# A study on the integration of social protection and disaster management in Indonesia

## インドネシアにおける社会的保護と防災の融合に関する研究

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| | |
|---|---|
| ASP | Adaptive Social Protection |
| Bappenas | Ministry of National Development Planning of the Republic of Indonesia |
| BNPB | National Disaster Management Agency |
| CCA | Climate Change Adaptation |
| CCT | Conditional Cash Transfer |
| CFA | Confirmatory Factor Analysis |
| Dana Desa | Indonesia's Village Fiscal Transfers |
| DRR | Disaster Risk Reduction |
| DTKS | Unified Database |
| FDS | Family Development Session, a collective meeting session in PKH Program |
| GoI | Government of Indonesia |
| Inarisk | Disaster risk database in Indonesia |
| Kampung Siaga Bencana | Disaster Preparedness Village Program |
| Kotaku | National Slum Upgrading Program |
| KUBE | Joint-Enterpreneurship for Economic Empowerment Program |
| MoEF | Ministry of Environment and Forestry |
| MoSA | Ministry of Social Affairs |
| PKH | Program Keluarga Harapan (Family Hope Program) |
| RPJMN | National Medium-Term Development Plan |
| SDGs | Sustainable Development Goals |
| SEM | Structural Equation Modelling |
| SFDRR | Sendai Framework for Disaster Risk Reduction |
| SFH | Smallholder Farmer |
| SP | Social Protection |
| TAGANA | Disaster Response Volunteer Group |
| UCT | Unconditional Cash Transfer |

# CHAPTER 1 INTRODUCTION

## 1.1 Background

The occurrence of natural disasters is increasing worldwide, especially in Asia, intensifying existing vulnerabilities and generating new ones. According to the data from Emergency Event Database (EM-DAT), disaster incidents in Asia comprise 40% of the world's disaster events. They contributed to economic losses in 2020 amounting to US$ 67.4 billion, which is higher than the annual average of US$ 49.2 billion during the past three decades, 1990-2019 (Asian Disaster Reduction Center, 2022). One such trigger is climate change, which causes hydrometeorological incidents. Consequently, floods and storms occur progressively in several Asian countries, leading to economic losses and fatalities.

This increased amount of data indicates that natural disaster risk could be a threat to human activities. Poverty is expected to intensify (ISDR, 2009); there will be 325 million impoverished people living in the 49 countries most exposed to the full range of natural hazards and extreme climates in 2030 (ODI, 2013). Specifically, in low-income countries, the severe impact of climate change could result in an extra 100 million people trapped in extreme poverty by 2030 (Hallegatte, S.; Bangalore, M.; Bonzanigo, L.; Fay, M.; Kane, T.; Narloch, U.; Rozenberg, J.; Treguer, 2016). The risk impact creates the probability of becoming deprived. Thus, disaster shocks or stress are a source of vulnerability to poverty (Hulme & Shepherd, 2003).

Natural disasters retain or set people back into poverty, making it harder to be eradicated (Hallegatte, Vogt-Schlib, Bangalore, & Rozenberg, 2017). The adverse impacts of natural disasters will mostly dislocate the livelihood of the poor and marginalized population, because of factors such as loss of assets and income, a lower standard of living, and unemployment (Akter & Mallick, 2013; Asian Development Bank., 2018). For example, several studies in Sri Lanka reveal that poor farming households that depend only on agriculture and are simultaneously exposed to frequent natural disasters can be especially devastated and need a longer time to recover (De Silva & Kawasaki, 2018; PiratheeparajahN & RajendramK, 2014). Meanwhile, research in Indonesia indicated that earthquakes are the most destructive disasters affecting household welfare because they cause formerly non-poor households to become poor owing to asset loss, damage costs, and causalities (Dartanto, 2022). Limited capital or resources, especially among people living in poverty, affect the lack of strategies for anticipating and recovering from natural disasters. This has made poor people less able to cope effectively with

disasters. The status of socio-economic indicated through its livelihood determines its vulnerability to environmental hazards. It is a vicious circle wherein disaster risk creates the probability of becoming poorer, and ultimately, it is increasingly challenging to develop strategies to deal with future risk.

Based on the above explanation, it can be assumed that there is a causal relationship between natural disasters and poverty. The association between these issues leads to cross-cutting countermeasures to solve disaster impacts and eradicate poverty. Cross-cutting support allows poor people to have more adaptive capacity to reduce their vulnerability and become more resilient. As comprehensive problem solving, a cross-cutting mechanism is needed to address poverty and vulnerability at once (Béné, Cornelius, & Howland, 2018; Davies et al., 2013). It aims to protect and transform physical and socioeconomic factors to enhance livelihood resilience.

