exclusion (Hynes, 2011). However, in the Lapindo case, survivors have passed the stage of living in the refugee camp, but are not yet totally accepted by the host community, formally or informally. The term "*wong mbambung*" that has been explained in Chapter 3 reflects this liminality in the sense that they have left the former place but are not yet allowed to fully settle in the new place. Prior studies find that people who experience liminality "will feel they do not fit or do not belong to the new place or community" (Chamberlain and Jhonson, 2018). However, in the case of the Lapindo survivors, besides the social exclusion, there has been a strong tendency for the people to experience liminality due to

their strong attachment to the former place. People still feel attached to the former world while they actually live their routine in the new world.

To capture this psychological dynamic of disruption to place attachment, I turned the qualitative evidence into a scale of disruption of place attachment. Based on the explanation above, the function of emotion, cognition, and behaviour cannot be separated clearly. However, in order to identify the contributing factors in the disruption of place attachment, I have to assign each statement only one aspect or dimension. The first group (statement numbers 1 to 5) represents the meaningful, satisfactory, and emotional attachment between the people and the place and also the identity of the people related to the former place. The place as a stimulus must have a valence in terms of identity, affective, and emotional values such as “*the former living place is meaningful*”. The second group (statement numbers 6 to 12) represents positive and negative emotional arousal when the people have to respond to various things related to the former place such as “*get carried away when remember the former living place*”. The third group (statement numbers 13 to 19) represents cognitive processes that can be intentional or spontaneous in reliving the former place such as to “*suddenly remember the former living place*”. I also include liminal experiences in this group. The fourth group ((statement numbers 20 to 30) is proximity-maintaining behaviours such as “*visit the former living place*” (see appendix 5).

Using principal axis factoring²², the output is four factors represented by 18 items that reflect the factors that could hamper or slow down the adaptation process. However, most of items that reflect actions or behavioural aspects do not have a high correlation with other aspects (the excluded 12 items). The cognitive and emotional values are the ones that play a major role in this kind of maladaptive process of disruption of place attachment while behaviours can be considered as having no high correlation with other aspects. Here are the four factors, i.e. cognitive and emotional processes, avoidance responses, liminal condition, and emotional attachment to the former living place (item should have a loading of at least .4), that relate to disruption to place attachment manifestation in the form of a pattern matrix.

Table 23. Factor analysis of disruption to place attachment

Item	Factor loads			
	Cognitive and emotional processes	Avoidance responses	Liminal condition	Emotional attachment to place
The former living place is meaningful	.702			
Conjure up the former living place	.614			
Indifference when reminded of former living place	-.571			

²²(KMO Measure of sampling adequacy = .857 and Bartlett's test of sphericity $X^2(153) = 1562.640, p = .000$). After that, the data were extracted using principal axis factoring with Kaiser criterion to determine the number of factors (resulted in four factors). Promax rotation technique was adopted because the factors are correlated. Reliability (Cronbach's alpha = .729). Community > .30, eigenvalue > 1, and factor loading > .30.

Item	Factor loads			
	Cognitive and emotional processes	Avoidance responses	Liminal condition	Emotional attachment to place
Longing for the former living place	.523			
Suddenly remember the former living place	.514			
Get peace of mind when relating with things associated with former living place	.500			
Happy to meet people from the former place	.492			
Sad because have to leave the former living place	.408			
Trying to keep in mind various matters relate to the former living place	.400			
Trying to forget memories of the former living place		.591		
Avoid things that will remind of life in the former living place		.587		
Feels like still living or staying in the former living place			.707	
Getting sick when have to think of things associated with the former living place			.431	
Emotionally attached to the former living place				.617

The first factor loads with a statement that expresses a meaning of the place, and also emotion and cognitive processes of remembering and longing for the place. The second factor consists of avoidance responses and an effort to forget or avoid controllable or uncontrollable thoughts of the former place. The third factor is liminal experience and physical illness associated with the former living place, and the last factor is emotional attachment to the former place. The fourth factor consists of only one item, namely “emotionally attached to the former living place” with a loading of .617.

The result of this exploratory analysis shows the relationship between liminal experience and disruption to place attachment. In this sense, liminality occurs when people remain attached mentally to the world they come from, but also consciously refuse to acknowledge anything related to the former place because it is unpleasant and can make them ill. In this light, we can conclude that liminality is caused by internal factors. It occurs when people cannot resolve their positional and emotional attachment to the former place, whether they want to remember or forget about it. This situation will make people stuck in this transitional “in-between” stage.

In summary, it is a painful process to respond to. It is a necessity for the survivors to be close to or to be associated with the former place because the place has become the source of affection and identity. When they lost the place, their identity and wellbeing were threatened. In order to counter this threat, they have to access anything that

represents the place, including memories of the place. These memories and dreams can also represent their collective memory of the place and reflect the relational dimension of space. However, the act of conjuring the place in mind can be accompanied by unpleasant feelings that are sometimes unbearable and have forced them to try to forget or avoid it. This cycle may lead them to endure both mental and physical illness.

B. Standing on a thorn

The strong attachment to the former place may become a factor that inhibits the people's capability to adapt to a new environment. Furthermore, adapting to a new environment becomes a difficult task for the survivors due to social and cultural alienation as well as conflicts and competition with host communities. There is also the stigma of their *nouveau riche* status to address. This status is given by society to Lapindo survivors because of the compensation money they received. Here is one example of how the stigma has become part of their daily life:

They said, "you are the people of Siring, but why did you move here?" Yes, I have to do it. There is a jealousy from the new neighbours: the mud people. When I hold a ceremony [kenduren], they said "why is this party less luxurious? You are rich [sugih], but why is the party less luxurious?" People are gossiping about us. It does not feel good. [Living] in other people's village is hard [di desa umong tuh agel]. Don't dare to take a high-profile role, don't dare to take a low-profile role either. I do not feel at home. A lot of troubles because we are in other people's environment, we are migrants. It was nice living in my own village [enak di desae dewek]. In Siring, we did not have a motorcycle; but still, it is more pleasant to live in my own village. [Living] in other people's village is just like standing on a thorn, standing on tiptoe could not tread the sole, just afraid to be hurt [ancek-ancek pucuk eri, njinjit-njinjit ora iso jleb]

They have to adapt to an unfamiliar environment that is sometimes also unwelcome and hostile. It is not only economic reasons that trigger hostile responses from the host community against the Lapindo survivors but also differences in customs and manners. Drinking habits, for instance, can be different from one community or kampong to another. In one kampong, drinking is a common habit. It is even included in their ritual and tradition. However, in other parts of Sidoarjo, these drinking habits are considered bad. Here is the comment of one of the residents of the host community against the Lapindo survivors who moved to their area:

These people have a drinking habit, and they just spent their compensation money on drinking. I don't like what they do, because, before they came, this place was peaceful. And they just like making a scene and behave as they please.

This judgement may be directed towards individuals, but the blame is often on the "mud people" collectively. Furthermore, the stigma has become the driving force behind the prejudice. The public may dislike the survivors' habits and lifestyle, but they will use this *nouveau riche* stigma to justify their opinion, judgement, and treatment of the survivors. It took away sympathy or empathy for the victims. As a consequence, the Lapindo survivors have to be careful in choosing the settlement and sometimes hide their identity to avoid

discrimination and unfair treatment in their surroundings. One could argue that the antipathy of the local people towards the Lapindo survivors could make them feel bad or feel they did not belong there, and they could lose self-confidence, as reflected in the survivors' specific behaviours such as behaving very carefully and full of consideration. Besides a tendency towards feeling reluctant while they were in the new environment, the reaction from the general public and host community also played a role in shaping these restricted behaviours. Here is an example of how they feel when they have to respond to the new environment:

When I was in Siring I was happy. When I was out of my house, I never locked the door... Now, I just live in a rented house [in Pamotan]. I don't feel good with the neighbours. I don't even dare to ride my motorcycle fast enough because these are new neighbours.

They have become more careful in relating to the people in the new living space and sometimes this caution creates an even greater social distance. In addition to losing a secure place, they do not seem to grasp the protocol on how to behave in this new social space. Some expressions reflect the condition of being disoriented or awry due to the loss of spatial order or control over place and space. They experience confusion and disorientation in addressing the social space. Confusion about how to behave in a certain social space is also illustrated by awkward gestures in the unfamiliar environment as shown in the following example:

We have to adapt to the new village. For example, we'll be mocked if we look up when walking, and will also be mocked if we look down, so we just keep silent... (Misalnya jalannya libat atas nanti diketawain dan kalau libat ke bawah juga bagaimana, jadinya diam saja).

In order to be in harmony with the surroundings, Javanese people should know how to act and behave appropriately to keep the balance. But again, the survivors have no idea on how to behave in this unfamiliar and sometimes 'hostile' environment and they choose to keep silent and stay low profile. As mentioned in Chapter 3, the inability of men and women to access social networks outside their homes has put them in an isolated or 'wedged' position. They have chosen this position because they know it is the safest one.

Restraining behaviours can be the best choice for Javanese people in the initial stages of moving to a new living place. They have to be polite and behave reticently (*sungkan*), and watch their behaviour and speech closely so as to not offend anyone. However, some people continue to restrain themselves from social engagement even though they have been living in one place for more than five years. In this case, the presence of social distance could be related to the tendency of the people to be polite and may also relate to the unfriendly environment that makes them avoid contact.

Using qualitative findings, I generated a measurement scale to capture this phenomenon (table 24). As a result, the highest factor loading (above .80) is the one that highlights how the survivors perceived that new environment as threatening and tried to avoid contact with it. In this threatening situation, the survivors have shown a tendency to be passive, reluctant, and careful.

Table 24. Factor analysis of social distance ²³

Items	Factor loads
	Social distance
The new living place is threatening or suppressing	.832
Feel forced If I have to engage in an activity in the neighbourhood	.829
Avoid meeting with neighbours in the surrounding environment	.814
Cannot interact freely (for example joking) with people in the new environment	.803
Not feel at home living in this new neighbourhood	.712
Restrict or confine myself from gathering with the surrounding people	.702
Social relationships are superficial with people from the surrounding environment	.629
Spend more time inside the house when I am in my new living place	.509
Feel the need to be careful when I am in the new living place	.400

One can assume that from the survivor's perception there are negative characteristics of this new environment, such as threat, that will inhibit the survivor's willingness to interact with other people or get involved in activities. They voluntarily distance themselves from their surroundings because they believe that this contact will hurt them mentally. However, 'standing on tiptoe' in order to avoid contact with the environment is the safest move but is not a very comfortable position to endure in the long run.

C. Wedged and isolated

Social isolation and loneliness seem to be the common responses of most of the survivors when they fail to integrate with a new environment. This loneliness seems to correlate with disruption to place attachment and social distance. Being away from familiar people and having to live in an unfriendly environment may trap and isolate them. Their former social networks are sometimes unreachable due to a physical and social barrier while the new community is not approachable. The lack of social engagement, participation, and a deficit in social contact along with a stigma have socially isolated them. Furthermore, prior studies suggest that this social isolation is mostly associated with and has become a major contributor to loneliness that is also felt by some of the Lapindo survivors (Petersen et al., 2016; De Jong Gierveld and Kamphuis, 1998).

Loneliness can be defined as a subjective unpleasant experience that is related to deficiency, absence, or limitation of an individual's social relations, quantitatively and qualitatively (Victor, 2015; De Jong Gierveld and Kamphuis, 1998). From the cognitive point of view, an individual can experience loneliness when there is a gap between their desires or expectations and their actual levels of social engagement. However, the loss of irreplaceable attachment can also cause loneliness (Victor and Sullivan, 2015; Peplau and Perlman, 1979). In the case of the survivors of the Lapindo mud disaster, both are

²³ (KMO Measure of sampling adequacy = .923 and Bartlett's test of sphericity $X^2(36) = 1709.464, p = .000$). Using exploratory factor analysis this measurement only has one factor with 9 items. Reliability (Cronbach's alpha = .874).

especially true because the change in place and space has created a disruption in the survivors' place attachment and also has reduced significantly their social networks. Furthermore, culturally embedded behaviours such as reticence (*sungkan*) can be considered as a voluntary act in distancing themselves from social relations, further isolating them. Using qualitative findings, I generated the measurement for loneliness²⁴. Loneliness, in the case of the Lapindo survivors, can be observed in several aspects. First, it relates to the unpleasant feeling of being involuntarily withdrawn from the environment. Second, it relates to deficiency in social relations both in quality and quantity. Lastly, it concerns the longing or desire to be in, or to have, a friendly or communal environment.

Table 25. Factor analysis of loneliness

Items	Factor loads		
	Isolation	Abandonment	The absence of close connection
Feel rejected by people in my surroundings	.747		
No longer feel close to anyone	.692		
Many people around but no one is with me	.689		
Unhappy about pulling myself from the surroundings	.655		
Feel wedged or isolated	.647		
How often do you feel estranged from others?	.630		
How often do you feel you have less friendship?	.614		
Feel apart from others	.570		
Unfamiliar with my surroundings	.517		
Feel truly alone	.504		
How often do you feel forsaken?		.766	
Very limited friends and acquaintances		.340	
Feel ignored by my surroundings		.311	
Miss having friendly/communal (<i>guyub</i>) surroundings			.709
Miss the enjoyment of being among the familiar people			.554
Miss being surrounded by people I know well and am close to			.435

From Table 25, we can conclude that there have been three factors that represent this loneliness or isolated feeling, which are isolation, abandonment, and the absence of close connections. Furthermore, it can be said that even though they are in a crowded place, they feel disconnected and cannot become part of the group of people. They feel

²⁴ (KMO Measure of sampling adequacy = .881 and Bartlett's test of sphericity $X^2(120) = 2309.343, p = .000$). After that, the data were extracted using principal axis factoring with Kaiser criterion to determine the number of factors (three factors). Promax rotation technique was adopted because the factors are correlated. Reliability (Cronbach's alpha = .855).

forgotten, rejected, or ignored in their surroundings, and it makes them unhappy and feel truly alone as if they have lost their connection with the outside world.

The relationship between this loneliness and individual characteristics, disruption to place attachment, social distance, and social engagement was evaluated using Pearson correlations (see Table 26). Age and gender have been included here because men and women may have experienced loneliness differently. The ages of the survivors also become a consideration because elderly people usually suffer from loneliness more severely than other age groups. I have also included social engagement as already explained in Chapter 4 because involvement could mean an attempt to build contact and connection with the environment. The result shows that all of the factors in disruption to place attachment, social engagement and gender were significantly correlated with loneliness. However, age and social distance were not correlated with loneliness.

Table 26. Correlations among individual characteristics, disruption to place attachment, social distance, and social engagement with loneliness

Variable	<i>M</i>	<i>SD</i>	Loneliness
Individual characteristics			
Gender	.4816	.50050	.144**
Age	42.4013	11.62181	-.013
Disruption to place attachment (DPA)			
Cognitive and emotional processes	11.2074	5.33355	.127*
Avoidance responses	1.9866	1.63636	.441***
Liminal condition	1.8528	1.53212	.383***
Social distance (SD)			
Social distance (SD)	13.8161	7.29735	-.081
Social engagement (SE)			
Informal interactions	2.2642	1.83563	.190***
Socio-religious involvement	3.1538	1.52267	-.250***
Political and cultural involvement	1.3445	1.62976	.481***

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

The linear regression was used to examine the effect of these significantly correlated independent variables on loneliness (Table 27). I have also included the social distance. Even though it was not significantly correlated, from the qualitative findings in the previous subsection this variable has a strong tendency to create loneliness. A significant regression equation was found ($F(8, 290) = 33.501, p < .000$) with an R^2 of .480 and adjusted R^2 of .466. When the level of loneliness was predicted it was found that avoidance behaviour ($\beta = .279, p < .001$), liminality ($\beta = .194, p < .001$), social distance ($\beta = .207, p < .01$), socio-religious involvement ($\beta = -.278, p < .001$) and political and cultural involvement ($\beta = .436, p < .001$) were significant predictors. The gender, cognitive and emotional process of attachment and informal interaction were not significant predictors.

In the process of adaptation, the people who are still in the transition process experience liminality and avoid contact with anything related to the former place that will likely create loneliness. Furthermore, the act of distancing themselves from the environment could also lead people to loneliness. In terms of social engagement, lower socio-religious involvement correlates with loneliness. In contrast, higher involvement in political and cultural activities relates to the existence of loneliness. How to explain the dynamics of these findings? It could mean that in the Lapindo mud context the political

and cultural activities tend to be exclusive and apply only to certain people who have the same belief, preference, and similarities. These political and cultural activities have been labelled as “mud victims’ movement”. If these kinds of activities should be conducted in the new place, especially in the mixed or blended settlement, or the survivors have to involve themselves in these activities, then there would be a greater chance it would separate them because it tends to be exclusive. Furthermore, these political and cultural activities often pertain to making statements and symbolic representation. On the other hand, socio-religious involvement will be conducive to creating contact and connections with people in the new place and encourage the survivors to be part of the society. This might be possible if these type of activities are more public and allow social relationships to flourish. This interpretation can be true in the context of Indonesia because socio-religious activities belong to the same dimension as the arena for people to strengthen relationships. Further, in socio-religious activities, the existence of groups with permanent members allows for emotional and affective bonding among members. This bonding then encourages or creates a sense of belonging and loyalty to a group, including through active involvement in activities organised by the group. Furthermore, informal interaction has no significant correlation with loneliness because this interaction functions more as an exchange of information or relaxation.

Table 27. Linear regression of individual characteristics, disruption to place attachment, social distance, and social engagement with loneliness

Variable	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Constant	5.550	1.993		2.784	.006
Individual characteristic					
Gender	1.317	.710	.085	1.854	.065
Disruption to place attachment (DPA)					
Emotional attachment	.038	.086	.026	.439	.661
Avoidance behaviour	1.323	.217	.279	6.087	.000
Liminality	.984	.238	.194	4.139	.000
Social distance (SD)	.220	.070	.207	3.131	.002
Social engagement (SE)					
Informal interactions	.100	.259	.024	.385	.700
Socio-religious involvement	-1.418	.229	-.278	-6.197	.000
Political and cultural involvement	2.076	.233	.436	8.919	.000

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

In sum, loneliness may arise when people avoid being mentally attached to their former place at the same time, they try to isolate themselves from any contact and connection with their new surroundings. The survivors have to respond to several issues in order to free themselves from loneliness. First, they have to work on resolving their uprooting trauma or disruption to place attachment in order to undergo the transition processes successfully. Second, they have to respond to their tendency to distance themselves from the environment and try their best to engage in regular social and religious activities in their neighbourhoods. However, the tendency of reluctance (*sungkan*) is not the only factor that has driven the survivors to withdraw themselves from social contact, as stigma

and unjust treatment also play a role. In this light, reconciliation or other social interventions will be needed to address this problem.

In sum, individual characteristics do not contribute to the survivors' loneliness but they relate to troubled social relationships and activities in a resettlement and the survivors' attachment to their former place. The failure to establish connections with the outside world is not only related to a person's social ability and willingness to interact with the outside world but is also linked to the traces of an horrific experience that remains to be solved, which may interfere with the adaptability process.

5.3 A LONG ROAD OF RECONSTRUCTION AND MENTAL RECOVERY PROCESS

There are still many economic, social, and health problems sixteen years after of the Lapindo disaster. Economic life is destroyed because people have lost their jobs and cannot generate income to make ends meet. The social problems can be identified as the loss or change in social relationships within families and extended families. Education and health problems follow economic problems. The inability of parents to provide sufficient money for daily living has jeopardised the continuity of their children's education. In addition, they do not have any savings for health services when they are sick. The survivors often said, *"even if we have a good house; we are still not worth living"*.

A. Materialisation of the suffering

For a while, the big amount of compensation money was able to create the mood of euphoria and optimism in most of the survivors. With this money, they planned significant acts; from building a house to buying new things such as a motorcycle, to holding a ceremony to send prayers to their ancestors. However, they realised the optimism was not justified because they perceived that it was not adequate compensation for their losses and traumas. Besides, the money created a severe conflict within family, extended family, and among neighbours. The conflicts arose within families because they fought over the compensation money. Some of them still do not talk to each other, and the conflict continues. This conflict has become a barrier that separates them even more.

I had the opportunity to observe how the compensation had affected people's relationships with their family and relatives. On June 2015, the government gave a bailout fund to LBI Company so they could complete the delayed compensation. One month before this moment, disputes and conflicts started to erupt when people heard about the bailout. These disputes and conflicts continued to escalate after the compensation was obtained. The first conflict that I witnessed was between an uncle and his nephew. In the afternoon, I was talking with an older couple in their living room. At that time, the 60-year-old husband just showed me the layout of their land and houses, the amount of the compensation he just received and some dispute concerning the distribution of the money. Then we heard the sound of a motorcycle parking in front of the house and a young couple entered the living room with an upset face. The old man looked surprised and a bit confused. But then he approached me and whispered, "This is the person we talked about. I am sorry, but you have to leave our house now." Three days later, I met with one of the old couple's sons. He complained about the attitude of his cousin who visited his father and got angry with him. He said that the quarrel between his father and cousin made his mother re-experience the trauma symptoms she had had three years ago.