External support is required to stimulate the strategies to cope with and adapt to disaster effects (Ahammad, 2011; Hamza, Smith, & Vivekananda, 2012; Wamsler & Brink, 2014). One kind of support is social protection (SP) which initially focuses on poverty reduction. It effectively protects people's livelihoods from major shocks and stresses (Béné et al., 2018). SP is all public and private initiatives that deliver income or consumption transfers to the poor, protect the vulnerable alongside livelihood risks, and improve the social status and rights of marginalized people, with the overall objective of reducing the economic and social vulnerability of poor, and marginalized groups (Devereux & Sabates-wheeler, 2004).

However, a range of studies have recently encouraged SP interventions such as cash transfer programs and public work programs, until micro insurance is linked with disaster risk reduction (DDR; Drolet, 2014b; Sagala, Yamin, Pratama, & Rianawati, 2014; Sarker, Wu, Alam, & Shouse, 2020a; Weldegebriel & Amphune, 2017a). As SP is a tool to protect and improve livelihood resources from disruption, it can be used to cope with disaster stress reasonably. It plays an essential role in strengthening the resilience of systems such as households or communities, achieving more significant equity, and supporting national human and economic development (Thomas Bowen, Carlo del Ninno, Colin Andrews, Sarah Coll-Black, Ugo Gentilini, Kelly Johnson, Yasuhiro Kawasoe, Adea Kryeziu, Barry Maher, 2014; Winder, M., & Yablonski, 2012).

As previously mentioned, Indonesia is a risk-prone country in Asia, as well as has a number of low-income or poor households. The number of poor people in Indonesia reached 25.4 million

in 2019, and the poverty level was 9.14% (Statistics Indonesia, 2020). In addition, the Bappenas report in 2019 revealed that 18 provinces with more than 10% poverty are affected by disaster impact.

The Program Keluarga Harapan (PKH) in Indonesia is a nationwide cash transfer program that has three advantages for its beneficiaries: it improves their financial status through cash transfers, strengthens human and social capabilities through training and workshops, and aids in accessing other forms of assistance, especially from the government. The targets of PKH are households living in poverty.

Therefore, this study explored the relationship between SP and disaster management. As this issue has grown relatively recently, it needs to explore global discourse, including the conceptual problem and implementation. Another objective was to evaluate the application of PKH, in disaster management, especially for household units.

## 1.2 Problem Statement

The problems raised in this study are divided into two issues. The first is the conceptual problem, which becomes the essential context of integration countermeasures for poverty and disaster impacts. The second is the empirical problem in this case study.

The conceptual problem refers to SP which is not originally designed to cope with disasters but potentially has broad functions to reduce the impact of natural disasters (Aleksandrova, 2019; Davies, Guenther, Leavy, Mitchell, & Tanner, 2009; Kuriakose et al., 2013; Sagala et al., 2014). However, this concept needs to be elaborated. SP to build livelihoods and resilience ahead of slow-onset disasters like longer-term climatic changes is still poorly understood (Béné, Wood, Newsham, & Davies, 2012; Davies et al., 2009). Moreover, there is limited empirical evidence on whether SP can build strategies to cope with the impact of natural disasters (Pain & Levine, 2012). Alternatively, the study of the disaster management concept is usually designed on a macro-to-medium-scale like mitigation infrastructure development. There is less intervention in disaster management on a microscale, such as household units, to protect and reduce the impact of natural disasters. However, it is vital to consider disaster mitigation at the micro level to assure adaptation capacity at the household and community levels. As the effects of a disaster are magnified among the most vulnerable groups in a population, they can pull themselves out of poverty to fall back into that situation. A vulnerable group, such as people under the poverty

line or just slightly above it, may be trapped in lengthy cycles of unemployment, low productivity and incomes, making them even more vulnerable to further extreme events. The consequences of disasters are such that there can be no development unless it is a sustainable process and unless resilience is an embedded component of development policy (Bello, Bustamante, & Pizarro, 2021). This condition could be influenced by the medium up to the macro scale. A successful measure on a micro-scale will also be delivered in the medium to the national scale for disaster management. An integrated effort at all scales/levels has become a challenge in developing inclusive disaster management (Sendai Framework for Disaster Risk Reduction, 2015).