This conflict over money affected both a family that seemed harmonious and a family that from the very beginning had the seeds of conflict or incompatibility in their relationships. The compensation-related conflicts within families and relatives were mostly about the determination of schemes and the amount of money distributed to each family. This problem arose because, among other things, in their former villages several families could live together on inherited land. Thus, when these families received the compensation for the land, they had to determine the right amount of money that each family was entitled to. Furthermore, the agreement mechanism through a consensus (*mufakat*) among them with or without a discussion or deliberation (*musyawarah*) was not always effective to solve the conflicts over compensation money. In this case, some of the families could reach an agreement because of the compliance or conformity of members of the families. However, there were also families that had to bring the dispute to court and asked for a professional legal counsel because their traditional way could not resolve the conflict. It can be understood from some cases that this dispute occurred because every party needed the money to survive and start a new life. However, there was once a case where one party did not legally own the land but felt entitled to a share because of the perceived connection to the land and the ancestors (as an offspring or descendant). On this level, it is not only the issue of the clarity of land status and clear documentation of land ownership. Cultural factors such as the interpretation and history of the land also affected the way they addressed the issue of land sales.

Besides its impact on individuals and families, the compensation also has a long-term effect on the community as a whole. The price set by the government for the land and property, five times higher than the market price, had become a new problem the survivors had to face. This high price could be seen as a way to console the people's great sorrow and suffering. The new term '*ganti untung*' (profitable compensation) had replaced the common term '*ganti rugi*' (unprofitable compensation, or just compensation) and became very popular in Sidoarjo society to signify a fortune the survivors made because of the disaster. Over time, this phrase helped shape public opinion and stigmatised the mud victims as wealthy, deep-pocketed people. This status made them the victim of economic exploitation, such as paying higher fees for administrative services, house building, and even donations for village events. One of the survivors from Siring who had fully received his compensation said: "I thought my life would be back to normal after receiving all the money; it has not."

What do the survivors actually want and need? Most of them said that they wanted their life that had been destroyed by the mud to be restored and they needed to be recognised by the government and society. In other words, it is not just about replacing their former land and homes with new ones, but more importantly it relates to restoring their work, social life, and culture. This means many aspects, including psychological, social and spiritual ones, need to be taken into consideration to help improve their condition.

Secondly, the need to be recognised by the government and society is associated with the obscurity of their status as citizens. After losing their ability to earn a living and after losing the social networks that supported their livelihoods, now they have lost access to various forms of government assistance for better education and medical services. It is therefore not merely the issue of an obscure residence status but also the reluctance of the government to provide assistance because of the perception that the survivors are

rich, so they do not need any assistance. The government and the company consider the land and property transactions as the total solution to restoring the survivor's economic and social life. After the completion of the compensation, Lapindo Mud was "a closed case". Almost every local government institution in Sidoarjo that deals with health, social, and education issues claimed that they were done with the Lapindo case because the government had finished paying compensation to all the mud victims.

B. Being submissive and grateful: an old way to cope with disturbances

Without much help from the central government, except for compensation and some administrative backup from the local government, the survivors tried to find a way to restore their lives. As described in Chapter 4, they looked back to their former land and social networks in order to restore their economic condition. In the same way, they reattached to their former place and social networks to restore their spiritual and psychological condition. This allowed them to restore and maintain the networks that provide them with instrumental and emotional support. For example, a woman from Kedungbendo insisted on following religious activities in her former place in Tanggul Angin. One of the reasons was because there were two women whom she respected and was very close to, who would give her encouragement as well as moral and emotional support. It is through these former and familiar social networks that the survivors could share and express their problems and troubles.

Even though the survivors live scattered around Sidoarjo and Java Island, they have developed mechanisms for keeping in touch and taking care of each other. They called it 'watchful' and 'word-of-mouth' (*ketok tular*). It means that they were trying to find out the whereabouts of the other survivors so they could help each other. This kind of network is useful for a variety of reasons, including for disseminating information and helping each other overcome problems. For example, if someone were sick, they would need a letter from the village office stating that they were a poor family and could not afford healthcare treatment. Usually there was a person in the guardian network who was willing to take over this task and help the family to obtain the letter while the family was taking care of the sick person. Sometimes they would collect money to be given to the family.

However, submission and praying became their last resort to cope with the situation and survive the ordeal. When problems persisted despite the all-out efforts they had made, or when things were getting out of hand, submission became a mental errand of choice. Sometimes people combined the effort of resolving their problems with submission to the higher force. Submission can take the form of prayer and total submission to the all-powerful Almighty. There are three characteristics of submission (*pasrah*). First, it pertains to fate (*nasib*), second, it has to be God's will, and lastly there is wisdom out of misfortune. How does this fatalistic approach help them respond to the problems? First, it works as a mediator to the healing process. After being hit very hard by difficult problems, there is room for the people to reflect on their lives and what is important for them:

When my husband died, my world fell apart. I couldn't do anything. But then I sat here (on a bench at the mud dyke). I saw cars and trucks, traffic down there in the distance. People were so busy with their lives. And then I realized, nothing is ours. All belongs to the Almighty (semua milik yang maha kuasa). So, we have to let it go. We have to accept, because there must be wisdom out of this (pasti ada hikmahnya)

The survivors believe that the acceptance of their fate should be total, not only to say it but believe it in their heart, so they can live in peace. A peaceful life can only be attained when people fully accept their suffering as part of life.

Many people, including my neighbours, said that they resigned themselves to fate or God's will (pasrah). They no longer thought about the compensation. But then he got sick. Hey, you cannot say that you resigned yourselves to fate but then in your heart and head you keep thinking about it. It should be total, not only in your mouth but also in your heart, totally, then you can live in peace.

Furthermore, if we try to relate this cultural way of coping with a concept of resilience, the Javanese worldview has an awareness that there are other beings or systems apart from the human world. When humans surrender, it could also mean that they give the power and space to other systems to work their magic. It is just like believing that other systems also have a way to respond to problems at hand. On the human side, this kind of coping can give a benefit of releasing some of the burdens and make them bearable. In other words, it will benefit the emotional and spiritual aspects more than the material ones because it could relieve someone from anxiety and worry and make them feel more serene and peaceful.

Furthermore, it is not mere individual suffering; it is collective suffering. Collectively, they experienced some kind of confusion in dealing with the shifting of place and space. In order to keep a balanced world, a group of people need to perform rituals. However, how would they perform the rituals when their land, shrine, cemetery, and other devices or artefacts needed to perform the rituals had drowned in the mud? This shows that the exposure not only occurred at an individual level but also collectively. It shows that in addition to an individual trauma, it can be considered as a collective trauma because it involved not only individual injuries but also the wounds associated with a communal bond with the ancestral soil.

For the survivors, the former land is irreplaceable in regaining a meaningful life. They had to maintain their bond with the land of origin. The grave visitation became a way for them to be connected with the old world and to make their lives whole and peaceful (again). As shown in Figure 13, some people put a mark in the mud to identify the graves of their ancestors, grandparents, and parents. Other people just made a guess based on whatever mark was left on the surface. These pictures were taken one day before Eid al-Fitr, a common time to visit the graveyard besides several days before the fasting month of Ramadan (*bulan puasa*). On regular days, few people visit the engulfed graveyard because it is far away and the embankment is sometimes slippery, making it dangerous to walk around.

Before praying and scattering flowers on their ancestor's tomb, people usually pray together (*istighosah*). A group of people from the engulfed villages such as Siring, Jatirejo, Renokenongo, and Kedungbendo organise and perform the *istighosah* almost every year before Eid al-Fitr. They will cooperate with embankment motorcycle taxis and a portal association (*paguyuban ojek dan portal tanggung*) to prepare tarps and sound system for this event. One of the events that I followed was the *istighosah* that was attended by the majority of the Siring people at point 21 of the mud embankment (Figure 14). The *istighosah* started

in the afternoon and was led by a respected religious leader. They read Quranic verses and prayed together (*tablil*) for around an hour. The atmosphere of the place was of silence and grief, especially when they prayed together. After the *istighosah*, they visited graves and chatted with their former neighbours.



Figure 13. Praying at an engulfed graveyard one day before Eid al-Fitr 1346 H (16 July 2015)

In the early years of the disaster, *istighosah* was a way for the people to express their concern on the delayed compensation. It became a kind of peaceful rally to put pressure on the company and the government to pay off the compensation. It was also used as a spiritual means in dealing with uncertainty and suffering. At this moment, people tried to resign

themselves to the forces outside of them. Even though it was hard, they tried to surrender to the Almighty and be thankful for whatever they had received in life. The religious leader called the faithful to accept and surrender all their problems to the Almighty.



Figure 14. *Istighosah* at point 21 of the mud embankment before Eid al-Fitr 1346 H (16 July 2015)

In summary, the survivors need the land and people from the same origin to perform ritual as a local way to heal their wounds. This effort may renew the relationships between people and the former place, and among themselves. Furthermore, the people gathered to strengthen each other to be able to endure this suffering using the old way: to resign themselves and be grateful. The old narrative articulates through the people's effort to respect their ancestors by scattering flowers (*tabur bunga*) as well as performing *istighosah* that can serve as a catharsis by repeating a continuous prayer while shedding tears.

C. The reproduction of the space and place: reclaiming their story as a way to be resilient

Spatial practice is lived directly before it is conceptualized; but the speculative primacy of the conceived over the lived causes practice to disappear along with life, and so does very little justice to the 'unconscious' level of lived experience per se. (Levebre, 1991, p.34).

During years of living with misery, the mud people continue to return to the dyke to earn a living, let go of all troubles in their mind, pray for their ancestors, and meet with their neighbours. This can be a daily, weekly, monthly, or yearly practice for them. Even most of the motorcycle taxi drivers claimed that they recognised the mud path to the centre of the mud bursts as well as the road to their homes. Through sixteen years of practice at the mud dyke, the mud people managed to develop their own framing of the Lapindo disaster.

It has become a collective effort to construct a local narrative, the people's story about the Lapindo disaster. As shown in Figure 15, a cement inscription has been made by the Lapindo survivors at the mud dyke to encapsulate their misery. Some of the Lapindo survivors have collected and saved money in order to build the cement inscription in 2013. However, it broke down because it was not strong enough. In the following year, they again collected money to build the second cement inscription and it still stands today.



Monument of Lapindo mud tragedy

*Lapindo mud has buried our village
Lapindo has given us empty promises
The state has been neglectful to
restore our lives
Our voice will never die out
To prevent this nation from forgetting
[this tragedy]
29 May 2014*

Figure 15. Cement inscription of Lapindo mud disaster

Beyond the experience of being uprooted from their land and home, the people tried to interpret and construct their narrative as a “Lapindo people” or “mud people”. This ultimately became the origin of their collective movement. This cement inscription encourages them to bring up the narrative of their experiences. It is a reflection of their experiences with an understanding and reinterpretation of their relationships with other systems or higher systems in society. It also is a feedback on how the system actually works for them.

The survivors' point of view on the contribution of the company and the state to their suffering is obvious from the text inscribed on the cement inscription. The state,

which is supposed to protect its citizens, is neglecting them. Furthermore, the inscription is also intended to pass on the miserable story to the next generation and make the people of Indonesia always remember the Lapindo mud tragedy. This transgenerational and collective effort to acknowledge their collective suffering could be a sign or confirmation that they are trying to fight back against their suffering, and also serves as a reminder to others so that this kind of tragedy will never happen again. It is a way to reclaim their story in order to continue their local narrative and regain a meaningful life, as well as being resistant to their mistreatment in other systems.

Besides the cement inscription, they also commemorate the mud day on May 29. The mud day commemoration is filled with various activities, from a health care discussion and praying together, to a drawing contest for children, as well as other activities for several days before the commemoration.

During the mud day commemoration in 2015, the survivors paraded a Bakrie statue (Figure 16) in convoy from a park near Porong train station to the mud embankment (around 1 kilometre). This procession was accompanied by traditional ensemble music (*gamelan*) performed by the youth of the Alfaz studio from eastern Besuki. When the convoy arrived at the mud embankment, they situated the statue as a replacement for the previous one that had worn out and broken down.

The procession of this unique statue actually represents a shift from an old worldview to a new one. Traditionally, the cause of a disaster is mostly related to mythological beings that come from the macro cosmos (representation of natural elements). However, the Bakrie statue has changed the direction and understanding of the people about the cause of the catastrophe. It is humans, not nature, that caused the catastrophe, or we can say that the problem is in the human system. Thus, we can see that the statue represents an awareness among the survivors of the fact that sacrifice or offering to mythological beings is not the only way to prevent a disaster. Providing feedback to the higher system about their policy and implementation of managing resources is also a way to prevent a disaster, especially one related to the mining industry.

Furthermore, the way in which they claimed their story is by using old means and artefacts but with new ideas and narratives in its content. The cement inscription, processions, and *ogoh-ogoh* are actually the traditional instruments for the ritual of purification or to get rid of bad things from one's village. However, the statue made by the survivors is different from the traditional one. Instead of making the statue of a mythological being, they made the statue of Aburizal Bakrie wearing a yellow shirt. This statue represents several things. First, Aburizal Bakrie is a major shareholder in the Lapindo Brantas Inc. Moreover, he also represents the government because at that time



Figure 16. *Ogoh-ogoh* of Aburizal Bakrie

he served as the Coordinating Minister for People's Welfare. The yellow shirt symbolises Golkar, the political party in which he continues to actively build his political career.

In sum, the survivors have used the inscription and commemoration day to create their new narrative. It is also a way to reclaim their story about the Lapindo disaster. Their experience taught them that a human act could also cause a disaster. To achieve this, the people used the old apparatus to show their resistance against the company's exploitation and abandonment by the state, and this call has become universal and transgenerational. It requires an agency to come up with a new narrative such as "people remain empowered despite negligence by the state." (*rakyat berdaya, meskipun negara alpa*). The survivors were not the sole contributors to the narrative formation, as they needed to work with other actors such as an NGO through discussions to crystallise their experiences into knowledge, performance art, and other commemoration activities. It shows the ability of the people to conduct a collective movement that reflects both political and cultural processes. All these efforts are aimed at ensuring that their voices are heard, and others continue to remember the tragedy and learn from it. This is new knowledge that the future generation and the rest of society should not forget.

Unfortunately, the government and the company as the owners of the mud dyke have a different idea and plan for this place. They conceptualise this place as a study and research centre for geology, fisheries, and agriculture besides the biggest ecotourist destination in Indonesia. The government plans to build a Geopark with complete facilities such as a museum, a research centre on aquaculture, and a green park-based rest area (Figure 17) to expose and capitalise on the biggest mud volcano in the world. The plan to build the Geopark was presented by BPLS in 2013, and in 2017 they started to build an embryo of the Geopark.

In this case, the mud dyke has become a space of contestation between the survivors and the government in reproducing place and space. Both parties are using their knowledge and experience in interpreting and transforming the mud dyke. To the government, technological supremacy becomes the main goal to be achieved and the foundation in developing this area, while to the survivors the relatedness to the place and ill connection among social systems in society has become the main theme they want to convey. To the Porong people, conceptualisation of the space comes out of their daily routine and direct experience with the place, the village that has transformed into a mud dyke, and everything they have been through during the sixteen years of the disaster. On the other side, the Geopark has mostly been conceptualised by technocrats who are not inhabitants of the place and have never had intensive interactions with the place.

5.4 CONCLUSION

This chapter has emphasised the explanation of stress reactions, resources activated for coping, and coping processes on proximal stressors. We find that the stress reaction of the Porong people is similar to the description of stress reactions from previous disaster research such as anxiety, panic, tremendous fear, and flight from dangerous areas (Lee & Blanchard, 2012; Prati et al., 2012). This emotional and behavioural stress reactions were immediate responses that were dominated by physiological activation when they were threatened by the mud flood, the blown pipeline gas, and other events with fast onset characteristics. However, we found more distinctive responses with a local nuance in ensuing coping processes.



Figure 17. The Geopark Sidoarjo

The contextual factors play a significant role in resources activated for coping and its processes that construct different and unique behaviours compared to other regions. These relate to the proximal resources which the Porong people can activate for coping that mostly come from their culture, traditions, beliefs, and rituals. For the Porong people, culture has been activated both at the surface and at a deeper level when they coped with stressors (Resnicow et al., 2000). In this case, they could use the expressive elements of their culture, such as performing a ritual with gamelan music. The activation of deeper cultural aspects is observed when people apply their core cultural beliefs in understanding their experiences such as focus on supernatural causes to explain their experiences and illness (Resnicow et al., 2000; Kloos et al., 2012). This activation of core cultural values and beliefs to understand their experiences could be related to the extreme circumstances of this disaster, which lies beyond the capacity of ordinary meaning-making quite apart

from the repressed affects that make it difficult for people to express their traumatic experiences (Ganteau and Onega, 2014; Goodall and Lee, 2015; Pillen, 2016).

Culture also affects the responses and strategies for battling the stressors. In dealing with long suffering, the Porong people reunited in *Istigosab* as a social and spiritual event to release the pressures, emotionally and spiritually express their trauma, reconnect with trusted social networks, and raise hope and optimism. Thus, culture has become a precious resource for the Porong people in surviving the long-standing suffering, especially when there are no real/actual solutions for their problems. In this case, other potential material and social resources for coping have become distal, difficult to access, or have even turned into new stressors, such as the postponed compensation, inaccessible social assistance, and the perceived hostile host communities. Even though coping strategies are difficult to compare and have their own purpose and benefits for the person battling the stressors (Kloos et al., 2012), we found that coping processes can predict the outcomes. In this case, loneliness as an outcome can be predicted by self-loathing and forms of social participation that can be considered as coping responses. Besides loneliness, trauma also has become an outcome. However, the notion of trauma itself is more about collective and public memory of survival than mere individual concerns.

The intriguing finding in this chapter is an adaptive change that reflects the resilience of the Porong community. Through empowered relationships with other actors, the Porong people emerge as agents who transform their core cultural beliefs in describing the cause of disaster. The transformation of core cultural beliefs is followed by an adjustment of the landscape, such as the Aburizal Bakrie statue replacing the statue of a mythological being, and the creation of the cement inscription of the Lapindo mudflow disaster as an additional act of resistance that they perform during commemoration day. In this commemoration process, the Porong people share their collective memory and transform it into public memory to be contested with other disaster narratives constructed by other groups in society. This commemoration is beneficial as it mitigates the risk of forgetting the deep and painful collective memories. It also promotes the sense of continuity of their communal identity (Goodall and Lee, 2015).

We can conclude that people may gain positive outcomes when they face disaster as shown in community resilience, but they may also fall into distress, dysfunction, and clinical disorders. The culture, traditions, and other proximal and accessible resources become factors that can make a difference in outcomes, besides the personal characteristics and the type of social networks that will be discussed in detail in the next chapters.

CHAPTER 6

TRANSFORMING NETWORKS, TRANSFORMING ACTORS: DEVELOPING NEW WAYS TO RESPOND TO DISTURBANCES

This chapter discusses the agency of Lapindo mud survivors in the form of individual or collective actions, movement, and manoeuvres. The previous chapter demonstrated that context and structure dictate the survivors' behaviour and actions. The context sets a limitation on how households can recover their lives. It was concluded that the survivors from the first and second waves faced a greater challenge than those from the later waves. Furthermore, the type of resettlement had a different impact on their livelihood condition. In the case of resettlement type, the resettlement that the survivors initiated is the one that is most conducive to the repair and improvement of their economic and social relationships, and most likely to allow survivors to continue a meaningful life by celebrating cultural activities. This type of resettlement makes it possible for small-scale businesses such as stalls or shops to preserve some of their former networks with potential customers. This social network and the presence of their relatives in the neighbourhood allows the survivors to get involved in social, religious, and cultural activities that are in line with their objective of continuing with their lives.

This final chapter tries to find out who or what kind of people and organisations can develop and repair economic conditions, relationships, and mental health amid the changes and challenges brought forth by the Lapindo mudflow disaster and how they adapt and. This will make it clear who is able to adapt to these uncertain circumstances. Furthermore, it is important to evaluate how these adaptive responses build on the resilience of the whole system. Based on an ecological perspective, however, adaptation not only deals with adjustment to change but also concerns the capacity of the actors to influence the resilience of a system (Walker et al., 2004; Nelson, 2011). In response to change, adaptation can strengthen or undermine the resilience of a system. Furthermore, the actors' capacity to influence resilience is not merely related to the possession and control of resources but more to 'the ability to make adequate use of the available resources' that is often found in the good quality of linkages and social networks (Nelson, 2011). In this light, one could argue that social relations and networks are important not only to allow people to adapt to changes but also to increase the resilience of a system.