The empirical problem arises from Indonesia being a risk-prone country while still dealing with the high poverty rate. In some parts of Indonesia, which are categorized as highly prone to natural hazards, the number of poor people is still high. The modeling results indicate that a household that encounters a specific natural disaster has a higher probability of being poor (4,68 percent more than others (Putra, 2017).

However, the problem of poverty in Indonesia has become challenging. It has increased since the crisis and political turmoil in 1998. The poverty rate has been increasing because of unstable internal economic conditions. The disparity in development between cities and villages is widening, as is the case in the western and eastern regions.

Owing to this issue, various poverty alleviation programs from macro to micro levels were conducted until the poverty level decreased. This yielded satisfactory results. Until recently, the poverty rate had saturated. This means that there are other factors that existing poverty alleviation programs have not addressed. Research by Bappenas stated that an invisible factor contributing to poverty is the impact of natural disasters that appear to disrupt livelihoods, especially for low-income people. The destructive effect of natural disasters has made their livelihoods challenging to recover. External stimulants are required to lift low-income groups from the problem of poverty and the impact of natural disasters.

Poor households have a double burden — the first being the limited resources to fulfill basic needs, and the second being less capacity to develop strategies in dealing with significant environment stresses that come up from natural disasters. In response, Indonesia still lacks adequate protective programs for poor and vulnerable households facing a high risk of natural disasters (Perdana, 2004). It can be seen in the vulnerable and poor households that livelihood depends on the environment and climate-sensitive sectors; for example, smallholder farmers or

cloth laborers in Java Island in Indonesia strive to maintain their livelihood when their daily income is disrupted by pattern weather that triggers flood incidents. Another empirical problem is the less coordinated countermeasure efforts of stakeholders in Indonesia. Many programs consider poverty alleviation and disaster impact reduction; however, fewer are linked.

## 1.3 Study Originality and Objectives

This study explored the possibility of integrating SP and disaster management on conceptual, empirical, and policy scales. This study comprehensively examined the integration approach of SP and disaster impact. It started with the conceptual debate on integration, a scientific discourse map of integration until empirical case assessment in different communities, and placed it in the context of program and policy improvement. A limited number of previous studies have acknowledged integration. Moreover, it is limited mainly to the conceptual stage and has not been completed with measured, practical cases.

Therefore, the main objectives of this research comprise:

1. To discover the integration framework of poverty reduction and disaster management in academic discourse globally.
2. To identify how PKH can help build coping strategies for low-income labor and smallholder farming households.
3. To explore SP program improvements, such as PKH, for integration with natural disaster issues.

## 1.4 Organization of The Study

This dissertation is divided into six chapters as illustrated in Figure 1, which presents the overall structure of this research. Below is a brief explanation of each chapter:

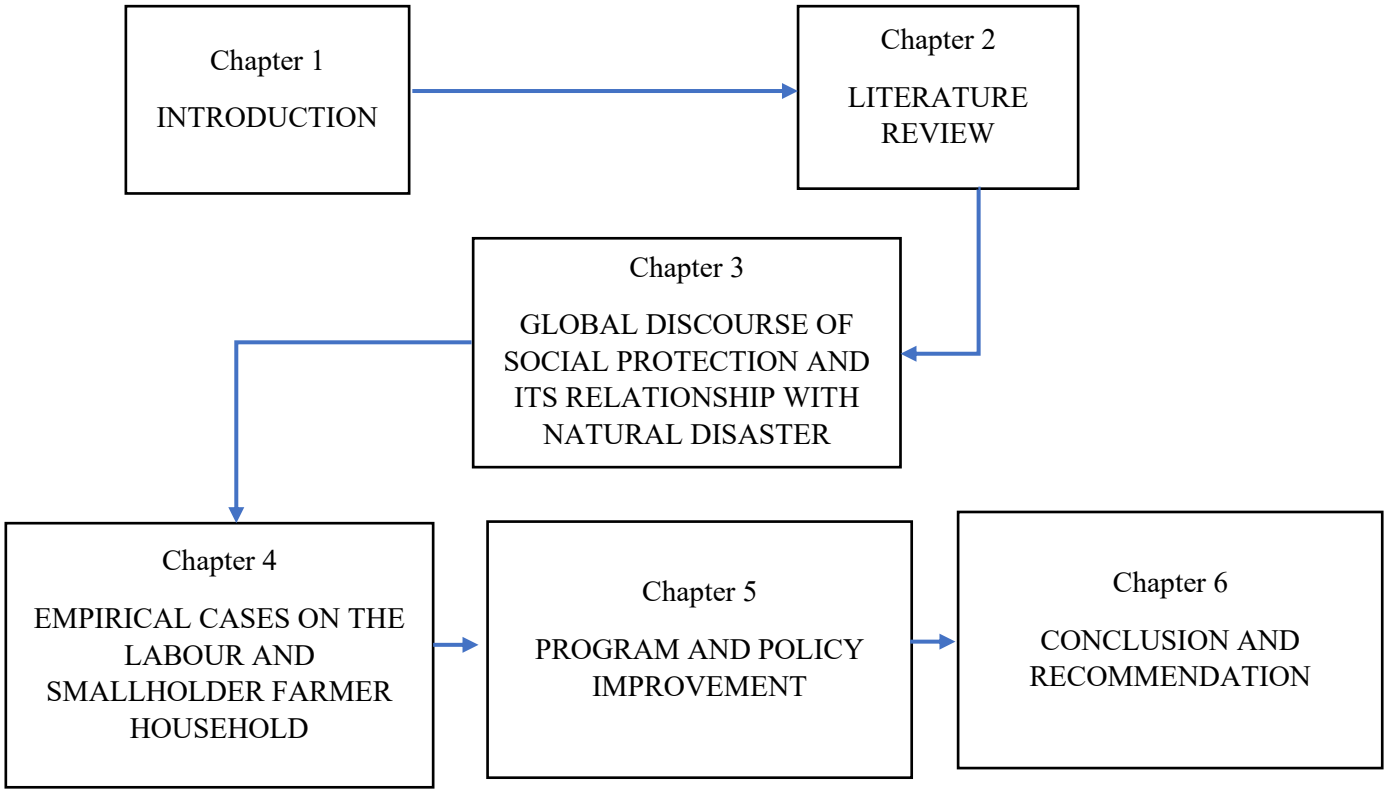



*Figure 1. Structure of Research*

Chapter 1 discusses the introduction as a background for the importance of this reason this research is important. This chapter introduces the conditions of poverty and disasters in Indonesia. Moreover, this chapter presents the methodology and term definitions used in this research.

Chapter 2 discusses literature as a reference for this research. It debates academic concepts and theories regarding SP and the impacts of natural disasters. Furthermore, it includes the position of this research in the discussion.

Chapter 3 explores the global and scientific discourse regarding integration issues.

Chapter 4 discusses empirical cases of labor and smallholder farming households. This chapter evaluates the impact of the SP program and its relationship with coping strategies through the livelihood capital characteristics of poor labor and smallholder farmer households. The findings are divided into an ex-ante (before the natural disaster incident) and ex-post (after the natural disaster incident) strategies.

Chapter 5 explores whether policies and programs in Indonesia, such as PKH, accommodate disaster issues. This includes exploring existing and potential (future) policies, plans, and programs for integrating SP and disaster management in Indonesia. The recommendations from the best practice on empirical findings can be inserted into existing policies, plans, and programs.

## 1.5 Study Framework and Methodology

Owing to a broad discussion of cross-cutting between poverty and disaster issues, this study has a multidisciplinary approach, while the engineering discipline approach is a basic analysis. Either poverty or disaster issues are complex and should be linked with multiple disciplines; therefore, a holistic viewpoint is essential to evaluate the excess relationship between them.

The first objective is a philosophical way to find conceptual references that deliver a message to complete the integration of concepts with evidence. Thereafter, the second objective attempts to find a systematic approach to the relationship between poverty reduction and disasters to gain a desired solution to the existing problem, as in the engineering approach. Finally, the third objective is to determine whether social and policy approaches are considered to place evidence with actual conditions in Indonesia (see Figure 2).

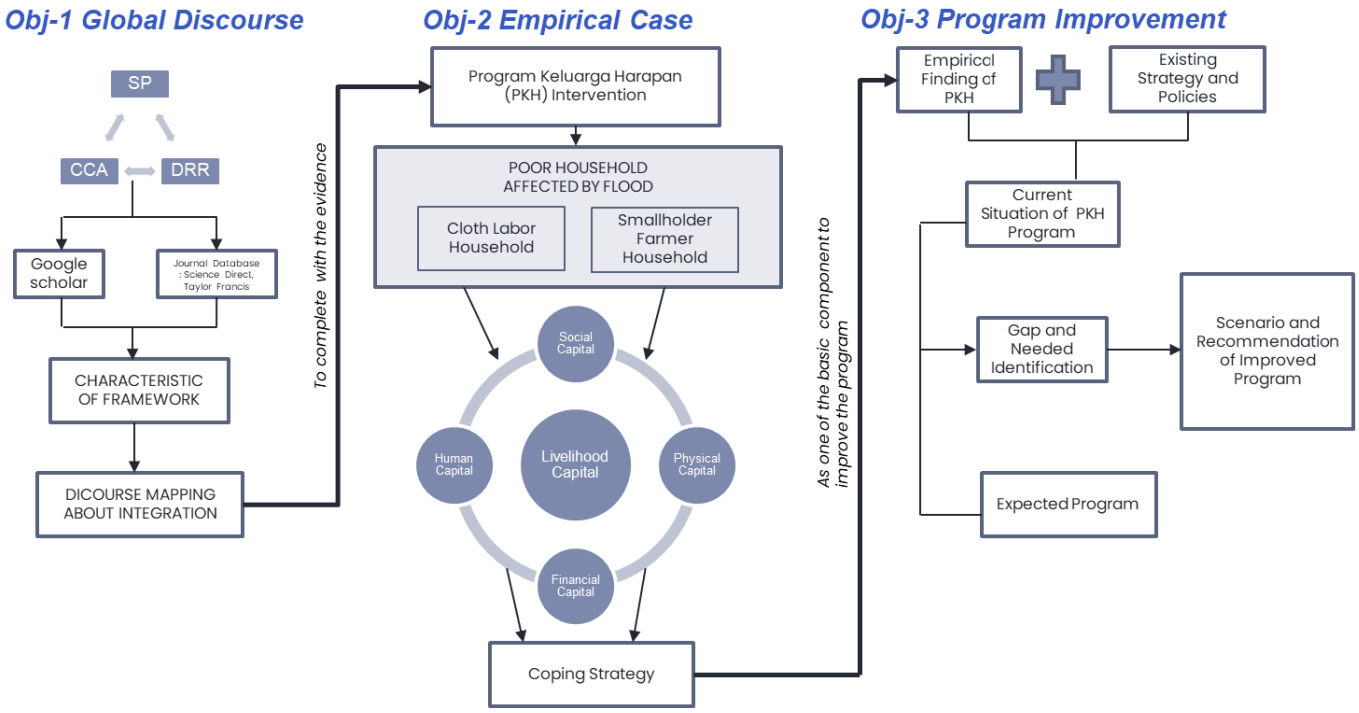



*Figure 2. Study framework*

To summarize the approach, including the methodology, recapitulation of the research methodology, and objectives of the entire study are enumerated in Table 1.

*Table 1. Research Methodology and Objective*

| Chapter | Methodology | Objective |
|---|---|---|
| Chapter 4<br>GLOBAL DISCOURSE OF SOCIAL PROTECTION AND ITS RELATIONSHIP WITH NATURAL DISASTER | **Data Collection:**<br>Desk Review<br><br>**Analytical Tool:**<br>Discourse analysis<br><br>Explanatory Analysis | • To identify each framework (Social Protection, Disaster Risk Reduction, Climate Change Adaptation) and address the integration and interrelationship among them.<br><br>• To identify the global trend of "integration" discourse among the scholar's viewpoint |
| Chapter 5<br>EMPIRICAL CASES ON THE LABOR AND SMALLHOLDER FARMING HOUSEHOLDS | **Data Collection:**<br>Survey for 600 samples<br><br>**Analytical Tool:**<br>Confirmatory Factor Analysis (CFA)<br>Structural Equation Modeling (SEM)<br>Explanatory Analysis | To provide empirical cases by exploring relationship between PKH and coping strategies in labor and smallholder farming households |
| Chapter 6<br><br>PROGRAM AND POLICY IMPROVEMENT | **Data Collection:**<br>Literature Desk Study, in depth interview with national and local government staff<br><br>**Analytical Tool:**<br>Content Analysis<br>Gap Analysis with Bardach's Typology | To identify the existing and the possibilities policies, plan and program in Indonesia related to integration issue |

## 1.6 Definition of Terms

a. Social Protection (SP)

SP is common in economic, social, developmental, and human studies. It is a policy that efficiently protects people's livelihoods from major shocks, including the threat of natural disasters (Béné et al., 2018). It is a public and private initiative that provides income or consumption transfers to the poor, protects the vulnerable against livelihood risks, and enhances the social status and rights of the marginalized, with the overall objective of reducing the economic and social vulnerability of the poor, vulnerable, and marginalized (Devereux & Sabates-wheeler, 2004). An SP program in a country comprises several instruments nationwide, with specific criteria depending on the target.