As discussed in Chapter 2, adaptive responses are determined by actors' capabilities such as flexibility, desire, openness to change, and critical thinking as well as their personal qualities and characteristics. At the household level, the availability of both financial and labour force capital would also influence the capabilities of actors to adapt and find a way to improve life. However, in this chapter, I want to argue that social relations and networks are also important in determining actors' adaptive responses to a new environment besides personal characteristics. Through these social relations and

networks, actors are able to transform themselves and find different ways to address various issues that this disaster has raised. Furthermore, the type of social networks will play a role in determining whether responses to changes will contribute positively to the resilience of the system.

Before discussing the adaptation process any further, I will first introduce the phases of collapse and revival of the local system. This introduction will reveal a distinctive feature concerning the Lapindo disaster where the actors have to make their manoeuvres on unstable ground. It also allows us to examine the effort of each actor to transform him or herself in order to survive and successfully adapt to changing circumstances.

6.1 THE BIRTH OF NEW ACTORS: MUDDY ORGANISATIONS

The Lapindo mudflow disaster has destroyed people's livelihood and has taken almost every resource they had such as land, house, farm, and other sources of living. The disaster has not only destroyed their physical and natural capital; their social and cultural capital have also been ruined. In order to regain new resources and restore their life individually and collectively, the survivors had to show their capability to survive using the remaining resources, and they even had to transform themselves into a different kind of organisation. They had to undergo this transformation because the components of the system and the relationships between those components had changed due to disaster. People could tie themselves into a different kind of relationship with local or national actors to gain actual or potential resources, or in order to turn the potential into actual resources. For example, the survivors created groups with their family and relatives to collect bricks from ruined houses or they could join their village folks' networks along the mud dyke to work as motorcycle taxi drivers.

As explained in Chapter 2, the adaptation carried out by the Lapindo survivors concentrate on taking advantage of new opportunities created by change. Efforts to seize such opportunities began in the earlier period of this disaster. This shows that there was a change in power holders when houses started to drown, and people were concerned about their future. At that time, people believed that a recovery scenario was possible. They imagined water and mud would be sucked up, and their houses and villages could be restored. People started to calculate the restoration costs, but the mudflow continued, became widespread, started to engulf their villages, and created chaos. People who could take advantage of this uncertain situation and gain public trust are those with certain characteristics such as communication skills, power, and capital. At that time, three types of leaders emerged: those who have economic capacity or the wealthy, those with bureaucratic backgrounds such as former headman (*lurah*), and the last are spiritual leaders such as *Gus*, *Ustaz* or leaders of Islamic boarding schools (*pesantren*). Furthermore, they usually belong to the upper class and have a certain status in the village. For example, Renokenongo had two influential figures: Haji Sunarto, a respected and wealthy person; and Pitanto, a former village chief.

At this point, the local government had lost its power to manage people and was replaced by these new leaders. The local government was still responsible for administrative affairs but the decision-making process at the grassroots level had been taken over by these elite figures. The people's decision was then implemented by the community committee (*pagnyuban* or *panitia*). The committee consisted of capable people who divided tasks among them. This committee often developed ideas or solutions and

then they would meet and negotiate with the company or the government concerning their ideas, which often ended in the form of a buyout of land and property. Furthermore, this committee often became persons of interest for the Lapindo company who tried to influence these elite figures to gain the people's loyalty and adherence to the scheme offered by the company.

At that time, the biggest survivor group is GKLL (Gabungan Korban Lumpur Lapindo or Lapindo Mudflow Victims Group). The board or committee of GKLL consisted of representatives of the community committees (*paguyuban*) from seven villages affected by mud. However, this group split up when the company changed the scheme of compensation set out by the government, which is 20% cash and 80% instalment, with the 'cash and resettlement' scheme. The GKLL committee accepted this new scheme. However, many of GKLL members did not agree with the committee's decision. There was a rupture and members who disagreed with the decision left GKLL *en masse*. Some people refused to sell their land and only wanted replacements for their buildings. This group is known as PWJ (Paguyuban Warga Jatirejo). There was also a group of people who adhered to the government decree on compensation and rejected the instalment scheme offered by the Lapindo Company. This group called itself Keppres (Kelompok Pendukung Keputusan Presiden, Movement Group to Support Presidential Decree). Another group namely Pagar Rekontrak whose members were mostly from Renokenongo village rejected the housing and living allowance but accepted the sale of the land in the cash and carry scheme. In Kedungbendo, there were also people from the housing complex (Perumtas) who once joined GKLL but after the changes of the scheme, they separated themselves from villager groups. While Perumtas had a limited area, it was densely populated, which made it quite a big group of survivors. The Perumtas group also split up into several groups namely PW Perumtas, Tim 16 (team 16), and Tim Independen (Independent team). Many fractions in the Perumtas group were mostly caused by disagreement and conflict among its leaders.

All the groups mentioned above were groups of survivors from the inside ring or Affected Area Map (PAT) that had to respond to Lapindo Brantas Inc in terms of their compensation or buyout process. There were also several groups developed by the survivors from the outside ring area, which are Kelompok 9 Desa (Group of 9 villages) and Gempur 3D (Gerakan Masyarakat Korban Lumpur, Victims of Mud Movement). At first, this group was Gempur 4D but was later changed into 3D because one village, Mindi, exited the group, leaving it with only Besuki, Penjarakan, and Kedungcangkring. In sum, people were divided into many groups and depended on their own group to fight for their specific demands.

In this phase, opportunity, risk, and constraints became the dominant factors in determining actors' choice, decisions, and manoeuvres. Even though the government as a formal and higher structure had set a certain scheme and procedure for compensation, 20% cash and 80% instalment, the company and the survivors attempted to tamper with this provision and set their own scheme that was in accordance with their goal, mission, and condition. For example, the Lapindo Company had to change the government's scheme into a 'cash and resettlement' scheme because of the economic crisis and financial conditions. In this case, the Lapindo Company came to a decision that was against government policy and regulation (presidential decree) because of a shortage of funds as the result of economic crisis in 2008. The Lapindo Company manoeuvred in order to

avoid a risk of spending their liquid assets to cover the compensation by shifting to the resettlement scheme.

The survivors also made their own choice, decisions, and manoeuvres because they wanted to seize opportunities and avoid risk. For example, PWJ (Paguyuban Warga Jatirejo, Jatirejo village association) was actually driven by religious scholars led by Gus Maksum, the owner of a boarding school Abil Hasan in Jatirejo Village. In addition to the fact that Jatirejo is the people's place of origin and their refusal to sell their land, the selection of a scheme that only sells the building but not the land was also conceived based on Gus Maksum's encounter with Abdurrahman Wahid or Gus Dur, the famous Nahdatul Ulama leader and 4th President of Indonesia. During the meeting, the late Gus Dur advised Gus Maksum against selling the land because he believed the mud area contains oil that will increase the value of the land in the future. The PWJ group was then formed to pursue the opportunity offered by these potential resources besides the mission to preserve the history of the place. In this case, in addition to avoiding the risk of losing their meaningful place, the movement of this group was also motivated by the desire to secure potential resources.

While opportunities, risks, and constraints regarding actual or potential resources will affect their goal or mission, an actor is embedded in a structure with a certain boundary that consists of ties or relationships between actors in order to pursue their goal to gain the resources. Some people continued to use their former/old relationships such as kinship and village relationships in pursuing their goal, while others built new social relations. For example, the Pagar Rekontrak group used their village relationships/membership as the foundation to take action and fight for their counter scheme. On the other hand, the Keppres group did not specifically use a certain village relationship or ties but the boundary of this structure, which is the people or community who agree with the presidential decree concerning the buyout process. In this sense, they used wider ties, not only kinship or village relationships but also the ties or relationships with Lapindo mud survivors.

Later, some of these earlier groups dissolved after most of their members received full compensation. However, there were also groups that could not achieve their mission and became defunct or inactive as their members lost hopes. For example, the Lapindo Company never granted the PWJ group's wishes to keep their land; as a consequence, they had to face uncertainty and most of the members did not receive full compensation. Before being inactive, this group held a weekly meeting, during which they prayed together (*pengajian*) as a means of mutual reinforcement. However, after years of disaster, the group did not dissolve and only became inactive because it was difficult for most of the members to come to the meeting and also because they thought the meeting was useless.

Furthermore, the dissolution of one group was followed by the emergence of a new group. The driving factors for the formation of this latter group was the livelihood condition that did not improve significantly even after the people received full compensation. In this latter form, an identity as a mud victim was intensively used as a membership requirement and became the boundary of the new structure. Some of the reasons behind this trend of new collective movement could be attributed to the collapse of the former village structure, alongside the change in resources and the similarity of livelihood problems. For example, the Ar-Rohma community is a women's organisation whose members are mostly from the villages that have been engulfed in mud (Siring,

Jatirejo, Kedungbendo, and Renokenongo). At first, this association was formed because the women needed to meet regularly to share their stories and tackle household problems. In the process, they started to realise that things other than their household problems might have contributed to their burden and suffering. For example, they were unable to access the community health insurance program for the poor (Jamkesmas; Jaminan Kesehatan Masyarakat) provided by the Indonesian government and also to exercise their other rights as citizens because none of them was registered in the National Social Protection Data. They could not rely on the local government and village apparatus to overcome these problems and had to resolve them by themselves. From 2009 to 2011 they started to collect information about government funds and assistance. They even asked for a meeting with several local government officials such as those of the welfare department, the health department, and the agency for regional development to receive information about citizen-focused government programs. In 2012, they legalised their gathering as a formal organisation in order to capture some opportunities spotted by its members. After its formal establishment, this group focused on the mission to recover Lapindo survivors' life through several strategies, such as setting up a cooperative and collecting money through *arisan* (a kind of rotating savings and credit association) and donation mechanisms to help ease each other's economic burden, access government funds, and assistance for health, social welfare, and education. They also built a small sewing business.



Figure 18. Ar-Rohma community as women study group of victims of Lapindo

In sum, in order to seize opportunities and secure potential and actual resources or avoid risks and constraints, the new ties that were based on a mud victim identity, not only on kinship and village relationships, were developed as the boundary of a new structure. One could argue that the changes caused by the mud have triggered the birth of a new organisation whose boundaries are larger than kinship or village folks, comprising the communities affected by mud. The manoeuvring of actors individually and collectively was triggered by the effort to seize any opportunities that could restore their life. This was the starting point of their movement. In subsequent years, the movement and manoeuvring were also triggered by the development of the actors' knowledge and skills

as well as values and norms as they encountered other actors. This topic will be discussed in the next section.

6.2 NEW TIES BRING NEW KNOWLEDGE, IDEOLOGY AND MEANINGS

The Lapindo disaster has forced the people to adapt to environmental changes. The characteristics of actors such as status, capital, and skills seem to play an important role in testing their ability to adapt and find ways to control, take a lucrative role, open up more opportunities, and gain resources. As shown in the previous section, characteristics of actors such as having communication skills, high social status, and abundant capital may determine their capability in taking a central role in leading and steering the Lapindo survivor groups. Besides the personal characteristics, ties, and relationships are also important in determining whether people with these characteristics are able to produce an action and manoeuvre that benefits individuals and strengthens the resilience of the whole system. This section will apply a social network analysis to describe how the survivors' adaptive response will undermine or strengthen the system.

In the early years of the Lapindo disaster, all of the people used the same pattern of mutual relationships to secure resources, relying on the strength of blood ties and local bonds. Although the density of social networks has changed because people have become scattered, kinship relations are still widely used to get actual resources such as instrumental, emotional, and financial assistance. Besides mutual or reciprocal interaction, the ties are also asymmetrical in nature, especially when it concerns village folks' relationships. The asymmetrical nature of their relationship is not new. The ties of patron-client relationships still persist in some of the mud-affected villages as part of a system of land tenure and agricultural production (Popkin, 1980; Blackwood, 1997). In the time of the Lapindo disaster, people used these ties when they wanted to capture potential resources such as compensation. Common people would usually follow and be loyal to elite figures and trust their patrons to determine their destiny. Furthermore, organisations that used these kinds of ties would usually transform themselves into resettlements in order to preserve their relationships. An example of this is the Pagar Rekontrak group that turned itself into the Renojoy resettlement.

In the former place, the asymmetric relationship between landowner and their labour did not threaten the resilience of the village system because of mutual obligations; there was a mechanism of redistribution that guarantees the fairness of benefits and risks to all members. For example, there is a charity tradition namely *santunan anak yatim* in Eastern Besuki that required elite figures, landowners, and rich people to give a donation to orphans and poor families each year. Furthermore, the density and centrality of social networks may inhibit their members from taking unethical actions that could be harmful to other members and the system. This is because, in the highly interconnected networks, surveillance, reputation, and consensus could prevent people from taking a personal interest that will only benefit themselves and put other people at risk (Brass et al., 1998).

This condition has changed after the Lapindo disaster. The asymmetric relationship has become a threat to the resilience of the system because people have become disconnected from one another. In addition, the density of social networks is decreasing, there are many cliques, most of the people are socially isolated, and the old consensus could not always be applied to a new situation. This condition may prevent fair distribution of benefits and risks to members of a population because the patrons only

concern themselves with the interests of their clique and can act more freely without the control of the rest of the population. For example, 500 households in Renojoyo could lose their land and houses as the result of an illegal land transaction carried out by their community committee (*paguyuban*).

This asymmetrical pattern of relationships with many cliques and disconnected ties has become susceptible to corrupt behaviour and misappropriation of authority as has been proven in some cases in Gempol Sari village, Eastern Besuki village, and Renojoyo settlement, among others. In this case, elite figures such as an urban village head (*lurah*) and a community committee head (*ketua paguyuban*) have acted illegally in order to maximise their personal or clique benefits, and these actions have sent some of them to prison for several years. Not only in the new resettlement; people had also seized every opportunity, legal and illegal, even before they moved to a resettlement. For example, people from the second ring affected area have learned from the first ring that compensation for building or property is higher than for land. This fact has driven some people in Eastern Besuki, especially elite figures with financial advantages, to build new houses on their land or at least expand their house in order to increase the value of their land. In order to make this empty house legitimate for compensation, these figures then asked their village folks, usually those who were poor and did not have a house of their own, to occupy these houses. In return, these poor people would receive a small amount of money as a reward.

Besides a change in the origin of the ties, a structural void is also a factor that gives some actors the chance to satisfy their personal interests from any opportunity this disaster offers. Besides their role as patrons, these elite figures, through a community committee (*paguyuban*), also served as an intermediary between Lapindo and the survivors in scheme negotiations and the buyout process. This position creates a structural void, especially in the negotiations and payment process, because the Lapindo Company mostly interacted with a community committee concerning the documents, schedule, and order of payment. It is not surprising that corruption and other unethical acts such as extortion and fraud were rampant during this period. A patron who also served as an intermediary would forge the documents or charge a service fee whenever the survivors sought his help and assistance in the buyout process. Furthermore, when a group with this pattern of relationships settled down in a resettlement, the patron would usually also take a role as a gatekeeper. For example, in Renojoyo, people could not move in or out from the Renojoyo resettlement without the permission of the head of the community committee. The patron had a higher bargaining position because they created an alliance with a notary, bank, and contractor that enabled them to hold the land and house certificates of Renojoyo residents.

For a group with patron-client ties whose networks could not be attached to a certain place such as a resettlement complex, the elite or community committee members could still use the Lapindo survivors for their benefit especially in the political field. The elite figures who usually held a position as the executive board of the committee (*pengurus paguyuban*) would make an alliance with local or national political figures in order to win the votes of the Lapindo victims. For example, the Kepress group coordinator who promoted some of Sidoarjo regent candidates in their group's rally and other Lapindo survivors' events promised to resolve the survivors' compensation problems – in return they must give their votes to certain candidates.

When the pattern of relationships changes, personal characteristics of the actors such as their morality will play an important role in determining whether they will succumb to unethical behaviours (Butterfield & Skaggs, 2018). The asymmetrical relationship, structural void, and other conditions explained above did not always produce or trigger corrupt behaviours among the actors. While a person with high moral values will more likely resist such temptation, a person with low moral values will be more prone to it. For example, the team leader/coordinator of Ketapang rejected Ketapang village head's suggestion to charge an administrative fee for their service and assistance in villagers' buyout process. However, some of the team leaders from another village collaborated with the local government apparatus to extort money from survivors.

Furthermore, I observed that the actors who interacted intensively with Lapindo Brantas' officials had the ability to seize opportunities, and had good enough financial standing, status, and charisma (mostly villages' community committee members or coordinators), so in later developments these people became business or political entrepreneurs. Such a political entrepreneur is Khoirul Huda, the secretary of GKLL. He is a Jatirejo resident who worked at a research institute and community service and was also an educator (teacher) before the Lapindo disaster. It was he who suggested to the GKLL community committee and its mass to implement the so-called cooperative strategy that emphasises compliance and avoid confrontation with Lapindo Company. This cooperative approach has made him close with Aburizal Bakrie. In 2010, he became a member of the Golkar party, which then was chaired by Aburizal Bakrie. In the same year, Khoirul Huda ran as a candidate for the Sidoarjo regent-deputy position together with Bambang Prasetya Wibowo who at that time was a director at PT Minarak Lapindo Jaya (Bakrie Group). In 2013, Khoirul Huda became a member of the Regional Legislative Council. In his campaign, he promised to resolve compensation problems and used GKLL as one of his voter's pools. However, after becoming a councillor, he refused to respond to the Lapindo mud case. In early 2018, he was sentenced to one year in prison after the court found him guilty of corruption while serving as a member of the Regional Legislative Council.

In terms of business entrepreneurship, survivors could learn to modernise the way they manage the resources by adopting modern corporate management from companies such as Lapindo Brantas Inc. Besides implementing their old way of managing their resources such as using their village folks as labour, most of these elite groups who are inspired by a modern organisational structure started to diversify their business. They also tried to increase their capital by borrowing money from banks to develop new businesses or expand their market. Among the actors who trod this path is Sunarto, the coordinator of Pagar Rekontrak. He has developed contractor and restaurant businesses, and one of his big restaurants is located in front of the Renojoyo resettlement complex. Another actor, a Ketapang coordinator, has developed his small car repair shop into a car rental business.

The difference in the way these actors manage their business in the past and today lies in their effort to maximise their profit through expansion, diversification, and by being more flexible to change. This flexibility is important because they have to adapt to continuous change in their environment. Even though the nature of relationships between these actors and their labour remains hierarchical, their businesses continue to expand. For example, before the disaster, some elite figures in Dukuh Sari had several fishponds

where fish were cultivated until they were ready for sale. However, after the disaster, they changed their business strategy. Propped by a strong capital position, they would search and buy unproductive or abandoned fishponds at a very low price. These fishponds were then renovated or were sometimes used temporarily to raise fish while waiting for the highest purchase offer.

Based on the short-term interactions with the Lapindo Company, some actors may have understood and upgraded their capabilities in seizing business opportunities and managing their assets. However, these people have not obtained this knowledge and skills only through observation as part of social learning, but also through partnerships and cadre building. As explained above, it is obvious that the Lapindo Company has recruited their opponent, Khoiril Huda, to turn him into their cadre. In this case, the nature of relationship between the Lapindo Company and the survivors has changed from opposition to a partnership that is nuanced into clientelism. Besides the partnership between the Lapindo Company and the survivors, there is also another type of partnership that has been established between the survivors and other national and supranational actors such as Uplink (Urban Poor Linkage), Walhi, Urban Poor Consortium (UPC), and other organisations that have an affiliation with national and international communities. Some of these organisations oppose the Lapindo Company but other organisations have taken a relatively neutral position. This relationship could produce not only knowledge and skills but also a different norm as an outcome of the interactions. Examples of such organisations include Ar-Rohma, KLM (Korban Lapindo Menggugat), and Sanggar Alfaz.

In these partnership ties, the role of the new nodes in the survivors' social networks becomes noticeable, not only in being inspirational but also in building and fostering their ideology and meaning of life. There has been a major transformation brought forth by informal education that broadens knowledge and develops the survivors' awareness and critical thinking that later enables them not only to seize opportunities and set up a long-term goal but also to provide feedback to the higher system. For example, some of survivors were involved in a national conference on community-based disaster risk management (Konferensi Nasional Pengurangan Risiko Bencana Berbasis Komunitas or KN-PRBBK) held in Surabaya, the capital of East Java province, 25 – 27 August, 2015 in order to formulate and add disaster risk analysis into Indonesia disaster management law number 24 of 2007.

This partnering and advocacy process could be considered to be the process that develops the actors' capabilities in influencing the resilience of the whole system through their involvement in giving feedback to the central structure, in this case the national government. Furthermore, the actions of these national and international organisations toward the survivors had the benefit of empowering them and enabling them to become social entrepreneurs. We can say that before meeting national/international organisations, these village people could be considered as actors who had limited political and environmental awareness and organisational skills. However, after partnering with these organisations and becoming their cadres, they could develop insight and understanding on how national and regional systems work. They also obtained new knowledge on mining operations and basic human rights such as the right to access public information. It helped broaden their life, enabling them not only to maintain family ties with the local communities but also to champion their interests, question government policies and take an active part in the larger society.

In sum, it is not just personal motives or interests that determined the direction of the movement and the outcome of the adaptation process but also who the actors interacted with. The individual quality may have influenced the capability of the survivors to play an active role in capturing opportunities and mobilising resources. In this case, individual characteristics may enable them to gain capital and the trust of other survivors. However, the type of relationships they were in would also influence the actors' choices, norms, and the end result. At first, almost all the actors showed social motives and fought for the common good of the mud survivors. They were trying to obtain compensation and other social and community problems. But in the process, interactions with other actors and being tied up in different social networks had led them to a different type of manoeuvre. In the case of Khoiril Huda, he eventually saw political opportunities and made his manoeuvre while being involved in intensive negotiations between GKLL and the Lapindo Company. In contrast, it was more likely for the head of the Pagar Rekontrak group to seize business opportunities using his new social networks comprising, among others, notaries who dealt with land and property transactions/legalisation, the banking system as a source of capital, and contractors who developed his housing estate. On the other hand, other actors such as KLM or the Ar-Rohma community may have seized social opportunities as a way to resolve their economic, social, and cultural problems after they interacted deeply with national and international NGOs. The experience in encountering a new node of actors could inspire the survivors to develop their goals, mission, and strategies in gaining actual and potential resources. Furthermore, the norms and values developed through their relationships could change the life direction of the actors and the way they appreciate life. We can see from this Lapindo disaster case which of the relationship types actually strengthened or undermined the resilience of the system. It is obvious that asymmetrical relationships such as between patrons and clients are more corrosive when it takes place in an uprooted condition such as one faced by the survivors because the unethical and predatory acts of the elite could destroy the linkage among actors. On the other hand, the new type of relationship will likely improve the resilience of the structure. How this partnership and collaboration strengthened the resilience of the structure will be discussed further in the next section.

6.3 MAPPING CONNECTIONS & MOVEMENTS: TRANSFORMING SOCIAL NETWORKS

As discussed in the previous section, the primary objective of most of the organisations that were formed at the beginning of the mud disaster was to obtain compensation and only a few of them transformed themselves through social and community learning. In the later phase of the Lapindo disaster, the issues widened from the mere completion of compensation to the establishment of organisations in order to mobilise the resources, recreate the space and place, and empower and advocate for the survivors' rights as citizens. Furthermore, the newly formed organisations reflect the integration or combination of a layer of structures and also a mixed match between traditional and contemporary organisations. Traditional social networks such as patron-client relationships reflect the type of connection in the former places and may generate a top-down mechanism among the actors with imbalanced positions. On the other hand, a contemporary organisation brought by NGOs offered more egalitarian relationships, and

the decisions of a group were usually made after the dialogue, meeting, or negotiation among its members. The nature of the partnership contains a value that supports more egalitarian relations that respect equal rights and opportunities. This partnership also relies heavily on people, so it is often called as a people-driven process.

This section explains the connection and movement of actors in the new platform of Lapindo survivors' social networks. As shown in the Figure 19, the connection and movement involve actors and organisations at three levels of structure: local, regional, and national. It is possible for the survivors to make connections with other actors at these three levels of structure. In this case, a survivor may limit himself/herself to a connection in the sub-structure, such as only playing and using ties that are available in his/her new resettlement, while other survivors likely opt for developing many connections with actors at all levels of structure. The first circle represents the survivors' groups that settled in a certain place such as a village or resettlement, where kinship, sub-villager (neighbourhood), and village ties are predominantly used as main mode of relationships. The villagers would use the ties mostly to meet daily needs and for practical purposes. Membership of this group is also exclusive, which means that people who are not blood relations, do not live in the same village, or do not stay together permanently in the place are usually not allowed to join the group. Basically, such a group is formed on the basis of similarities and similar settlement of its members.

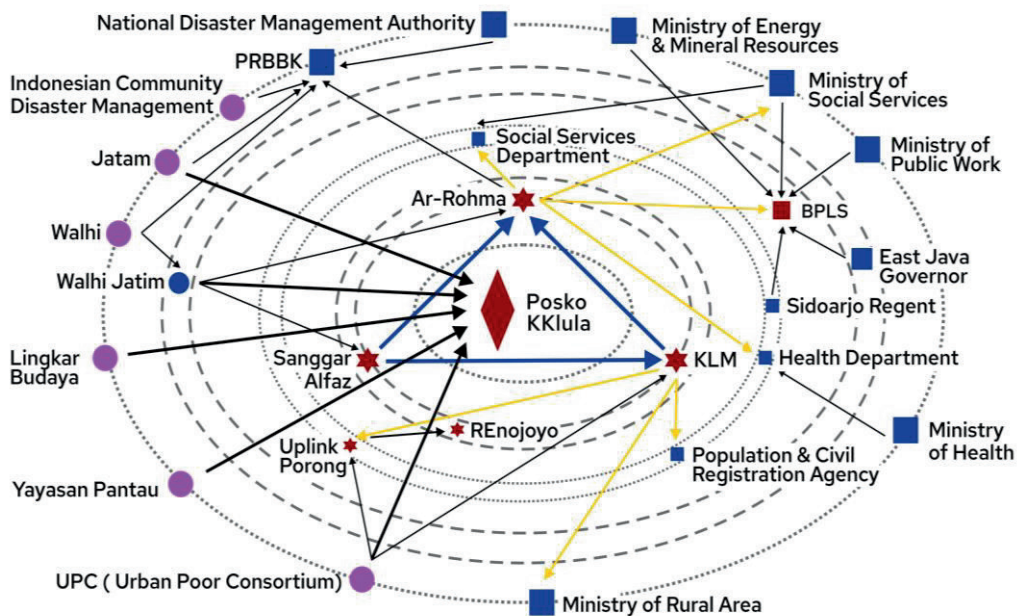


Figure 19. Transforming network map

Furthermore, the star (see Figure 19) represents new Lapindo survivors' groups inside or outside the survivors' resettlement. The example of an organisation inside the survivor's settlement is Sanggar Alfaz in Pangreh, while Ar-Rohma is outside of the settlement. Wherever they are located, the membership of this group is not limited to those who stay in one place but may include other survivors from various locations. Furthermore, this

kind of organisation could also establish partnerships with NGOs or volunteers from other regions. Through these kinds of networks, the survivors developed their knowledge and skills and were able to access resources outside their resettlement. Several local actors and organisations that were still active during the fieldwork are Ar-Rohma, Sanggar Alfaz and KLM (Korban Lapindo Menggugat; Lapindo Victims Suing). The members of the Ar-Rohma group are usually survivors from the first ring while the KLM members are from the second ring affected area such as Glagaharum, Sentul, Gempol Sari, and Kalitengah. Sanggar Alfaz is different, because its members are exclusively from Eastern Besuki. In Figure 19, Pagar Rekontrak is included to represent an earlier form of partnership between mud survivors and NGOs. It began with the presence of Uplink Porong, which accompanied the people, mostly those from Renokenongo, in the Porong New Market refugee camp. Later on, this partnership encouraged some Renokenongo villagers to establish the Pagar Rekontrak group to fight for their compensation scheme in 2007. The role of Uplink Porong in this earlier form of partnership was to develop the survivors' skills in organising demonstrations, contacting regional and national organisations that could assist them, and also in negotiating their terms with the company and the government. Furthermore, Uplink Porong helped the survivors organise themselves and advocate for their needs through programs that could build the people's awareness and critical thinking (Hamdi et al., 2009). At the community level, Uplink helped to improve the management of information so as to strengthen the people's critical awareness and opposition so they would continue fighting and remain united.

Furthermore, as we can see in Figure 19, the national structure may consist of government institutions (represented by blue square) and non-governmental organisations (represented by purple round shapes). These established national organisations often have their own representatives at the regional and local levels, while the NGOs such as Walhi have their own branch at the regional level. Furthermore, relationships between national and regional representatives are often hierarchical in nature with a top-down mechanism. After the Lapindo mud disaster, there has not been much change in the national and regional organisation formation except for the presence of BPLS (Badan Penanggulangan Lumpur Sidoarjo; the government funded Sidoarjo Mudflow Agency) as the national government representative for this Lapindo mud affair at the regional level.

Local actors would move through this Lapindo survivors' social networks to resolve economic, health, social, and cultural challenges. First, they would use their local organisation to generate income. Most of the Lapindo survivor organisations were implementing a similar method to resolve their economic conditions. They established a joint business group that also served as a cooperative with their fellow Lapindo survivors. In this way, they tried to accumulate funds through members' savings, personal donors, and government grants. However, it is not easy to raise funds from members because most of them are poor. Furthermore, personal donors are very rare and hard to fixed. So, to secure the funds, they sought access to institutions or actors at the regional and national levels. KLM and Ar-Rohma actually could raise funds for their cooperative from a government grant. This grant was possible to get as long as they were connected with the important persons who had a certain status in a national government institution. In the Ar-Rohma case, one of its members met with the officials of the Ministry of Social Affairs (Kementerian Sosial) at the mud dyke who were willing to help them secure the grant to

develop the garment and confection business, while KLM received the grant through the assistance of the officials of the Ministry of Villages (Kementrian Pedesaan) for the cultivation of red ginger and freshwater catfish. However, the two organisations faced the same problems that hampered their business growth, namely limited knowledge and skills in marketing and business development. Furthermore, the failure of some of the members to return their loans pushed their cooperative to bankruptcy.

In addition, the local organisations used this social platform to exercise their rights in order to secure government subsidies and assistance in many ways. In an emergency, they would ask local village apparatus to provide them with the letters or documents required to get payment reductions from hospital or school. However, in the long run, they had to respond to regional and national government organisations in order to obtain permanent health, education, and social assistances. Furthermore, these local organisations helped not only their members but also other survivors who needed government assistance. For example, Ar-Rohma offered some of Renojoyo residents to apply for financial assistance, but they refused the offer due to trust issue.

As described above, the capability to open contact and develop a relationship with important persons from the higher structure plays a significant role in the success of accessing grants and subsidies. Another example is Ar-Rohma, which had to arrange some of the meetings with the officials of regional government institutions concerning the assistance. However, these regional institutions could not follow up the survivors' demand due to various reasons, such as that the survivors were not yet registered in the national data and there was a limited budget for regional and local assistance. However, they were able to resolve the problem when one of the members of Ar-Rohma managed to meet with the Social Affairs Minister who was visiting the mud dyke and raised their concerns over the difficulty of obtaining government assistance. The minister, Khofifah Indar Parawangsa, then hooked them up with an official of the regional social affairs office who continuously assisted them in completing the data. One year later, more than six hundred households from various locations and resettlement areas obtained their health and education assistance.

Besides using the new social platform to develop joined businesses and reclaim their access to social protection, the people also used it to help each other in daily chores, rituals, and celebrations. They also helped prepare or buy other members' home industry products such as homemade soap or catering. The relationships developed by members of this local group are *wong pasar* (traditional market traders) relationships that are equally liberal, with actions taken only after a discussion. Furthermore, a change in-group formation often occurred due to the group's internal affairs. For example, in the earlier time, members of Ar-Rohma group were engaged in a conflict over fund allocation that led to a change in the group's membership formation. When Ar-Rohma received its grant for the first time, some of the women members wanted to split the fund evenly among members to help them meet daily needs and repay debts. However, other members preferred to invest the fund in a long-term goal such as building a cooperative or starting a business that suited them. Finally, some of the women members left this organisation because they did not agree with a majority decision to develop a cooperative and a confection business. Besides internal conflicts, the main problem of these new organisations is the economic condition of their members. Most of them were struggling financially. They would sometimes leave the organisation temporarily to make ends meet

for their families. The other problem was the members' lack of education, making them less able to understand the points of discussion and to express their opinions and ideas. For example, some women members of Ar-Rohma were not confident enough to ask the questions they had prepared and rehearsed for the meeting with the officials of the Ministry of Health just because they did not understand the word 'quota' that one of the officials used while explaining the ministry's inability to provide health assistance to the Lapindo survivors.

Furthermore, these local groups could also develop collaboration and coordination among themselves in managing mud survivors' special events such as a commemoration day, workshop, and advocacy. The most recent collaboration between these three organisations was in 2014, when the then-presidential candidate Joko Widodo visited the mud dyke to make a political contract with mud survivors. Even though this event created conflict among the local groups, they continued to work together in the next events such as a paralegal workshop and a hydroponic agricultural workshop. Such collaboration could also be seen among regional and national organisations that usually coordinated and worked together to respond to some overlapping cases. For example, after a meeting in Ciputat, Jakarta in 2008, Walhi, JATAM, Lapis Budaya, UPC, and Yayasan Pantau established NGO collaboration in the form of Posko KKLuLa (Pos Koordinasi Keselamatan Korban Lumpur Lapindo; the Coordination Post for the Safety of Lapindo Mud Victims) with an office in Gedang village, near the mud dyke. Some of the outcomes of this collaboration were the publication of alternative media such as Buletin Harian Kanal (Kanal Daily Bulletin), Lapindo survivors' website, www.korbanlumpur.info, and Radio Komunitas Kanal (Kanal Community Radio). In 2009, this collaboration brought together all parties to commemorate 3 years of Lapindo mud with the theme "*Surat Untuk Bulan*" (A Letter for the Moon). After this event, commemoration day has become a routine for mud survivors. During the fieldwork in 2015, the Posko KKLuLa was inactive because some of the NGOs had left. However, a few of them such as Walhi continued to work at this post and they played a major role in maintaining the post's regular activities such as website, bulletin and commemoration day.

Moreover, local and regional/national organisations have developed some deeper relationships. In this case, Ar-Rohma and Sanggar Alfaz have an affiliation with Walhi Jatim (East Java Walhi) and these three parties have built a triadic alliance while KLM has a strong connection with UPC and Uplink in representing mud survivors who still live around the mud embankment. The relationships between these local organisations with their partners are based on mutuality and strong ties among members. The relationships that connect them together are not only based on organisation goals, its mission, and program. At some point, these partnerships can continue into the deeper social and emotional bonding, with some developing into friendship and family ties. Through this connection, the NGOs continuously encourage survivors to do self-advocacy, social learning, and networking with other organisations and associations that carry out a similar mission. For example, in 2015, Walhi asked Ar-Rohma to be involved in bridging organisation to formulate and bring out the wider issue. With individuals and institutions from other regions in Indonesia, they elaborated some recommendations or lessons learned from local and regional cases as an input for a national policy on mining activities.

In sum, there have been many organisational changes at the local level. Besides the change in the type of connections and their distribution, there is also a new kind of

organisation that emerged after the Lapindo disaster. In the past, the national government would create and establish programs that guaranteed people's welfare. However, the Lapindo disaster has paralysed the top-down coordination and is threatening the welfare of the people. As a consequence, people must take a more active role in revitalising their status, which will guarantee the fulfilment of their rights as citizens. Furthermore, NGOs have played a significant role in activating the grassroots level or enabling the lower class to form opinions, missions and their capability to create a new connection that will benefit the Lapindo survivors' community. These empowered people are able to open up new paths that could connect actors at various levels within the hierarchical structure. They have to connect and work with diverse organisations in order to advocate for their rights. These new platforms do not only the Lapindo survivors with daily and practical needs but also help to raise larger issues. Through hubs and bridging communities, the people are capable of giving opinions and suggestions that are useful for the further development and refinement of national policy. This is a form of guerrilla struggle with many hubs. There is no real geographical area associated with these new organisations. These types of networks could develop when the survivors meet with progressive networks. Through new alliances, each of the small local groups could connect with one another and be able to work together on a particular project and mission. The existence of these hubs is possible when large, national-scale NGOs initiate to liaise or facilitate connectivity among these local small groups. If we look back at how these groups develop and interact, we can conclude that these types of organisations benefit the system and contribute to strengthening its resilience. Even though these groups' performance and achievement are not stable enough, the empowered people are able to create connections and give feedback to other systems at other levels. Further, if we assess the way they are using their funds and resources, it is obvious that they are willing to invest their resources to develop wider and healthier social networks. Through a long process, some of the Lapindo survivors managed to become activists or cadres in NGOs that had raised them, or they could choose to go back to their community as new social entrepreneurs that work in the best interest of the local people. These figures have helped to raise awareness on the importance of education as a means of improving public welfare. They have the ability to voice their opinions on injustice and suffering, have a strong sense of solidarity, and have a long-term vision, with willingness to postpone their short-term plan for a better future. We will further discuss types of actors in the next section.

6.4 PATTERNS OF ADAPTATION: VARIOUS TYPES OF PEOPLE IN NEW SOCIAL NETWORKS

There are several patterns of adaptation among the Lapindo survivors that can be identified. In this case, adaptation patterns are obtained by clustering people based on their efforts to cope and adapt to the changes in their livelihood and place of living. As mentioned in Chapter 4, labour size and wealth index are among of the factors contributing to economic burdens. Further, in Chapter 5, the existence of loneliness could determine how people respond to disruption to place attachment, social distance, and their willingness to engage socially with their new environment. Based on these findings, seven variables are chosen to define the types of adaptation to changes in place and

livelihood. These variables were labour size, wealth index, social distance, two sub-variables of disruption to place attachment which are avoidance, and liminality, and two sub-variables of social engagement which are socio-religious involvement, and political cultural involvement.

These seven factors have been taken into account as the ability or capacity of the people to adapt to the new situation created by the Lapindo mud disaster. This ability is divided into household and individual abilities. Household adaptation can be determined by the capability of household members to seize opportunities using their labour and assets while individual capabilities are influenced by their ability to socially integrate with the new environment through engaging in social activities and overcoming the problems related to disruption to place attachment and social distance. Further, this adaptation effort falls under the circumstances of being trapped and the need to fight it off. Actors who are able to fight are supposed to own certain elements and variables that help them to adapt well to this situation.

Table 28. Adaptation pattern of Lapindo survivors²⁵

Orientation	Trapped	-----			Free	Population means
Adaptation pattern	Trapped	Cautious	Hibernating agent	Social entrepreneur		
Household						
Labour size	1.37 (low)	1.33 (low)	1.59 (high)	1.64 (high)	1.47	
Wealth Index	.105 (medium)	.149 (high)	-.011 (low)	.126 (medium)	-.0035	
Individual						
Disruption to place attachment						
Avoidance behaviour	2.87 (medium)	1.05 (low)	1.59 (low)	2.55 (medium)	1.99	
Liminality	2.31 (medium)	.98 (low)	1.88 (low)	2.41 (medium)	1.96	
Social distance (SD)	16.10 (medium)	23.35 (high)	4.98 (low)	11.02 (medium)	12.1	
Social engagement (SE)						
Socio-religious involvement	2.53 (low)	3.21 (medium)	3.70 (medium)	2.81 (low)	3.3	
Political and cultural involvement	1.34 (low)	.124 (low)	1.48 (low)	2.48 (medium)	1.48	

The first pattern is trapped. This type of adaptation is found in households where labour resources are limited. These households still have issues in dealing with their attachment to the former place and in their ability to adapt to the new environment. These households are trapped in both the old and new worlds; they are not yet ready to let go the past and cannot find a way to connect themselves to the present.

²⁵ We have used hierarchical clustering technique with dendrogram to get the number of relevant clusters and the Ward Method for calculating the similarity between clusters.

The second pattern is cautious. This pattern is found among the survivors who develop their assets more than they develop their labours to seize opportunities. These survivors have moved on and have successfully overcome the issue of disruption to place attachment. However, the distance between the new environment and the survivors remains wide and their involvement in socio-religious activities is done with great caution. This is a cautious model of adaptation that demands that people to be watchful, play safe and avoid taking risks. They just want to keep the status quo in terms of livelihood or social interactions without breaking rules and it is done by avoiding problems, risks and confrontation.

The third pattern is hibernating agent. This type of adaptation is found in struggling households that are dependent on their labours to seize opportunities. These are poor and risky households with little assets. However, these households can adapt to the new environment. They are open to suggestions and relationships, which helps them to survive. They play the roles of peacekeeper, helper, follower, and mediator. They mostly support the good cause, goal, and mission of an organisation.

The last pattern is social entrepreneurial. These are labour-intensive households with enough assets to respond to a wide range of opportunities. The dynamics of these households lead them to political and cultural struggles to achieve their goals and change the system. While their stance may cost them their relationships and the good acceptance of society, it is a cost they are willing to pay in order to accomplish their political and cultural missions. They would use the issue of place attachment as one of their points of departure to negotiate with the larger system. Below are some cases that the actors for each type of model above respond to that will give a more comprehensive picture about how they adapt to the changes caused by the Lapindo mud disaster.