In this study, SP focuses on the countermeasure of poverty, limited to only one instrument, such as a cash transfer program.

b. Cash transfer program

Cash transfer is a program wherein a family/household receives cash benefits. For example, in Unconditional Cash Transfer programs, families receive cash benefits because the household falls below a certain income cut-off or lives within a geographically targeted region. These are the only criteria determining eligibility for participation. Another type of cash transfer is Conditional Cash Transfer, where families receive a cash payment only if they comply with certain requirements (Fernald, Gertler, & Neufeld, 2008). In this study, the cash transfer program is limited to the conditional cash transfer that has been attached to the Indonesia national welfare program.

c. Disaster Management

Disaster management is a tool incorporated into regional development planning and implementation, as regional conditions vary under socioeconomic conditions and hazard-related circumstances (UNCRD, 2012). The multidisciplinary nature of disaster management suggests collaboration between different disciplines for an efficient outcome (Iqbal, Perez, & Barthelemy, 2021). Disaster management also includes the effects of climate change.

In this research, disaster management is a general countermeasure in dealing with a natural disaster, specifically the hydro-meteorological catastrophe initiated by decision-makers such as the government or non-profit organizations.

d. Disaster Risk Reduction (DRR)

DDR is the concept and practice of reducing disaster risks through systematic efforts to analyze and reduce the causal factors of disasters. Reducing exposure to hazards, lessening the vulnerability of people and property, wise management of land and the environment, and improving preparedness for adverse events are examples of DDR (UNISDR).

e. Climate Change Adaptation (CCA)

CCA is a wide range of adjustment processes to actual or expected climate and its effects, to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate, its effects, and human intervention may facilitate adjustment to the expected climate (IPCC, 2012a).

f. Livelihood Capital

Livelihood capital or resources are defined as a stock base from which different product streams are derived, from which livelihoods are constructed (Scoones, 1998). It comprises five components based on a sustainable livelihood framework: natural, physical, human, financial, and social capital (Bebbington, 1999; Moser, 1998; Scoones, 1998).

In this study, livelihood capital refers to the resources that belong to poor households, which comprises financial, social, human, and physical capital.

g. Coping Strategies

Coping strategies are specific responses or activities used to adjust to changing conditions, including those caused by natural disaster with short and long-term impact (Adger, Huq, Conway, Brown, & Hulme, 2003; Mosberg & Eriksen, 2015). In this study, coping strategies can be seen in a sequential stage before (ex-ante) or after (ex-post) the flood. Coping strategies include activities of poor households to reduce the impact of natural disasters.

h. Adaptive Social Protection (ASP)

ASP is a concept that provides a broader definition of how social protection cooperates with DDR and climate change. It is an integrated approach to SP, DDR, and CCA, resulting in a greater impact on people's vulnerability helping them escape poverty ASP involves examining the role of SP in strengthening adaptation, which is more robust in the face of current and future shock. Figure 3 illustrates the modified version of Davies.

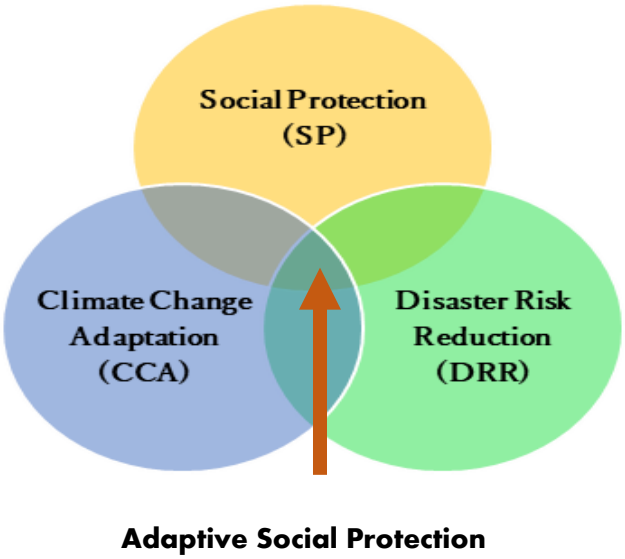



*Figure 3. ASP Concept*

i. Program Keluarga Harapan (PKH)

PKH provides conditional social assistance to underprivileged families (KM) which are designated as PKH beneficiaries. PKH opened access to poor families, especially pregnant women and children, to utilize various health service facilities (*Faskes*) and educational service facilities (*Fasdik*) available around them (Ministry of Social Affair, 2020). There are two main activities in PKH :1) routine cash transfer and 2) family development session.