Model 1: Trapped

The suffering woman: Trapped between household problems and unresolved individual problems

Sukinah was born and raised in Jatirejo village. The family and relatives she grew up with were physically, socially and emotionally close. This closeness enabled these big families to help each other to resolve domestic and financial issues as well as emotional and social problems. This strong and close relationship continued until she finished her high school and was married. Her husband is also a resident of Jatirejo village. This married couple then built a house on the same plot of land with her family. After a while, she started a sewing business while her husband worked as a driver. She did not have to wait too long for her business to reach a break-even point. When the Lapindo mud hit her village, she already registered her ownership of land and property. So, it was easy for her to propose compensation to the Lapindo company because her land status was clear. She was also lucky because she was among the first group that received full compensation in cash from the Lapindo company under the cash and carry scheme. Her relatives, who did not receive the compensation due to the unclear status of their land, begged her to lend them some money to survive. She could not refuse, because she believed it was wrong to refuse to lend some money to needy relatives. As a consequence, she could not buy a house and her small family had to move frequently from one

leased house to another, including one in Perumtas where they lived for years until she ran out of money. She then started another sewing business, but it did not run as good as before, because she did not have a marketing network and there were not many buyers in her new area. Meanwhile, her husband could not earn steady income. In a month, he only worked one or two days whereas they have three children who then went to secondary and high schools. To restore her economic condition, she sought a bank loan but failed to secure it because she was regarded as a potentially non-performing customer. She then tried to raise chicken but was forced to sell them off after neighbours complained about the bad smell coming from her chicken farm. Her social life in the new place was limited to attending Quran recitation. She did not feel at home in Perumtas. Besides her routine waiting for customers in her store, which was located inside the house, sometimes she would visit her ancestors' graves at the Jatirejo cemetery that was not affected by the mud. She was very happy because she could meet her former neighbours and also her relatives when she was there. However, it was still difficult for her to visit or look at the mud dyke, which, to her, was a traumatic place that kept reminding her of all the good things she lost. She never wanted to go back there just to remember again and again the suffering she had been through. She said: Too much sadness and desperation because of the mud.

Growing up in a good communal environment makes her believe that her kinship's desire is her personal desire. It is important for her to help family and relatives and also to have a permanent house that is located close to her family and relatives. However, the mud has taken away the best things she ever had, and as other Lapindo survivors she has to respond to many problems and challenges afterwards. She tried hard to survive and even she was willing to spend her time and show great efforts to get some resources and, in several moments, she got some advantages from the situation. However, she tends to employ familiar means, such as replicating the same business in order to adapt to the challenging and complicated situation. In the end, it was not enough to alleviate her burden. Furthermore, her decisions have often led to more complicated problems. Her relationship to the new environment has not developed well while she is now far away from her relatives and village folks. In fact, she could perform better with the backup and support of her well-connected environment. To her, the Lapindo mud disaster has cut her off from her roots, making her open and vulnerable to external threats and leaving her helpless in uncertain circumstances.

Model 2: Cautious

The cautious housewife: keep it stable and safe

Narti was raised in Kedungbendo as the first daughter from her mother's third marriage. She managed to complete her high school in Sidoarjo. Her family was rich enough to rent them a house in Sidoarjo so she could go to a good high school. Her mother was very good at running the family business from a tofu factory in their backyard to a grocery store in the Porong Old Market. As she grew up, Narti was trying to imitate her mother in running a business. She saved some money and started her business by selling cigarettes

in front of her house in Kedung-bendo. Later on, she was confident enough to sell snacks in the afternoon. Everything was running well and one day her sister suggested that she borrow some money from the new village cooperative to expand her business. At that time, she was a bit afraid because she was not used to borrowing money. However, she finally agreed with her sister's idea. With this money, she rented a kiosk in the market for a fruit stall. Not long after they had borrowed the money, the Lapindo mud erupted. The disaster has changed the family's dynamics. It raised chaos and caused disputes among siblings over the compensation money. It was because her mother had many properties in her large land that she deserved a very big compensation of nearly 2 billion rupiahs. In this situation, she could not resolve the family's problems. Sometimes she took side with her sister against her stepbrother's greediness, but she also often did not agree with her sister's action on controlling her mother's money. However, to win the battle, she chose to get a house in KNV, which is the Lapindo company's resettlement, as her share. At that time, she just needed a permanent house and stable environment to continue her family living. Besides, she was familiar with Sidoarjo areas, which made her feel safe. After she settled in her new house, she used her remaining money to open a food stall in front of her house. However, only a few people would buy the food and slowly she went out of business. After that, only her husband who worked at a parking lot provided the family with daily income. In her new neighbourhood, she was very cautious, not to be involved with just anybody. She is still willing to involve in religious activities but not more than that. She selected a few people to be her friends. She even preferred to stay separately from her relatives or stay far away from them because she did not like confrontation and conflict. She actually did not agree her sister worked at the mud dyke. She considered the mud dyke as a disrespectful community with many bad people hanging around, telling vulgar jokes and stories. She believed that it could pollute her sister. Today, Narti has chosen to become a full-time housewife that relies on her husband's income. She has sent her daughter to an Islamic boarding school (*pesantren*) because she believes it is the best way to raise children in this modern world that is full of temptation.

Her desire is limited to keeping her life and that of her family stable, as she needs time and external motivation to be open to new things around her and seize challenging opportunities. Even though she has a good example of entrepreneurship from her mother, she has been very careful and given it much consideration. This calculative behaviour may gain her a permanent house, but it also may halt her agility to capture the opportunities that arise in this situation. To adapt to the changes, she keeps doing similar things and prefers to use the old way to respond to the situation she could not fully understand. However, it does not mean that she has never tried to find a way to survive or restore her economic condition. But her choices have often failed to address the problems and she could only rely on other people's direction and persuasion in order to take a very drastic and different approach.

Model 3: Hibernating agent

The obedient and tenacious follower, enlightened bodge, and a brave orator

Rahman was born into a very poor family that did not have land. In his early life, he really wanted to continue his education, however, his father preferred him to help on the farm. He could not resist and must obey his father's wishes. At the age of nine, he had to work on a farm, and he dedicated himself to a role to support his father and family. He adapted well to the patron-client model in interacting respectfully with the upper class that would protect and take care of his family. Later on, he got married when he was a teenager. Four children—two boys and two girls—were born from their marriage. Despite the good family relationships, they actually struggled to live because they were born poor and did not have any assets except their small bamboo house. Even though they lived on the edge of poverty, they still managed to save some money, and could buy a small plot of land for farming while working as labour on the landlord's land. This couple tried hard to send their children to school as high as they could. However, their first daughter could not continue her higher education because of lack of fund so she worked at a factory. In the early period of the Lapindo mud disaster, they suffered because there were no paddy fields left for them to work on. There was repeated crop failure due to mudflow and many landowners chose not to cultivate their land. Their farm was also not productive for cultivation. During this time, this family just felt there was no hope for them. Even though most of the paddy fields were affected by mud and people lost their jobs, the government did not consider including their village in the Affected Area Map. Later on, some people from Walhi organization came to their village and assisted them. From this encounter, he and other villagers established Sanggar Alfaz for children. The adults found themselves united and gathered to face their suffering. They joined in the protest and also created groups that could help each other such as the women's group, *jimpitan sebat*, to collect money for health insurance purposes. Under this circumstance, he preferred to be a backup for his former Quranic recitation teacher who took a central role in leading the people. Even though he was in a 'second' position, he did not lose his independence in expressing his opinion. He was confident enough to be an orator for his group's protest and other mud survivors' events and rallies. In his community, most of the people from the lower class did not have the courage to express their opinions. He was active in initiating the process of moving together with his village folks to the new place. However, in the process, he was facing the rejection and opposition from people with financial power and the religious elites. This conflict had divided the villagers into three groups. Rahman managed to keep his family and relatives living closely together. He lived side by side with his brother, sister and aunt in the Pangreh resettlement. However, he could not keep his old job as a farmer because he could not find a land or landlord. He continued to switch jobs from a construction to a factory worker. Under such circumstances, he became a protector for his relatives and other poor and oppressed people from the exploitation of rich elites who had built and managed his resettlement. He became critical and would resist the contractor's unfair treatment that deviated from the initial agreement. Through

a partnership with an NGO, he learned a lot about national and international laws. With help from his new social networks, he managed to get scholarship for his son so he could continue his higher education.

Just like lower class household members in a stratified community, he used to be restrained and submissive to his personal desires and dreams. Even though he had a dream to continue his education, but he relented to his father's command to work as a worker on a farm. He played his role as a pariah and trod the same path his father did, which was to serve and be loyal to the upper class and religious landlords in order to maintain his livelihood. However, he could also seize an opportunity as he saved some money and bought a piece of land to improve his life. He was a hard and persistent worker, so were his wife and children who were willing to participate in improving the household economy. Living in poverty did not make them lose their eagerness to improve their lives. Furthermore, the disaster has given him the opportunity to meet other actors that empowered and appreciated his dreams and desires. He was willing to learn, even though it was difficult, he was persistent in his effort to continue to broaden his knowledge and improve his skills for a better community life. He still showed respect and loyalty to the supposedly higher status, but he also did not hesitate to correct or give input if he found their lack of understanding of the problem. However, his lack of experience sometimes made him less agile in negotiating and developing different kinds of relationships with different types of actors at different levels. His oratory skill was often used for sending a message to those in the higher structure. However, in the more dynamic situation he was incapable of immediately identifying and exploiting opportunities. As an agent, he will grow when he is in an environment that empowers him but it remains difficult to emerge as an actor with enough ability and agility to bounce from one setting to another.

Model 4: Social entrepreneur

The fighter from a labor-intensive household: A woman who works as a motorcycle taxi driver

Hatami was born in Siring village as the first child of a poor couple. She had had a great desire to break free from poverty. She was aware she could do it through education. She insisted on continuing her education and worked hard to earn money. After graduating, her family needed her much as a breadwinner. She met her future husband who had a permanent job and a good salary. It was a good opportunity to improve her livelihood. After marriage, they managed to renovate her mother's house, install electricity and pay for her siblings' education. When the mudflow occurred, she had one daughter, and was pregnant with the second daughter. The problem started to arise when her husband suddenly got ill, and it was a late stage cancer. In 2007, her husband passed away and left her no money and two daughters who had to be raised. This became her moment of desperation. She said it was the hardest and darkest moment and she got a severe depression. However, after she took time to reflect, she realized that she was the only hope for her two daughters. So, she just grabbed her high school diploma and went to a factory to apply for a job. After a week there was nothing, while there were still mouths to feed. She decided to go to the mud embankment, asked her village folks for permission to work at the mud dyke. It was a challenging one because she had to learn how

to ride a motorcycle and also learned how to mingle with people. Then she became a motorcycle taxi driver and also an active member of the GKLL. At that time, she had to juggle between fighting for Lapindo survivor's compensation and also feeding her daughters and the rest of family. She would insist on staying at the mud dyke until 10 p.m. to make sure that there was enough food for her family. At home, she had three tin can piggy banks, one for daily needs, one for monthly cost, and one for emergency situation. Then, each time the mud dyke became quieter and no tourists, she would use the time to trace down and visit her neighbours. She found them and it was a shocking moment because her former neighbours were facing similar condition, struggling to meet daily needs, without any fund left for medical and education costs. She found a lot of dropout cases and also sickness such as cancer that led to death. There was a moment when she asked her former neighbours to hold a meeting just to hang out and share a story and burden. This meeting is the embryo of the Ar-Rohma community, which is a women's organization of the Lapindo mud survivors to restore their economic and livelihood condition while fighting for access to social security, health and education funds from the government. At the dyke, she met a lot of actors and networks that later on upgraded her knowledge and sharpened her ideology. She is learning a lot about environmental issues from the best experts in Indonesia through an uplink program, an adult learning program. She also learns about legal systems through paralegal activities. Some of the organizations even offered her to work with them but she rejected it because she just wants to be among her people and fight with them. She even persuaded her daughter to study law. "I want to learn Indonesian laws, but I am too old, so I encourage my daughter to do so, so we will know what has happened with our laws that make people like Bakrie can go away easily with their mistakes."

Hatami is a fighter and a dreamer. Since the very beginning of her life, she has trained herself to be a fighter. She fights against poverty, fights to survive, and fights for her dreams. Sometimes she has to bend the laws. She negotiates, sacrifices, pushes hard, resigns, and retreats to reflect and find the meaning of her life but then she will be ready to fight again. Her desire to live a better life is innate. It has been in her blood since an early age. However, the skills and abilities to 'dodge the bullet' and survive has been built and maintained through her life experience. She can seize opportunities, negotiate, and take advantage of things and people to accomplish her mission and her organisation's goal. She has a culturally embedded attitude that is *pasrah* (surrendering to God's will) that helps her to reflect and establish the meaning of her life such as 'All of these do not belong to us. It is a God's Plan. There should be wisdom behind them'. Her encounter with other actors from local, national, and international organisations helps sharpen her perspective, mission, and goals to create a better life not only for her family but also for other Lapindo survivors. She is learning the national and international idioms and practices of basic human rights to fight for a better life. Furthermore, unlike the other Lapindo survivors who are able to preserve their former networks by moving and living together in the same resettlement complex, she cannot reconnect with her former networks. However, she manages to build hubs to reconnect and preserve her former social networks and also

integrate it with her new nodes such as NGOs and other Lapindo mud survivors' groups. This type of social movement that she initiated was based on her relationships with other people. She has been motivated and moved by the suffering of her fellow villagers who face similar problems as she does. Using her group, she wants to develop a social network that is able to fight and reclaim their rights. She tries to open access and maintain linkages to an upper system in order to access resources and information. The Ar-Rohma organisation can be considered as both the medium and the outcome of the adaptation processes that she has endured these past nine years. Further, her choices, intentions, and actions can be considered conducive to the resilience of the system because she is able to expand and build connections and new social networks among her village folks, Lapindo mud survivors, NGOs, the government, media, and international organisations in order to achieve long-term goals.

6.5 PASRAH DAN/ATAU LAWAN: FIGHTING FOR CIVIL RIGHTS

In this Lapindo mudflow disaster case, the idea of resilience is not primarily a return to the starting point, but it also concerns the ability to develop a way to adapt to environmental conditions that effectively collapsed because the changes exceeded the threshold. For that, an actor should be able to see opportunities, collaborate, or work collectively, has a willingness to learn and update necessary information and be able to use the resources adequately to adapt to changes. With this ability, an actor is expected to be able to modify the local content using new knowledge in order to endure the challenging situations. Furthermore, the actors should not only be able to modify the local components but they should also be able to develop links and relationships with other actors at another level of the system in order to provide feedback and contribution to policy making. With this intention and actions, actors show their capabilities to adapt to changing situations and influence the resilience of the structure.

Reflecting on all chapters, we can see that the problems caused by the Lapindo mudflow disaster are complex because it is not limited to economic and physical matters but also concerns social relationships, as well as cultural and psychological issues. The survivors have to overcome and maintain the stability of their everyday life while processing their transition and creating a narrative that reflects their so-called 'new society'. Moreover, the situation becomes more complex when we evaluate the survivors' adaptive responses using a resilience perspective. In this case, the success of the actors in restoring a meaningful life cannot be the only element that determines the resilience of the structure of their society, as these successful actions to adapt will also affect the interconnections between all associated domains of society. Even though an actor is able to act as an entrepreneur who seizes opportunities, the motive and the distribution of benefits will also be an important element to evaluate their adaptive efforts. As in the case of Lapindo, some of the elite figures are able to see and utilise the opportunities despite the unfair distribution of the benefits that may put other survivors at a disadvantage and destroy linkages among the people. The opportunistic bureaucrats make a manoeuvre that happens to be one of the adaptive responses to accumulate some resources that most of the time benefit only their households and extended families or friends, but not the general public. On the other hand, the social entrepreneurs who lay down new social movements and adaptive responses for the well-being of a group of mud victims could be more resilient in terms of their efforts to maintain connections and offer feedback and fairness

of the distribution of risks and benefits to the entire population. Further, they also invest the available resources to create new connections

CONCLUSION AND DISCUSSION

This research shows the difficult conditions which communities in Porong, East Java must endure due to the Lapindo mudflow disaster that has destroyed their living space. The findings that I have presented suggest that to be resilient in facing adversity requires not only individual strength, abilities, and capacity but also a balanced socio-cultural context. As distal and proximal factors, this socio-cultural context will influence people dynamically in the process of coping and adapting to this kind of adversity. In this case, personal history along with household capacity, neighbouring life, and cultural background constitute multilevel factors that determine the state of resilience in relation to the trauma of individuals and communities. Indeed, resilience is not just a static condition of persons or communities, but it also implies a dynamic connection of all parts that are important for achieving a state of resilience. In this light, resilience involves interconnectedness of the micro, mezzo, and macro levels that are socially constructed in the form of socio-ecological hierarchies. In this socio-ecological perspective, reinforcing resilience then could or should be achieved through both policy changes and/or local struggles that bring to the fore citizens' wellbeing and social justice in a holistic manner. Further, resilience and trauma may be two sides of the same coin that can co-exist over time. A personal and/or collective process of reflecting and making sense of the agonising experiences could result in a new narrative that can be a basis for personal or communal struggles and resilience while trauma still can subsist since people are at risk of losing their community ties as well as the ties to their past. To put these findings in a wider context is to broaden the meaning of technological disaster; is not a one-time event, but can be seen as a protracted crisis, which places the community in tension between transforming itself or falling into a state of powerlessness. The detailed explanation of these findings will be described under the following four themes, that is coping and cultural adaptability, the resilience of society, trauma and other socially induced mental illnesses, and technological disaster as a long-term crisis.

1. COPING AND CULTURAL ADAPTABILITY

Lapindo has created an enormous challenge for Porong people to respond to. While this event may be explained within an ecological and contextual framework (Kloos et al., 2012, 2021), many factors have contributed to creating a stressful situation that people have to cope with. It is a continuum of distal and proximal, or contextual and personal factors that have both a direct and indirect influence on people's lives. The distal factor is represented by the 2008 monetary crisis that affected Lapindo Company's financial performance, which prompted it to halt compensation payments and prolong people's suffering. It is also environmental degradation and social fragmentation that have affected individuals and families in multiple dimensions—economically, socially, and health-wise. On the other hand, the proximal factors can be personal, family, and community problems, the trauma, chronic physical and psychological illnesses, prolonged unemployment, and family and neighbourhood conflicts over resources. The change in relationships among people and to their land also contribute to stress, especially because the land has a special meaning for them and is part of their cosmological universe.

In the case of Porong people, they have distal and proximal factors that also protect them from harmful events such as a sense of community, social capital, family support, and other resources. However, the mud has destroyed this protection system at personal, family, and community levels and has increased their levels of stress. Individuals, households, and communities have performed some form of coping to relieve significant stress levels in order to survive and regain their wellbeing and happiness while reconnecting with their world. However, they have to face alienation and stigmatisation personally and communally at the same time. They also have to trade off long-invested resources for daily survival. In the case of Porong people, coping has become not only an individual effort but also a familial and communal effort. In terms of household coping and adaptation, we found that a small, steady, and labour-intensive household has the highest chance of economic survival. However, labour size is more significant in an uncertain environment than accumulated resources. This might imply that in unstable conditions, a group of labour forces with varied abilities, skills, and characteristics will increase the ability of the household to take advantage of opportunities or even widen the range of opportunities. Besides a stock of heterogeneous labour forces, fixed assets better predict economic burdens than liquid assets such as income. These fixed assets could also be productive assets to seize additional opportunities. From this study, we can conclude that a household that can stand the chance to survive during the Lapindo crisis is a household that is ready to seize new opportunities characterized by a large family consisting of a higher number of productive ages with diverse abilities and households that have productive, fixed assets that can be utilized for earning a living.

Furthermore, neighbourhood processes and social regularities are important for Porong people in coping, adapting, and successfully anticipating the challenge brought by the disaster. As a corporate community with communal interests, most Porong communities developed social activities and events, including informal neighbouring (*cangrukan*) and other formal social activities such as associations in the community. These neighbouring processes have different functions in communities and give support to a range of households and individuals. This was shown in the research finding that relationships in the form of social capital could help each household in dealing with economic and social difficulties through instrumental, financial, and social support. In terms of neighbouring, all migration waves, and all different communities such as Renokenongo or Jatirejo faced similar problems in carrying out social regularities in new places. Even the third and fourth migration waves who moved together with their neighbours still had to adapt to host communities in terms of sharing public roles and facilities. The survivors from the first and second waves understood the importance of neighbouring and in this matter, they utilized original landscapes such as the mud dyke and cemeteries as a meeting point to maintain informal neighbouring with people from the former place while also benefiting from disaster tourism. In this light, disaster tourism can produce narratives that relate to disaster recovery and community resilience (Tucker et al., 2017; Liu-Lastres et al., 2020) that the Porong people have developed in commemoration as a new ritual in the tourism site.