j. Disaster Mitigation

A sequence of activities aims to reduce disaster risk through structural and non-structural development and awareness. It also increases the ability to encounter threats. In this research, disaster mitigation is about tangible activities that measure the natural disaster impact initiated by the system, such as government, private sector, community, household, or even individual.

k. Cross-cutting mechanism

An approach aims to make a collaboration intervention in the planning, implementation, monitoring, and evaluation of development policies and programs. In this research, the cross-cutting includes intervention and problem solving of gaps involving several stakeholders to collaborate and find a new fusion way to intervene in the issues.

l. Safety Net

A program that protects families from the impact of economic shocks, natural disasters, and other crises includes cash, in-kind transfers, social pensions, public works, and school feeding programs targeted at poor and vulnerable households (World Bank, 2019). The safety net is to support people, not to be trapped in poverty. In this research, the safety net is limited by the favored method, cash transfer.

m. Slow Onset Disaster

A disaster event that emerges gradually over time. Slow-onset disasters could be related to, e.g., drought, desertification, sea-level rise, and epidemic disease (UNDRR, n.d.). Usually, it comes in several frequencies in a specific location. In this study, the slow onset disaster is the flood incident.

n. Ex-Ante Strategy

The ex-ante strategy is defined as measures taken before experiencing shocks respectively (Lekprichakul, 2009). This study defines preparedness and precaution activities to deal with the flood threat.

o. Ex-Post Strategy

The ex-post strategy is defined as measures taken after experiencing shocks respectively (Lekprichakul, 2009). In addition, this study includes the recovery strategy to back into the everyday activities of the vulnerable group

p. Climate related Disaster

A natural disaster event that is related to a climate such as hydrometeorological (e.g., floods, storms) and climatological disasters (e.g., droughts) (Thomas, Ramon, Albert, & Perez, 2013). In this study, the disaster has a close relationship with heavy rainfall over a period of time.

q. Integration Approach/Framework

An integration framework is an approach that mainlines a joint collaboration for several stakeholders from different backgrounds to figure out one linked policy, program, or intervention. For example, in this study, the integration framework means cooperating disaster issues in poverty reduction measures like social protection schemes.

r. Vulnerable group

Specific groups with less capability to cope with uncertainty and risk. The vulnerable group is often characterized by low assets and access and is at risk of chronic poverty (Kozel, 2004). In this study, the vulnerable group focuses on their economic status.

s. Poverty Alleviation/Reduction

A process that seeks to reduce economic and non-economic poverty levels in groups of people, communities, or countries. Poverty reduction may include the program in education, health, entrepreneurship, technology, income redistribution, and various forms of economic development (Tavanti, 2012).

t. Family Development Session

The structured learning process to accelerate behavior change in PKH beneficiary families. Family development sessions are carried out in groups, and social assistance officers give the learning session. Teaching materials in the form of module books, flipcharts, posters, and brochures made by the MoSA and supported by local governments.

u. Unified Database

Household and individual data by welfare status in Indonesia. The Indonesian population's unified database covers 40 percent of poor households in the country, which is updated four times a year by the MoSA and the Adhoc team.

v. Policy improvement

Policy improvement is the process of modifying existing policies, including a program with several changes or major changes depending on the proposed target. It aims to adjust the current approach to catch up with the latest issues and be up to date with the recent problems.

w. Smallholder farmer household

Smallholder farmer households in this research are the same as the peasant family. It means the farmer working in the rice field and other plant fields and paid by the landowner. So, the smallholder farmer has not owned the land.