Furthermore, this disaster has taken almost everything and has placed the people in the critical "breathing in the mud" condition. However, this disaster has also opened people's eyes to unjust treatment. Using their traditional cultural practices and remaining communal energy, they redefine meaning and reinterpret their situation. This critical

awareness fuelled by local spirits has become the foundation for a transformative change in framing power relations between actors and social structures. Along with the effort to find a new way to adapt to the challenging situation, some people have grown to become an agent of change that is expected to transform the social structure that has marginalised the people and treated them unjustly. In this light, ecological coping concerns not only an individual effort to cope with a stressful situation, but it is also related to a shift in people's perception of the disaster: it is a human error and failure to contain the risk of oil and gas mining. It has also raised critical awareness that people suffer not only because of individual problems but also due to unequal and even oppressive relationships. In this light, a disaster may become part of a social and cultural change that prompts people to be critical and reflect on their old way of life, as well as encouraging people to create social and political movements for a better life (Alexander et al., 2004).

Moreover, a cultural approach to dealing with misfortune and disaster is beneficial for people, especially if they are able to employ it at the right time and right way and for the right reason. In this respect, the power of surrendering is not always negative to the adapting effort as it can give people room for personal reflection and group reflection. This helps people developing a new meaning and mission in their life. They are struggling to find meaning and produce a counter-narrative that is different from the mainstream or authoritative narrative and is even different from the traditional framework of disaster or calamity. They have come to an understanding that the disaster is human-made, and that the government has neglected their well-being. In this kind of disaster where its meaning and the question of who is to blame are hotly contested, the community managed to develop a counter-narrative against many conflicting narratives. It is a significant effort to regain control over their life and a foundation to establish new trajectories as a community.

Lastly, our findings indicate that social networks play an important role in helping people to cope and adapt to the changes brought about by a disaster. In the Lapindo mudflow case, we find predatory and empowering social networks as the contributing factors, reflecting the exchange between individuals and their context. These predatory social networks highlight the role of elites in using their power and relationships to gain personal benefits while the empowering social networks contribute to developing people's knowledge and skills that enable them to access resources that could be beneficial for the marginalised group of people. The latter social networks could benefit the larger structure, in this case the central and regional governments, because locals could provide feedback on how to make their plan work at the local level and it may also encourage the development of distributed networks that are seen as the best type of networks to respond to the disruption compared to centralised and hierarchical networks.

2. RESILIENCE OF SOCIETY: GRASSROOTS TRANSFORMATION OR POLICY CHANGES?

The Lapindo mudflow disaster is not an event that is socially, politically, and historically isolated from Indonesian society. It is rooted in the way society develops the economy in a geospatial context. As stated by Button and Schuller (2016), this is not only a nation-state affair but is also interconnected with the history and development of the global economy, especially in extraction and mining industries. In this regard, disaster becomes

inseparable from the resilience of society because disaster has become part of everyday life and a product of our contemporary way of life. It is growing and interconnecting in our socio-political structure and system. This may make us wonder as to how to best address the 21st-century challenge; whether it is related to the ability of the central government to create sophisticated solutions or whether it depends on local experiments at the grassroots level.

In terms of resilience, this study found that resilience can be seen as a dynamic relationship between various ecological levels, from personal, family, neighbourhood, community, and region to the nation-state. This dynamic relationship between ecological levels can be seen in resettlement processes. Settlements initiated by companies, are very likely to carry a construct and content as mandated through the structure of a global market economy, and demand Porong communities to adapt to it while settlements which are primarily initiated by communities contain distinctions and considerations that highlight social, and emotional closeness that also put forward local needs. From this finding, we can conclude that relocation is a process with high stakes that cause disruption of social networks, local economies, and lives (Balachandran et al., 2022). The relocation process must therefore be done thoroughly and through a collaboration of all stakeholders in assessing the risk including the potential consequences of relocation for households and the entire community while prioritising relationships to the place. In the case of the Lapindo mudflow disaster, there is an absence of a policy to facilitate this community-based relocation which may be negative to the policy context around disaster and migration.

In Indonesia nowadays, local communities are keen to develop solidarity to address the mining industry's problems across the country. Several local communities in Java such as the Tumpang Pitu community in Banyuwangi, East Java, have met and worked together with Lapindo mudflow survivors and have been critical of the mining operations in their area and are against gold mining extraction in their mountain. It is the second largest gold mining company in Indonesia after Freeport. The Lumajang people in East Java are also against sand mining on their coast, while the Samin people in Rembang, Central Java, have organised a social movement against cement producers who want to acquire their land for industrial purposes. Conflict, criminalisation, and protest have become part of local communities' daily life. They defend water springs, land for farming, and other local resources that are vital for their livelihood and meaningful life. At the middle and upper level, NGOs such as Jatam and Walhi, other scientists, and Komnas (national committee for human rights) are working together to revise environmental laws and regulations, for example to legally punish companies for ecological and environmental destruction such as in the case of Lapindo mudflow and Kalimantan Forest fires.

There is more tension and contestation in the social structure of Indonesian society: the upper levels of society are trying hard to implement their plan concerning development projects that are supposed to enhance the wellbeing of society. However, local levels of society try to communicate their suffering and concerns about the impacts of the projects on their land and livelihood. In the Lapindo case, the local communities are still in a healing and recovering process physically, socially, and mentally. On the one hand, they cannot go back to their old world, which highlights the role of social capital as part of their livelihood. Now, as part of a regulated market, their lives have become more fragile in light of new exposures. However, as communities, they manage to reframe the

disaster and give new meaning to their lives that may inspire other local communities in Indonesia who are facing similar problems. They argue that it is time to be more reflexive and critical of our way of life. From what I have learned from the Lapindo mudflow disaster, people can adapt creatively but it does not mean that we should take technological disaster, which has inflicted great suffering on the people, lightly. Besides, it is possible to develop and maintain a resilient ecological system as long as we enhance the capability of the agents to make changes through mutually empowering partnerships. Lastly, as an individual and as a collective group, we must never forget our history and collective memories when reflecting upon our choices. There needs to be an alternative to balance the dominant way of life and to allow for local and subsystem experimentation against national or global scenarios in order to retain and sustain the resilience of local structures and systems.

3. TRAUMA AND OTHER SOCIALLY INDUCED MENTAL ILLNESSES

This study underscores the impact of a disaster on generating trauma and other mental illnesses. The findings of this study in terms of cause, development, and the way Porong people expressed their trauma and mental illnesses are different from the mainstream construction of mental illnesses and trauma in the discipline of psychology, which are predominantly guided by the Diagnostic and Statistical Manual 5 and known as posttraumatic stress disorder. In the Lapindo mudflow disaster, mental illness and trauma are not merely a dysfunction in individuals, but they are a consequence of social determinants of mental health problems (Goodall and Lee, 2015; Purser, 2019). From a local perspective on mental illness, it is obvious that the people suffered both acute and chronic mental illnesses due to the short-term and long-term patterns of social disruption related to the Lapindo mud disaster. In this light, social factors such as poverty have become the context of suffering that should be considered as a cause when identifying and classifying distress and other mental health problems.

In terms of development, mental illnesses emerged because of shock, fear, threats, worries about the wellbeing of families, and the loss of something meaningful. In this case, the sense of suffering resulted from complex cognitive, affective, and emotional processes that impact individual experiences, the use of the local context as a framework, the local norms and values as a way of giving meaning to the world around them and in the way that local people arrange their lives. With this comprehension, losing their homeland and meaningful social relationships presented a pathway for people to develop psychological problems. In this manner, the frame of reference applied by the local people was one of many elements that contributed to the development of psychological problems.

In terms of manifestations of mental illness, inseparable and entangled physical and psychological symptoms tend to be observed in Acehnese and Poso people who are affected by 'violence' caused by social and communal conflicts besides the narrative of 'trauma' to express their suffering and mental health problems (Tol et al., 2010; Smith, 2018). From the cause, development, and expression of mental illness, it can be suggested that both immediate and long-term circumstances in the environmental and cultural context may differentiate the way people perceive and cope with the situation and their associated mental health problems.

Trauma as a special subject in this study has two main aspects that differentiate the findings: the scope of the traumatic event and the way people express their traumas. For Porong people, the societal factor has become a major contributor to developing a traumatic condition. Despite the debate and controversy regarding the DSM-5 definition of trauma that requires “actual or threatened death, serious injury, or sexual violence” [10] (p. 271)²⁶, continued exposures to both minor and major adverse events that Porong people experienced repeatedly over time can likewise lead to trauma.

Furthermore, the expression of this mental condition is not always in line with the four clusters of symptoms specified in DSM 5. The local perspective, the pattern of relationships among Porong people and their land, community, ancestors, and other cultural factors have played an important role in defining, establishing, and explaining their psychological experiences and conditions. For the local people, the constant effort to process and comprehend their experiences of being uprooted from their ancestral land, being isolated, being deprived of social capital resources, and other turbulence that comes up in their long miserable journey was often a source of trauma. In addition, local people often use metaphors, legends, and folklore as a way to express their psychological conditions that may not easily be understood and recounted in a short period of time. The shock, physical treatment of the mud, and forced displacement may cause suffering and undermine mental and physical health. However, the socio-economic condition such as severe economic problems, social conflicts, stigmatisation, and decay, as well as being separated from social networks, can prolong psychological distress and hamper the recovery process from mental and physical illness. All these stressful events in the lives of Porong people qualify as a source of trauma.

The trauma expressed by the Lapindo survivors serves as a narrative of the misery Porong people suffer in relation to the impact of the Lapindo mudflow disaster. This situation is in line with what Smith (2018) found among Acehnese survivors who actively use the term trauma to reflect their own and others’ experiences of suffering and to process their recovery. In this light, the trauma may contain various elements that reflect reactions to various shocking events that are difficult to understand, and do not make sense while no solution can be found to the problems. The trauma also reflects the condition of the elimination of people’s choice and ability to be able to carry out their daily lives in accordance with their traditions in a specific living space arranged to fulfil their needs and desires. Trauma is also a gripping memory associated with various events that are not only life threatening but also threaten the integrity and dignity of one's life as a human being. Trauma is associated with the irreplaceable loss of something good and beautiful, such as harmonious relationships among humans and with their environment.

The Lapindo mudflow disaster has inflicted individual, collective, and cosmological traumas on the people. It is true that as a horrific event, the Lapindo mud disaster can make people suffer from a post-traumatic stress disorder due to the death-threatening mudflow. However, the long-term litigation, delayed compensation, and social conflicts have also turned this disaster into a technological disaster that causes a collective trauma and destroys the social fabric of communities (Erikson, 1997). Beyond these two kinds of

²⁶ American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*, 5th edition. Arlington: American Psychiatric Association, 2013.

traumatic experiences, the communities also have to suffer what I would call a cosmological trauma where forced displacement and the loss of their place of origin have severed their ties with nature, the local environment, and the non-human world, thus unsettling the foundation of their socio-cultural identities. This unsettling condition is encapsulated in a liminal, somatosensory, and subconscious form of unrest due to the psychic and spiritual wounds that hamper or block any attempt to redevelop a harmonious relationship with the environment, including the natural environment, that could put their mind at rest (*adem, ayem, tentram*). The concept of cosmological trauma has been defined by Durrant and Topper (2020, p. 187) as “the rupture in relational networks produced by colonization ...the cosmological damage wreaked by colonial modernity, which implicates not only humans, but entire systems of relations amidst the cosmos.” In this light, modernisation has invaded and colonised the local and traditional world that is believed to be in harmonious relations. In the broader definition, Durrant and Topper (2020, p. 192) state that cosmological trauma may “...also be termed ancestral trauma, denoting both a breach in the relation between the present and the past, the living and the dead, and a rupture of the mechanisms by which a culture inherits itself.”

The challenge that arises from this type of disaster can be considered deep and complicated. This disaster certainly has the power to be corrosive. Not only is it capable of destroying social tissue and collective ties, it also generates a rift in human-ecological relationships and creates a rupture in the survivors’ spiritual world. It took people out of their rooted places, put them in a socially isolated place that impeded the communities’ recovery and prevented them from revitalising their bond that is needed by these traditional communities who rely heavily on social relations. For Porong people, a trauma is not only suffering, but also entails a struggle.

Against the background of this explanation, the trauma as represented in the DSM framework could not be used to capture the trauma caused by the Lapindo mudflow disaster. Applying this framework could risk privatising the trauma while the main situation to be addressed involves social and cosmological ruptures that are characteristic of postcolonial modernity (Goodall and Lee, 2015; Durrant and Topper, 2020). The insight of this finding can be used to formulate an intervention beyond personalised treatment that puts too much burden on the coping mechanisms of individuals “whose bonds of social and collective support have already been weakened” (Purser, 2019, p. 413). While treatment and support programmes are still needed to enhance the ability of individuals and families to cope with problems (Kloos et al., 2012), it is also important to acknowledge an effort made by the Porong people to register this traumatic event with a wider public through the tradition of commemoration, narrative creation, and building commemorative sites. It is a serious effort to prevent the risk of forgetting this horrible event. It can also be used to promote a sense of continuity in communal identity through a shared past and to raise critical collective awareness as opposed to individualised treatment which is clearly inadequate to cure the size of suffering caused by social factors or that inevitably follow the expansion of extractive capitalism (Goodall and Lee, 2015; Purser, 2019; Durrant and Topper, 2020). This trauma is also the seed of intergenerational trauma memories, while at the same time it is the basis for resilience as stated by Smith about this paradox (2018, p 26) concerning Acehese survivors who suffered prolonged social conflict that their history of violence was a cause of intergenerational trauma but

also a powerful basis for intergenerational resilience through their strong identity they share as survivors of a long history of conflict.

4. TECHNOLOGICAL DISASTER AS A LONG-TERM CRISIS

We can conclude that the Lapindo mudflow disaster cannot only be explained by using a classical definition of disaster that highlights the existence of a single abnormal event that disrupts normal life and has negative impacts on a person or community (Fritz, 1961). The Lapindo mudflow disaster did not only interrupt people's activities at a certain time, but it also made them struggle to respond to the degrading environment and corrosiveness of their communities. Furthermore, the disruptions were more massive and persistent, and evolved into both physical and social disturbances that forced people to transform themselves in order to survive. As shown by prior research, degrading environment and corrosiveness could ecologically and socially trap people into living in a poor-quality environment and prolong the effect of disaster (Gill and Picou, 1998; Picou, Marshall and Gill, 2004; Boonstra and Hanh, 2014; Boonstra and Hanh, 2014; Mayer et al., 2015).

Furthermore, we could not restrict our explanation of the Lapindo mudflow disaster merely as an event that disrupted the life of individuals and the community. Based on the findings of this study, we must understand that disaster is also a process and mechanism that puts a certain group of people in a hazardous situation for a protracted period of time. In this light, the socio-political and historical situation, including developments through the application of technology to exploit and extract resources such as in the mining industry, may trigger accidents that lead to disaster. One could argue that the choice of a society in managing its existence may diminish or increase the amount of risk they may be dealing with. Furthermore, this choice bears risks that should be contained so that it will not turn into an emergency situation. Moreover, these trade-offs and risks must be borne by a certain population that in this case are traditional communities who rely on local social networks and kin relationships in securing and protecting their well-being. These people, as a subaltern group, do not only sacrifice their historical and meaningful land, houses, and villages, but they also had to give up their livelihoods and to endure a 'new' normal life that in reality is still full of risks and other types of vulnerability. It is ironic and may backfire because the application of technology to exploit natural resources is justified by alleged improvements to the welfare of Indonesian people.

Furthermore, social processes played an important role in causing this disaster. In addition to the company's negligence, a lack of control by the central and regional governments over mining and mineral exploration activities, the poor implementation of the zoning area plan and other types of disempowerment and structural disadvantages that deprived local people of equal power to determine the sort of development that they and their region need. Not only did the disaster send waves of shock to the Porong people's normal life, the delay in recovery processes and negligence in rehabilitating people's physical and social environment also prolonged its effects and put them at risk, physically and socially. They had to live in an environment where the land, water, and air were polluted and dangerous for their health. Furthermore, it was hard to contain risks and contamination that spread through water and air. Socially, they have been fragmented and isolated as a consequence of a partial solution that moreover highlights materialisation over meaningful relationships.

This Lapindo mudflow case enables us to broaden the definition of disaster that is not only a one-time shock caused by an extraordinary event but also contains a slow and continuous emergency because of prolonged consequences of the catastrophe that is capable of degrading the economic, social, and ecological status of a region. The debate and contestation of the cause of the Lapindo mudflow disaster reflects the processes of interpretation and framing that may prolong or hasten the recovery of survivors (Barrios, 2017). Furthermore, the insight into the human role in this disaster has brought us to an understanding that natural disasters also take place within a social and political arena. This Porong case reflects a situation of the world today concerning human-induced rapid environmental change. Industrial and technological disasters such as Bhopal, Chernobyl, and the Exxon Valdez oil spill that occurred in recent decades have also shown the limitation of humans in resolving the consequences of malfunctioning technologies (Broughton, 2005; Bromet et al., 2011; Picou et al., 1992).

Against this background, we not only have to initiate evaluative and corrective actions but also raise awareness that this is a real condition that will likely occur more frequently in the future. Preparation for such events is only possible if more people are aware of the risks of the development of modern lifestyles that we choose and the imperfect human ability to control or contain all the risks that may arise from the life choices of society. With this awareness, we can only hope that we can be more open to different and alternative ways of life, including a better awareness that cooperation and collaboration among disciplines is increasingly necessary because we are not confronted with simple phenomena but complex phenomena that are not easy to be immediately understood, predicted, and controlled.

Appendix 1 and 2 corresponding to Chapter 3

Appendix 1. The reasons for staying in the contaminated area

Reasons	Responses		Percent of Cases (%)
	<i>n</i>	%	
No other place to live	69	42.3	50.4
Did not get compensation	45	27.6	32.8
More feeling at home	18	11.0	13.1
Have doubt about moving	7	4.3	5.1
Other	24	14.7	17.5
Total	163	100	119

Appendix 2. Resettlement profile

Type	Resettlement	Location	Origin	%	Total	Male	Female	Occupation
1	Kahuripan Nirvana Village (KNV) consists of 17 neighbourhoods	Jalan Raya Jati, Sidoarjo	Kedungbendo	40	4863	2163	2700	Private employee, factory worker, entrepreneur, students
			Siring	5				
			Renokenongo	15				
			Jatirejo	8				
			Mindi	1				
			Ketapang	1				
			Non-survivors	30				
2	Sugiharas	Tanggul Angin	Kedungbendo	80	500	215	285	Entrepreneur, factory and construction labour, driver, teacher, project worker
			Gempol Sari	5				
			Siring	5				
			Jabon	1				
			Ketapang	9				
Renojoyo	Kedungkampil Porong	Renokenongo	95	1980	915	1065	Factory and farm labour, driver, entrepreneur, handyman/craftsman	
		Mindi	3					
		Glagaharum	2					
Ngering	Japanan, Pasuruan	Jabon	45	715	-	-	Factory labour, teacher/lecturer, entrepreneur, private employees, builder, labour in fishpond	
		Renokenongo	35					
		Siring	15					
		Mindi	5					
Karangbangkal	Japanan, Pasuruan	Jabon	100	200	-	-	Factory labour, merchant, project worker, builder	
Beringin	Beringin Porong	Beringin	100	815	400	415	factory and construction labour, merchant	
Podokaton	Jabon	Besuki	90	250	-	-	A factory worker, petty trading, farm labour,	
		Jatianom	10					

Type	Resettlement	Location	Origin	%	Total	Male	Female	Occupation
	Pangreh	Pangreh Jabon	Besuki Timur	100	167	72	95	builder/collier, tailor, teacher, labour, merchant, officer, teacher, nurse, farmer, salesman, mortgagee, housemaid, welder
	Dukuh Sari	Dukuh sari Jabon	Besuki Timur	100	90	42	48	Farmer, merchant, construction, farm and factory labour, teacher, sailor
	Balongdowo	Tanggul Angin	Ketapang	50	-	-	-	Factory worker, builder, teacher, entrepreneur
	Pamotan	Kesambi Porong	Balongsendo	25	890	425	465	Factory worker, driver, entrepreneur
Gempol Sari			10					
Siring			15					
	Gedang (Gedang Asri)	Kesambi Porong	Pamotan	95	315	150	165	Private employees, factory worker, driver
Gedang			2					
Ketapang			2					
	Mindi (Mindi Baru)	Kesambi Porong	Mindi	1	640	303	337	Private employees, teacher, pensioner, unemployed
Gedang			2					
Jatirejo			2					
3	Griya Candi Asri	Gelam Candi Tanggul angin	Mindi	97	476	220	256	Factory and construction worker, driver, entrepreneur
Gedang			1					
Non-survivors			14					
	Perumtas 2	Tanggul angin	Jatirejo	50	200	150	50	A factory worker, merchant, civil servant, motor-cycle taxi
Siring			20					
Kedungbendo			10					
Non-survivors			20					

Note. Type 1 company settlement, type 2 survivor settlement, type 3 blended settlement. This resettlement profile (especially the total amount and percentage of people) is based on the estimation of persons who have been interviewed by enumerators and these persons usually play an active role in the neighbourhoods such as informal head of neighbourhood. However, most of these neighbourhoods do not yet have a formal or official management to handle administrative affairs.

Appendix 3 and 4 corresponding to Chapter 4

Appendix 3. Regression analysis of factors that predict social engagement with unstandardised regression coefficients beta (B) of gender, age, occupation, organisational membership and number of relatives in the neighbourhood.

	Informal	Socio-religious	Political-cultural ²⁷
Intercept	1.841 (3.121)	3.085 (4.962)	1.992 (3.609)
Individual characteristics			
Gender	.552* (2.497)	.384 (1.684)	-.008 (-.041)
Age	-.001 (-.141)	.002 (.273)	-.008 (-1.185)
Occupation			
Unemployed	.259 (1.086)	.322 (1.300)	.233 (1.039)
Self-employed	.265 (.920)	-.284 (-.951)	-.508 (-1.882)
Wage labour	(ref)	(ref.)	(ref)
Household characteristics			
Org. membership	.065 (.583)	.204 (1.677)	.066 (.605)
Relative in neighbourhood	.302** (2.885)	.295** (2.660)	.011 (.112)
Duration of stay	.010* (2.142)	-.003 (-.698)	.014** (3.348)
Resettlement characteristics			
Facilities			
Poor	.499 (1.489)	.539 (1.492)	-.669* (-2.064)
Medium	.489 (1.683)	.391 (1.248)	-.367 (-1.308)
Good	(ref)	(ref)	(ref.)
Resettlement type			
Company	-2.859*** (-6.705)	-.211 (-.458)	-3.154*** (-7.668)
Survivor	-.377 (-1.201)	-.794* (-2.404)	.483 (1.639)
Blended	(ref)	(ref)	(ref)
Perceived changes			
Changes in comfort	.122 (1.066)	-.215 (-1.768)	-.119 (-1.073)
Changes in conflict	-.172 (-1.123)	-.321 (-1.938)	-.156 (-1.044)
R²	.487	.071	.359
Adjusted R²	.466	.036	.334

Note. *t* statistics are shown in parentheses

* $p < .05$; ** $p < .01$; *** $p < .001$

Appendix 4. Regression analysis of factors that predict economic burden with unstandardised regression coefficients beta (β) of income, perceived changes in daily expenses, labour size, livestock, wealth index, settlement type, and settlement type*perceived changes in daily expenses.

	Economic burden
Intercept	1.266*** (6.484)
Income	-6.001 (-1.871)
Expenses	8.653* (2.403)
Perceive changes in daily expenses	.372** (3.180)
Labour size	-.116* (-2.387)

²⁷Using principal axis factoring, 6 items of social engagement is distributed to 3 factors. The variance explained is 54,019. With loading: mingle with a neighbour (.982), mingle outside neighbour (.473), religious involvement (.586), social involvement (.564), cultural involvement (.725) and political involvement (.654)

	Economic burden
Livestock	-.157* (-2.481)
Wealth Index (asset)	-.089* (-2.061)
Settlement type	
Company	.335 (1.382)
Survivor	.121 (.668)
Blended	(ref.)
Settlement type* Perceive changes in daily expenses	
Company	-.348* (-2.305)
Survivor	-.157 (-1.252)
Blended	(ref.)
R^2	.145
Adjusted R^2	.119

Note. *t* statistics are shown in parentheses

* $p < .05$; ** $p < .01$; *** $p < .001$

Appendix 5 and 6 corresponding to Chapter 5

Appendix 5. Original disruption of place attachment scale ((1) almost never, (2) sometimes, (3) often, (4) almost always)

No.	Statements
1.	The former living place is meaningful
2.	The former living place is the best place ever
3.	I am still the people from a former living place although the place is no longer exist
4.	Emotionally attached to the former living place
5.	Emotionally attached to the people of the former living place
6.	Happy to meet the people from the former place
7.	Longing for the former living place
8.	Miss the people from the former living place
9.	Sad because I have to leave the former living place
10.	Being moved when relating with things associated with former living place
11.	Get peace of mind when relating with things associated with former living place
12.	Indifference when reminded of former living place
13.	Conjure up the former living place
14.	Trying to keep in mind various matters related to the former living place
15.	Suddenly remember the former living place
16.	Imagine that I can live as it used to be in the former living place
17.	Dream about the former living place
18.	Trying to forget memories of the former living place
19.	Accepting the fact that I had to move from my former living place
20.	Feels like still living or staying in the former living place
21.	Visiting people from the former living place
22.	Visiting the former living place
23.	Talking about the former living place
24.	Engage in activities held by people from former living place
25.	Doing habits that had often done in the former place
26.	Join activities that may put me in touch with people from former living place
27.	Looking for a place to stay as similar as possible with the former living place
28.	Comparing current place with former living place
29.	Avoid things that will remind me of life in the former living place
30.	Getting sick when I am thinking of various things associated with former living place

Appendix 6. Disruption of place attachment scale after factor analysis

Item	Statement
1	The former living place is meaningful
13	Conjure up the former living place
7	Longing for the former living place
15	Suddenly remember the former living place
12	Indifference when reminded of former living place
14	Trying to keep in mind various matters relate to the former living place
11	Get peace of mind when relating with things associated with former living place
3	I am still the people from a former living place although the place is no longer exist
23	Talking about the former living place

Item	Statement
6	Happy to meet people from the former place
9	Sad because have to leave the former living place
16	Imagine that I can live as it used to be in the former living place
29	Avoid things that will remind of life in the former living place
18	Trying to forget memories of the former living place
20	Feels like still living or staying in the former living place
17	Dream about the former living place
30	Getting sick when thinking of things associated with the former living place
4	Emotionally attached to the former living place

Appendix 7 corresponding to Chapter 6

Appendix 7. Example of Four Types of Human Agency (complete version)

Type 1: Trapped

Sukinah was born and raised in Jatirejo village. The family and relatives she grew up with were physically, socially and emotionally close. This closeness enabled these big families to help each other to resolve domestic and financial issues as well as emotional and social problems. This strong and close relationship continued until she finished her high school and was married. Her husband is also a resident of Jatirejo village. This married couple then built a house on the same plot of land with her family. After a while, she started a sewing business while her husband worked as a driver. She did not have to wait too long for her business to reach a break-even point. When the Lapindo mud hit her village, she already registered her ownership of land and property. So, it was easy for her to propose compensation to the Lapindo company because her land status was clear. She was also lucky because she was among the first group that received full compensation in cash from the Lapindo company under the cash and carry scheme. Her relatives, who did not receive the compensation due to the unclear status of their land, begged her to lend them some money to survive. She could not refuse, because she believed it was wrong to refuse to lend some money to needy relatives. As a consequence, she could not buy a house and her small family had to move frequently from one leased house to another, including one in Perumtas where they lived for years until she ran out of money. She then started another sewing business, but it did not run as good as before, because she did not have a marketing network and there were not many buyers in her new area. Meanwhile, her husband could not earn steady income. In a month, he only worked one or two days whereas they have three children who then went to secondary and high schools. To restore her economic condition, she sought a bank loan but failed to secure it because she was regarded as a potentially non-performing customer. She then tried to raise chicken but was forced to sell them off after neighbours complained about the bad smell coming from her chicken farm. Her social life in the new place was limited to attending Quran recitation. She did not feel at home in Perumtas. Besides her routine waiting for customers in her store, which was located inside the house, sometimes she would visit her ancestors' graves at the Jatirejo cemetery that was not affected by the mud. She was very happy because she could meet her former neighbours and also her relatives when she was there. However, it was still difficult for her to visit or look at the mud dyke, which, to her, was a traumatic place that kept reminding her of all the good things she lost. She never wanted to go back there just to remember again and again the suffering she had been through. She said: Too much sadness and desperation because of the mud.

Type 2: Cautious

Narti was raised in Kedung Bendo as the first daughter from her mother's third marriage. Besides her two siblings, sister and brother, she also has two other stepbrothers from her mother's previous marriage. She managed to complete her high school in Sidoarjo, together with her sister. Her family was rich enough to rent them a house in Sidoarjo so they could go to a good high school. Her mother was very good at running the family business from a tofu factory in their backyard to a grocery store

in the Porong Old Market. As she grew up, Narti was trying to imitate her mother in running a business. She saved some money and started her business by selling cigarettes in front of her house in Kedung Bendo. Later on, she was confident enough to sell snacks in the afternoon. Everything was running well and one day her sister suggested that she borrow some money from the new village cooperative to expand her business. At that time, she was a bit afraid because she was not used to borrowing money. However, after her sister pushed her hard and promised to split the money and also the payment, she agreed with her sister's idea. With this money, she rented a kiosk in the market for a fruit stall. However, not long after they had borrowed the money, the Lapindo mud erupted. The disaster has changed the family's dynamics. It raised chaos and caused disputes among siblings over the compensation money. It was because her mother had many properties in her large land that she deserved a very big compensation of nearly 2 billion rupiahs at that time. In this situation, she could not resolve the family's problems. Sometimes she took side with her sister against her stepbrother's greediness, but she also often did not agree with her sister's action on controlling her mother's money. However, to win the battle, she chose to get a house in KNV, which is the Lapindo company's resettlement, as her share. At that time, she just needed a permanent house and stable environment to continue her family living. Besides, she was familiar with Sidoarjo areas, which made her feel safe. After she settled in her new house, she used her remaining money to open a food stall in front of her house. However, only a few people would buy the food and slowly she went out of business. After that, only her husband who worked at a parking lot provided the family with daily income. In her new neighbourhood, she was very cautious, not to be involved with just anybody. She is still willing to involve in religious activities but not more than that. She selected a few people to be her friends. She even preferred to stay separately from her relatives or stay far away from them because she did not like confrontation and conflict. Once, she had an idea to ask her mother to live with her after her father passed away because of depression as he could not forget his former house. However, her sister should also live with her because it was her mother's wishes. After a month she could not stand her sister's carelessness and her inability to keep up with the growing household burdens. Then her sister and mother went back to the mother's house in Japanan and her sister started to work around the mud dyke. She actually did not agree her sister worked at the mud dyke. She considered the mud dyke as a disrespectful community with many bad people hanging around, telling vulgar jokes and stories. She believed that it could pollute her sister. However, her sister just ignored her complaint because somebody had to pay the bill and they could not live-in debt forever. Today, Narti has chosen to become a full-time housewife that relies on her husband's income. She has sent her daughter to an Islamic boarding school (*pesantren*) because she believes it is the best way to raise children in this modern world that is full of temptation.

Type 3: Hibernating agent

Rahman was born into a very poor family that did not have land. The family had to work as a labour for the landlords in the village. In his early life, Rachman really wanted to continue his education, however, his father preferred him to help on the farm. He could not resist his father and must obey his father's wishes. At the age of nine, he had

to work on a farm. He was sad and in tears when he bumped into a group of children in uniform who were about to go to school whereas he headed to the rice fields to work. However, he dedicated himself to a role to support his father and family. He adapted well to the patron-client model in interacting respectfully with the upper class that would protect and take care of his family. He would kiss their hand and did not dare to stare into their eyes. Furthermore, Rachman liked to do *tadarus* (the reading of the holy Qur'an together, especially in the month of fasting [Ramadan]) in the mosque and people from the noble society loved listening to his Quranic recitation. So, he became the only *sudra* who was invited by the nobles to the special occasion of Quranic recitation. Later on, he got married when he was a teenager. Four children—two boys and two girls—were born from their marriage. Despite the good family relationships, they actually struggled to live because they were born poor and did not have any assets except their small bamboo house. His wife worked at a factory but quit the job when she was pregnant. Nevertheless, she never stopped looking for another job to support his husband. In difficult times when she could not get a job in a factory or a household as a housekeeper, she would do *213erman*, which is collecting a remaining rice-waste in paddy fields at harvest time. Even though they lived on the edge of poverty, they still managed to save some money, and a couple of years before the Lapindo disaster they could buy a small plot of land for farming outside their village while working as labor on the landlord's land. They also could buy an old and battered motorcycle as a replacement for their old bicycle for their daily transportation. Further, he kept his involvement in religious activities even though he had to bring his son who mostly fell asleep on his lap when was reciting the Qur'an. This married couple were aware of the importance of education for their children and thus tried hard to send their children to school as high as they could. However, their first daughter could not continue her higher education because of lack of fund so she worked at a factory to help the family. When the Lapindo mud erupted, he lived with his nuclear family and also with his mother. In the early period of the Lapindo mud disaster, they suffered because there were no paddy fields left for them to work on. There was repeated crop failure due to mudflow and many landowners chose not to cultivate their land. Their farm was also not productive for cultivation. During this time, this family just felt there was no hope for them. Even though most of the paddy fields were affected by mud and people lost their jobs, the government did not consider including their village in the Affected Area Map because the village was not severely affected. Later on, some people from Walhi organization came to their village and assisted them. From this encounter, he and other villagers established Sanggar Alfaz, which is a group that concerns with children's condition and wants to create a safe environment for children to play, learn, and express themselves. The adults found themselves united and gathered to face their suffering. They joined in the protest and also created groups that could help each other such the women's group, *jimpitan sebat*, to collect and save money for health insurance purposes. Under this circumstance, Rachman preferred to be a backup for her former Quranic recitation teacher (*guru ngaji*) who took a central role in leading the people. At this moment, their relationships have shifted from teacher-pupil or landlord-labor to best friends' relationship. The encounter with Walhi and other NGOs has broadened their perspective so they could develop more egalitarian relationships. Even though Rachman was in a 'second striker' position, he did not lose his independence in

expressing his opinion. In his community, most of the people from the lower class did not have the courage to express their opinions and they preferred to skip or avoid a formal meeting. Most of the people in his village did not believe that Rachman also could give some opinions even when he did that in a village meeting, people would say that it was his Quranic recitation teacher, not him, that talked at that time. Actually, Rachman is an active member and can be considered as the founder of these two organizations, Sanggar Alfaz and Jimpitan Sehat. He was also active in initiating the process of moving together with his village folks to the new place. However, in the process, his group was facing the rejection and opposition from people with financial power and the religious elites in his former village. This conflict had divided the villagers into three groups, even his best friend, the Quranic recitation teacher (*guru ngaji*) was expelled from the resettlement community. Rachman managed to keep his family and relatives living closely together. He lived side by side with his brother, sister and aunt in the Pangreh resettlement. However, he could not keep his old job as a farmer because he could not find a land or landlord. He continued to switch jobs, for instance, from a construction worker to a factory worker. His wife also had to work as a nanny and her daughter maintained her job at a factory. Under such circumstances, he became a protector for his relatives and other poor and oppressed people from the exploitation of rich elites who had built and managed his resettlement. He became critical and would resist the contractor's unfair treatment that deviated from the initial agreement. Through a partnership with an NGO, Rachman learned a lot about national and international laws such as human rights. Even though it was difficult for him to express himself due to limited vocabulary and lack of education, he was confident enough to be an orator for his group's protest and other mud survivors' events and rallies. With his nine years of experience dealing with the Lapindo mud disaster, he could express his opinions in formal and informal meetings in both rough and polite ways. He could keep his loyalty in supporting the group to reach its mission. Even though he was not that agile and skillful in negotiating his terms, he would be persistent in accomplishing his jobs. With help from his new social networks, he managed to get scholarship for his son so he could continue his higher education at the Faculty of Law in Malang, East Java.

Type 4: Social entrepreneur

Hatami was born in Siring village as the first child of a poor couple. They lived in a small house with bamboo-woven walls. Since she was a little child, she had had a great desire to break free from poverty. She was aware she could do it through education and work outside Porong. Her childhood memories were full of struggle. She had to work at a young age and sometimes she behaved mischievously such as stealing chicken eggs or corns from her neighbor's farm just to get some nutritious food. She insisted on continuing her education and worked hard to earn money such as working as a maiden. As soon as she graduated from junior high school (SMP), she moved to Sidoarjo to continue her senior high (SMA) education while working at a factory to pay the tuition, meet her daily needs and saved some money for her family. After graduating, she faced the choices of continuing her study, working or getting married. At that time, her family needed her much as a breadwinner. It was during this time that she met her future husband who had a permanent job and a good salary. Even

though she was not in love with him, it was a good opportunity to have a more stable income that can be used to improve her livelihood through marriage. She then made an agreement with him that when they were married, he would also be responsible for her big family. After their marriage, they managed to renovate her mother's house into a permanent brick house, install electricity and pay for her siblings' education. When the mudflow occurred, she had one daughter, and was pregnant with the second daughter. At that time, they had no financial problems even they could save money for their children's education in the future. Then, the problem started to arise when her husband suddenly got ill. They already consulted several doctors in Porong and none of them could figure out the illness. However, after she brought her husband to the hospital and they knew that the illness was a late stadium cancer that is hard to be cured. At that time, she did not give up and spent all of the family's savings in order to heal and save her husband. However, in 2007, her husband passed away and left her no money and two daughters who had to be raised. This became her moment of desperation. She said it was the hardest and darkest moment and she got a severe depression. However, after she took time to reflect and looked at her two daughters, she realized that she was the only hope for them. So, it was a moment of enlightenment, she just grabbed her high school diploma and went to a factory to apply for a job. However, after a week there was nothing, while there were still mouths to feed. She decided to go to the mud embankment, asked her village folks for permission to work at the mud dyke. It was a challenging one because for a long time she was just a housewife but at this dyke, she had to learn how to ride a motorcycle and also learned how to mingle with people whose world was very different from hers. Then she became a motorcycle taxi driver and also an active member of the GKLL. She got a very specific task, which is to watch out people that joined the survivor's rallies whether they were survivors, or a spy sent by the company or the government to infiltrate the group. She also had to go back and forth to Jakarta for rallies and to participate in a meeting with the officials of the government or the company to negotiate the compensation. At that time, she had to juggle between fighting for Lapindo survivor's compensation and also feeding her daughters and the rest of family. The problem continued when her mother suffered from breast cancer so she should undergo surgical removal of the breast and her father got a kind of mental illness. Not long after, her father passed away, but her mother survived the cancer. Time and again, she just struggled to earn money to feed her family. She would insist on staying at the mud dyke until 10 p.m. if she could not reach the daily income target in order to make sure that there was enough food for her family to eat. At home, she had three tin can piggy banks, one for daily needs, one for monthly cost such as electricity and education, and one for emergency situation such as medical cost. She just tried to distribute the money she got everyday so it would be enough when she needed it. After years working at the mud dyke, she just wonders what her former neighbours and village folks have become of these days. Then, each time the mud dyke became quieter or no tourists visited the dyke, she would use her break time to trace down and visit her neighbours. She found them one by one and it was a shocking moment because she said her former neighbours were facing similar condition as she was, struggling to meet daily needs, without any fund left for medical or children's education costs. She found a lot of dropout cases and also sickness such as cancer and other illnesses that lead to death.

There was a moment when she initiated or asked her former neighbours to hold a meeting just to hang out and share a story and burden. This meeting is the embryo of the Ar-Rohma community, which is a women's organization of the Lapindo mud survivors to restore their economic and livelihood condition while fighting for access to social security, health and education funds from the government. At the dyke, she met a lot of actors and networks that later on upgraded her knowledge and skill drastically and sharpened her ideology. She continues to maintain her friendship with a lot of national, regional and local government officials, NGOs such as Jatam, Walhi, other women's fighters from other regions in Indonesia, researchers, filmmakers, artists/celebrities. She is learning a lot about environmental issues from the best experts in Indonesia through an uplink program, an adult learning program. She now understands more about her rights, such as the right to access public information, the right for health and education funds. She also learns about legal systems through paralegal activities, learning that her welfare should be protected and guaranteed by the government. Some of the organizations even offered her to work with them but she rejected it because she just wants to be among her people and fight with them. She wants to make it personal, even she persuaded her daughter to study law. She said: I cannot believe that no one can touch Bakrie even though everyone knows this disaster is part of his fault. People, even the government, are like having a stem in their nose (it is a proverb in Indonesia "*seperti kerbau dicocok batang hidungnya*" or like a buffalo with the stem in its nose, which means fools who follow what others say). "I want to learn Indonesian laws, but I am too old, so I encourage my daughter to do so, so we will know what has happened with our laws that make people like Bakrie can go away easily with their mistakes."

Appendix 8.

Declaration Data Management PhD Thesis Radboud Social Cultural Research, Radboud University

Section A. Primary data / information

For my thesis I have collected **primary** data / information.

Yes → Complete section A.

No → Go to section B.

I declare that

- A1. The data for my thesis are obtained with the consent of informants / respondents. Yes/No
- A2. Privacy sensitive data / information is encrypted and is stored on a protected computer or server environment. Yes/No
- A3. The data / information is securely stored for reasons of scientific integrity at least for 10 years after finishing PhD research. Yes/No
- A4. Anonymized data / information is registered in a well-known data repository system (Research Data Repository, DANS-KNAW). Yes/No/n.a.
- A5. Access to anonymized data / information is arranged referring to the FAIR principles of data management. Yes/No/n.a.

Section B. Secondary data / information

For my thesis I have used data / information **collected by other researchers**.

Yes → Complete section B.

No → Go to section C.

I declare that

- B1. The data / information is obtained legitimately. Yes/No
- B2. Non-public or secured data / information is stored on a protected computer or server during research. Yes/No
- B3. The data / information is not shared with third parties, and has been treated in accordance with the agreements made with the information provider Yes/No

Section C. General

I declare that

- C1. A short methodological justification, and/or the syntax and method of data / information processing is deposited in a so-called ‘publication package’. Yes No
- C2. It is not possible to link data / information in publications to individuals (except with explicit consent). Yes No
- C3. The data / information is analyzed in a trustworthy manner and is not been deliberately manipulated toward certain outcomes. Yes No

Signature

Name PhD Candidate: K.L. Dalimunthe
 Title Thesis: Breathing in the Mud: Resilience and Traumas of Porong Communities Affected by the Lapindo Mudflow Disaster, East Java, Indonesia
 Date: 27-12-2022

Signature: 

If one or more statements cannot be confirmed the Phd should explain in an Annex why certain conditions are not met following the ‘comply or explain’ principle.

This manuscript is based on ethnographic field research and a quantitative survey that were conducted in Porong, Sidoarjo, East Java, Indonesia, mainly from February 2015 through February 2016. The data were collected in accordance with the ethical standards of the Radboud Institute for Social and Cultural Research. In line with Privacy Legislation and Data Protection Laws, the ethnographic material cannot be made public in its natural form such as field notes, because I am responsible for protecting the participants' identities. For methodological reasons, these data are not suitable for analysis by researchers who are not familiar with the context of the field site in which this study has been conducted, and by researchers who have not been present in the specific ethnographic setting of this study. The ethnographic data are stored on a computer that is secured with a password. A backup of this folder is stored on a password-protected external hard drive. The survey data and a methodological explanation of their analysis will be deposited in a publication package on a secure server of Radboud University.

<i>Adem ayem</i>	peaceful
<i>Alhamdulillah</i>	God bless
<i>Arisan/ arisan keluarga</i>	social gathering/family gathering
<i>Babat alas</i>	cleared the forest for settlement
<i>Bari 'an/ barikan</i>	1) An annual traditional gathering consists of a certain procedure such as offering, eating and praying together in an ancestral shrine. 2) A celebration similar to Thanksgiving
<i>Bedol desa</i>	Moving together with village folk
<i>Bulan puasa/ Ramadan</i>	fasting month
<i>Ceria</i>	cheerful
<i>Cangruan/ nyangruk/ / jagongan</i>	hang out with other fellow residents
<i>Desa</i>	Village
<i>Dusun</i>	hamlets
<i>Diba'an</i>	Religious activities for women
<i>Gamelan</i>	a traditional instrumental ensemble
<i>Gotong royong</i>	Mutual assistance or working together in achieving a goal
<i>Guyub</i>	Togetherness, harmony and unanimity in groups, getting together
<i>Istigosab</i>	Praying together
<i>Id Mubarak/ Eid al-Fitr</i>	Islamic celebration after fasting period
<i>Jakno' / jalukan/ dekean/ numpang</i>	Neighbourly investment system
<i>Joglo</i>	Type of Javanese house
<i>Kampung halaman</i>	Native land
<i>Kawlingan</i>	Plots of land
<i>Kerasan/ betah</i>	The feeling of being at home or at ease
<i>Kenduri</i>	ceremonial activities
<i>Landasan/ landas</i>	a villager has successfully selling a land
<i>Lohor</i>	Islam praying time between 12:00 to 15:00
<i>Ludruk</i>	a puppet show
<i>Lurah</i>	a head of village/headman
<i>Makmur</i>	prosperous
<i>Mancapat</i>	the concept of Javanese space that is a centre that leads to the four main cardinal directions.
<i>Mbah</i>	Respectful calls for traditional leaders or ancestors
<i>Wong mbambung</i>	footloose people
<i>Melek-melekan</i>	A group of people staying awake the whole night
<i>Mussala</i>	Islamic prayer room
<i>Mufakat</i>	consensual agreement
<i>Mudik</i>	Homecoming

<i>Mudin/modin</i>	A religious head in the kampong
<i>Musyarawah</i>	consensual agreement with discussion or deliberation
<i>Naik atap</i>	roofing the house
<i>Nrimo/ikblas</i>	characteristics such as acceptance or surrender and sincerity
<i>Omah kampung</i>	Kampong house
<i>Paguyuban</i>	committee
<i>Pesantren</i>	Islamic boarding schools
<i>Punden or pasarean</i>	ancestral shrine
<i>Rame</i>	crowded
<i>Rukun</i>	Getting along
<i>Rumat</i>	Ritual that is aimed at casting out or appeasing evil spirits
<i>Rumat desa</i>	A ritual to get rid of bad things from the village
<i>Syukur</i>	a thanksgiving celebration
<i>Sajen</i>	an offering
<i>Santri</i>	Islamic boarding school students
<i>Sedekah bumi</i>	a traditional agricultural ritual to honour the earth or land
<i>Selamatan/slametan</i>	a celebration/ a ceremonial a ceremonial banquet
<i>Seru</i>	boisterous
<i>Soyo</i>	the effort of villagers to voluntarily help a fellow villager who was building a house, especially in making the foundation of the house
<i>Sugib</i>	wealthy
<i>sedekah bumi</i>	alms to the earth
<i>Tanah kas desa</i>	village treasury land to assist the management of the village in payment for village officers
<i>Tablilan</i>	praying together
<i>Tanah tumpah darah</i>	hometown
<i>Tanah leluhur</i>	ancestral land
<i>Tanah kelahiran</i>	the land of birth
<i>Tim paguyuban</i>	Village association
<i>Tenggang rasa</i>	tolerance
<i>Tenram</i>	Tranquil
<i>Wangsit</i>	an inspiration
<i>Wage</i>	the name of a day in Java calendar system
<i>Ziarah or nyekar</i>	visit parents'/ancestors' graves

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We need certain qualities and abilities to be able to withstand challenges and adversities. In the case of the Porong community, they need these abilities to endure the destruction of their living space caused by the Lapindo mudflow disaster. The hot mud that sprung from the earth had flooded their kampung. It created many difficulties, problems, and suffering because of the loss of original place, the forced migration, the loss of occupation, and disruption in children's education. This disaster has given a rise to conflicts between families, friends, and neighbours. Even the disaster itself is the source of contestation between man-made or natural disasters that have presented an extra challenge in the form of long-term litigation and uncertain compensation between the Lapindo government, company, and survivors. In sum, the destruction brought by the Lapindo mudflow disaster comprises both material and immaterial loss and continues to threaten people's health and well-being that needed even more time, effort, and energy to recover.

To be well again, individuals, families, and communities must thrive in every challenge brought by this disaster. In this study, we find that the abilities to cope, adapt, and successfully deal with every challenge and hardship brought by the Lapindo mudflow disaster depend on many factors, both contextual and personal. These factors could differentiate the proximity of stressors, stress reaction, resources to be activated, coping process, and the outcomes of all these processes. In contextual factors, there are economic, social, and political forces that have created four waves of different challenges to the Porong community. The survivors of the first and second waves must face the abrupt change and displacement caused by uncontrollable mudflow that buried the houses. Most of them had to spend longer time living in the shelter and temporary houses in Pasar Baru Porong (New Porong Market). It was different with the survivors of the third and four waves who had more time to relocate to new places. However, they had to experience living in the contaminated area near the mud for a longer time and most of them must deal with the risk of flood due to broken or collapsed dam, and health risks due to the air and water contamination. Other economic and social events that amplified stressors for the Porong individuals, families, and communities such as the legal decision that declared LBI innocent and debated causes of mudflow, a shift in strategy regarding disaster emergency response, mitigation, and reconstruction, and LBI's financial distress and shortage of funds due to the global financial crisis in 2008. These economic, social, and political forces influenced the policy and implementation of the reconstruction and recovery activities of affected communities, one of which took the form of changes in payment schemes and delays in payment of compensation.

The second contextual factor is cultural traditions, beliefs, practices, rituals, and institutions that developed people's place identity and place dependency. We found that Individuals and communities of Porong encounter difficulty and need a longer time to recover from the forced migration. This was because they have a very strong bond and attachment to their original places. It was difficult for them to relive their culture and rituals in the new places because these activities should be performed in their ancestral lands with their original communities. Besides, most of their host communities have very different rituals and norms that prolong and hamper the integration process. The problem in the integration process can be observed in the other contextual factor concerning

neighbourhood processes and social regularities. As a corporate community with communal interest, most Porong communities developed social activities and events which included informal neighbouring (*cangrukan*), social, cultural, and political relationships. These neighbouring processes have different functions in communities and give support to households or individuals. This is shown in research finding that the relationships as social capital could help each household in dealing with economic and social difficulties through instrumental, financial, and social support.

The last contextual factor is family dynamics, in terms of demographic structure, capital, and credit that play a role in household coping abilities in dealing with shock and destruction. Some factors are related to material factors, such as the ability to have a new house after the old one is buried by mud. We found that after years of the Lapindo mudflow disaster, 8.4% of households do not own their residences. Furthermore, even where they have a residence, many problems surround them such as house ownership certificate problems, livelihood difficulties, and social conflicts. To deal with financial problems, we find three types of household coping: indirect, passive, and active coping. Indirect coping is the one that seems to accommodate local values and norms such as *pasrah* (resignation) or praying as indirect ways to deal with real financial and social hardships. Based on income, occupation of head household, labour, and household size, we identify four types of family situation: small steady family, steady with intensive labour, downward spiral, and family in critical condition.

The individual factor plays a role, especially in the individual desire for change, critical thinking, and the ability to initiate and create the change itself. These individual characteristics do not take shape overnight but are forged through life. Both passion and the ability to change should be possessed by individuals in order to overcome and adapt to challenges brought by the Lapindo mudflow disaster. Furthermore, the characteristics of exchange between individuals and contexts also become determinators for the Porong people's recovery. In this light, empowering social networks have become a key factor that could facilitate recovery, while predatory social networks could hinder the recovery of individuals and communities. These individual characteristics, context characteristics, and the types of exchange between individuals and context determine the outcome which in this study manifests in psychological disorders such as individual and collective trauma, stress, and other psychological difficulties that persist even after years of disaster. This form of distress seems to correlate with the coping process that continues, concerning disrupted place attachment and integration with a new or host community. During traumas and suffering, some individuals and communities still can thrive and demonstrate resilience mostly because of their individual characteristics and the type of social networks that empower them.

SAMENVATTING (DUTCH SUMMARY)

Mensen hebben bepaalde eigenschappen en vaardigheden nodig om de uitdagingen en tegenslagen in het leven aan te kunnen. In het geval van de gemeenschap in Porong had men deze vaardigheden nodig om de verwoesting te kunnen doorstaan van het leefgebied door de ramp van de Lapindo modderstroom. Hete modder sprong in grote hoeveelheden op uit de aarde en overspoelde het dorp en een groot gebied daarbuiten. Dit veroorzaakte veel directe moeilijkheden, problemen op termijn, en veel lijden door het verlies van de eigen plaats in de wereld, de gedwongen migratie, het verlies van broodwinning, en de verstoring van het onderwijs aan de kinderen. De ramp leidde ook tot conflicten tussen families, vrienden, en buurtgenoten. De ramp werd zelfs een bron van woordenstrijd over het onderscheid dat men kan maken tussen door mensen veroorzaakte en door de natuur veroorzaakte rampen, wat een extra moeilijkheid vormde voor de verantwoordelijkheid voor het toe van langdurige ondersteuning en financiële compensatie. Wie draaide daarvoor op, en in welke mate? De Indonesische overheid, het mijnbouwbedrijf Lapindo Brantas Incorporated (LBI) dat in de omgeving naar bodemschatten boorde, en de overlevenden uit het dorp verschilden daarover sterk van mening. Samenvattend kan worden vastgesteld dat de verwoesting door de modderstroom zowel materieel als immaterieel verlies betekende, en voortdurende zorgen om de gezondheid en het primaire welzijn van de slachtoffers. De situatie vroeg en vraagt om veel tijd, inspanning, en energie om tot duurzaam herstel te komen.

Om hun leven weer op orde te brengen, moesten individuen, families, en andere verbanden weten te gedijen in de door de ramp veroorzaakte probleemsituaties. In deze studie vinden we dat de vaardigheden die nodig zijn om het hoofd te kunnen bieden aan de problemen, onder andere zijn dat men tot een realistisch idee van de aard van de problemen kan komen, en dat men tot een effectieve aanpak weet te komen. Allerlei factoren spelen hierbij een rol, zowel contextueel als meer persoonlijk. Deze factoren kunnen wat betekenis betreft variëren door de mate van nabijheid van de stress-gevende aangelegenheden, de hevigheid van de stress reacties daarop, de mate van het voor handen zijn van de middelen die hierop ingezet kunnen worden, de aanpak van de stress-gevende aangelegenheden zelf, en de gevolgen die al deze processen samen hebben.

De eerste categorie van contextuele factoren die hier wordt besproken, is die waarin economische, sociale, en politieke krachten een rol spelen. De overlevenden van de eerste en de tweede modderstroom moesten een antwoord vinden op de abrupte noodzaak hun plaats en het gebied te verlaten, waar de niet te stuiten modder hun huizen overspoelde. De meesten van hen hebben lange tijd moeten leven in noodonderkomens en tijdelijke huizen in Pasar Baru Porong (Porongs Nieuwe Marktplaats). Dat was anders voor de overlevenden van de derde en de vierde modderstroom, die meer tijd hadden om een goed heenkomen te zoeken. Hoewel dit een voordeel was, moest deze groep wel voor een langere tijd in het verontreinigde gebied vlak bij de modder verblijf blijven houden, en omgaan met het risico van nog een modderstroom als gevolg van een bezweken dam, en het risico van ziekte door contact met besmet water en besmette lucht. Andere economische en sociale omstandigheden die het leven bemoeilijkten voor individuen, families, en buurtgenoten in Porong, waren de uitspraak van het gerechtshof dat het mijnbouwbedrijf LBI vrijspak van schuld aan de ramp, de aanhoudende discussie over

wat dan wel de oorzaak van de modderstroom kon zijn, de veranderde aanpak van de directe respons van de overheid op de ramp en de daarop volgende als verlichtend bedoelde maatregelen en reconstructies, en de geringe financiële armslag van LBI, dat ondanks de rechtelijke uitspraak steun gaf aan de overheid en de bevolking, hoewel dit als gevolg van de financiële crisis in 2008 beperkingen kende. De actieve lokale en minder lokale economische, sociale, en politieke krachten beïnvloedden de implementatie en de uitvoering van het beleid van de ondersteuning en herschikking van de getroffen bevolkingsgroepen. Dit leidde onder andere tot veranderingen in het tijdsschema van financiële steun en het uitstel van de betaling van compensatie.

De tweede categorie van contextuele factoren is die waarin culturele krachten een rol spelen. Het gaat hier om culturele tradities, vormen van geloof, gebruiken, rituelen en instituties gebonden aan een bepaalde plaats, die de identiteit van mensen, en hun onderlinge relaties, mede gestalte geven. Gevonden werd dat individuen en gemeenschappen uit Porong ernstige problemen ondervonden bij hun gedwongen migratie, en nadrukkelijk de tijd nodig hadden om hiervan te herstellen. Dit was omdat zij zeer gehecht waren aan de plek waar zij vanouds verbleven en waarop zij hun leven compleet hadden ingericht. Het was moeilijk voor hen om hun cultuur en rituelen op nieuwe plaatsen voort te zetten, omdat deze activiteiten uitgevoerd behoren te worden op het land van de voorouders en met de door hen als authentiek beleefde gemeenschap. Afgezien hiervan hadden de gemeenschappen die de gevluchte dorpelingen opvingen, heel andere rituelen en normen, wat het integratieproces langer deed duren en bemoeilijkte. Wat betreft het integratieproces speelden ook andere contextuele factoren mee zoals routines in de ontvangende gemeenschap die zo hun vaste omgangsregels hadden. Als een gemeenschap met een eigen samenhang en met een sterk gezamenlijk belang, ontwikkelden de meeste buurtschappen uit Porong sociale activiteiten en gelegenheden die leidden tot informeel nabuurschap (cangrukan), met een eigen sociaal, cultureel en ook politiek karakter. Deze nabuurschappelijke relaties en processen vervulden verschillende functies voor de betrokkenen en verleenden ondersteuning aan huishoudens en individuen. Het onderzoek laat duidelijk zien dat sociale relaties kapitaal vertegenwoordigden, dat elk huishouden van dienst kon zijn bij economische en sociale problemen. Met dit kapitaal was het mogelijk instrumentele, financiële, en sociale steun te genereren.

De derde en laatste categorie van hier onderscheidde contextuele factoren bestaat uit de dynamiek van familierelaties, in termen van demografische samenhang, kapitaal, en krediet, die een rol speelden bij het vermogen van huishoudens om effectief om te gaan met de shock van en de vernietiging door de rampzalige modderstroom. Familieverbanden konden zich bijvoorbeeld richten op het verkrijgen van een nieuw huis, na de verzwelging van de oude woning door de modder. Gevonden werd dat jaren na de ramp, 8,4% van de huishoudens niet in juridische zin in het bezit was van een eigen onderkomen. En verder dat, als men al in niet-juridische zin een onderkomen had, veel problemen hen beknelden, zoals met huisbezit-certificaten, de kostwinning, en met het veranderde samen leven op zich. Om een antwoord te vinden op financiële problemen, kunnen drie strategieën worden onderscheiden: indirecte, passieve, en actieve wijzen van probleembenadering. De indirecte aanpak speelt in op lokale waarden en normen, zoals rituele afzondering (pasrah) en gebed, om reële bedreigingen op het financiële en sociale vlak te kunnen doorstaan. Gebaseerd op inkomen, het beroep van het hoofd van de

huishouding, en de grootte van de huishouding, konden vier typen familieomstandigheden worden onderscheiden: kleine stabiele families, families stabiel door intense arbeid, families in een neerwaartse spiraal, en families in hachelijke omstandigheden. De individuele factor speelt daarbij een belangrijke rol, speciaal het individuele verlangen naar verandering, het vermogen over dingen kritisch na te kunnen denken, en het vermogen een verandering daadwerkelijk in gang te kunnen zetten en te voltooien. Deze individuele eigenschappen krijgen niet van de ene dag op de andere hun beslag, maar krijgen vorm gedurende een mensenleven, door opvoeding en ervaring. Zowel het verlangen als het vermogen te veranderen moesten tot de bagage van een individu behoren om hem of haar in staat te stellen zich bijtijds te kunnen aanpassen aan al de facetten van de ramp van de modderstroom, en deze facetten op den duur te kunnen doorstaan en terzijde te kunnen schuiven. Daarbij was de uitwisseling tussen individu en context bepalend voor het uiteindelijke herstel van de mensen uit Porong. In het licht hiervan wordt de ondervonden toename aan zelfvertrouwen en kracht door deelname aan positief gerichte sociale netwerken onderkend als de sleutel voor succes bij het tot stand komen van dit herstel, terwijl de ervaring met roofzuchtig ingestelde, op bruut voordeel gerichte sociale netwerken, voor het duurzame herstel van individu en gemeenschap vooral als potentieel hinderlijk naar voren zijn gekomen. Individuele kenmerken, contextuele kenmerken, en kenmerken van de uitwisseling tussen individuen en context, bepaalden en bepalen de uitkomst van de in de studie gevonden psychische schade, zoals individuele en collectieve trauma's, stress-stoornissen, en andere psychische problemen die blijven voortbestaan, ook nog jaren na de omstandigheid van de ramp zelf. Deze psychische aandoeningen lijken samen te hangen met de processen van omgaan met de ramp, die in dit opzicht blijft voortduren. Wanneer mensen nog enigszins kans zien te gedijen en veerkracht te tonen, komt dit vooral door hun individuele kenmerken en het type sociaal netwerk dat hen ondersteunt.

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