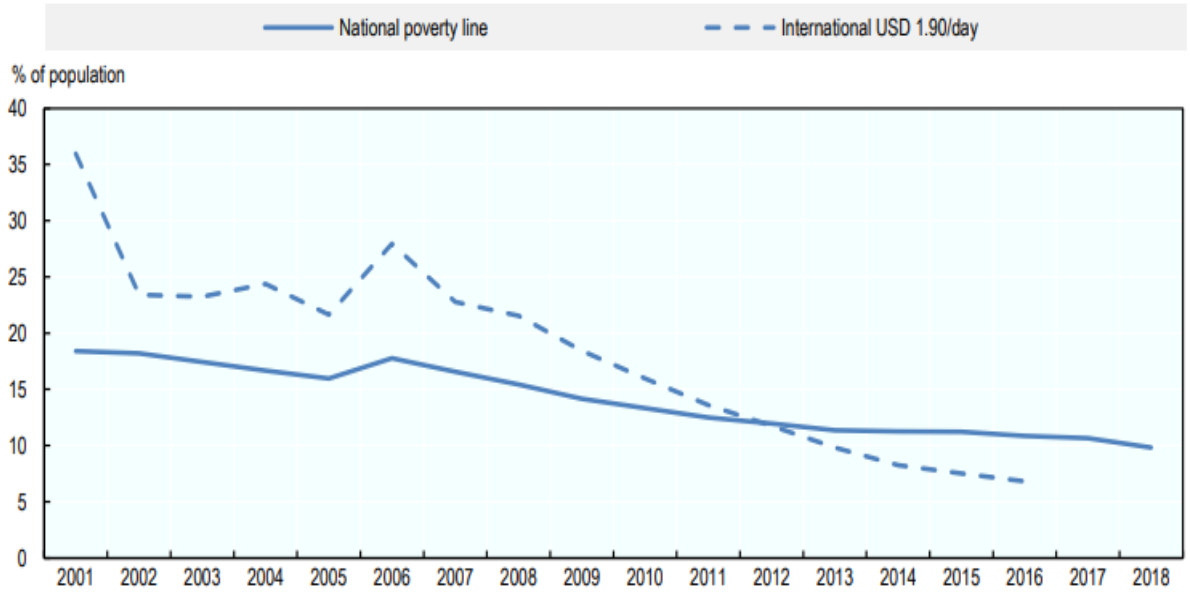
x. Labor Household

Labour household in this research refers to the family where the head of household works as traditional cloth labor. They usually work in the medium or small local enterprises that their relatives or neighbor applies.

## 1.7 A Brief Explanation of Indonesia's Condition: Poverty and Disaster

### *1.7.1 Poverty and Countermeasure in Indonesia*

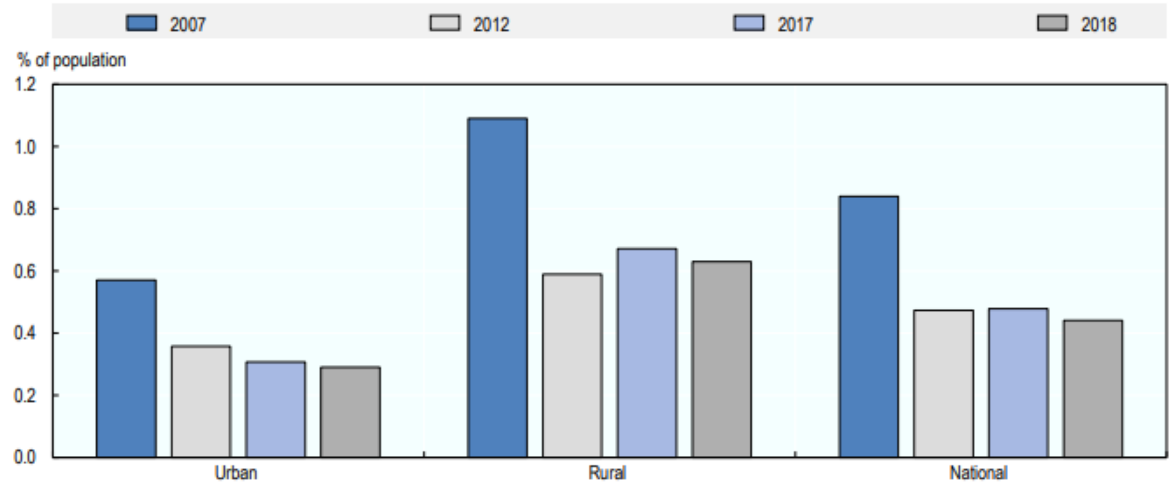
Indonesia, with a total population of 273.52 million in 2020 (The World Bank, 2022) has successfully slashed the poverty rate from 24.23 % in 1998 to 9.66 % in 2018 (Statistics Indonesia, 2020). Indonesia's strong economic performance has had significant impact on reducing poverty and bringing the poverty rate below 10% (see Figure 4). The World Bank International set the poverty line at USD 1.9/day and compared with Indonesia's poverty line, which has fallen consistently since 2006. Indonesia's poverty line has been higher than that of the World Bank since 2012. However, the decline in poverty stopped after 2006, with a large proportion of the population remaining poor or vulnerable.




Source : OECD, 2018

*Figure 4. Indonesia Poverty Headcount Ratio (2001-2008)*

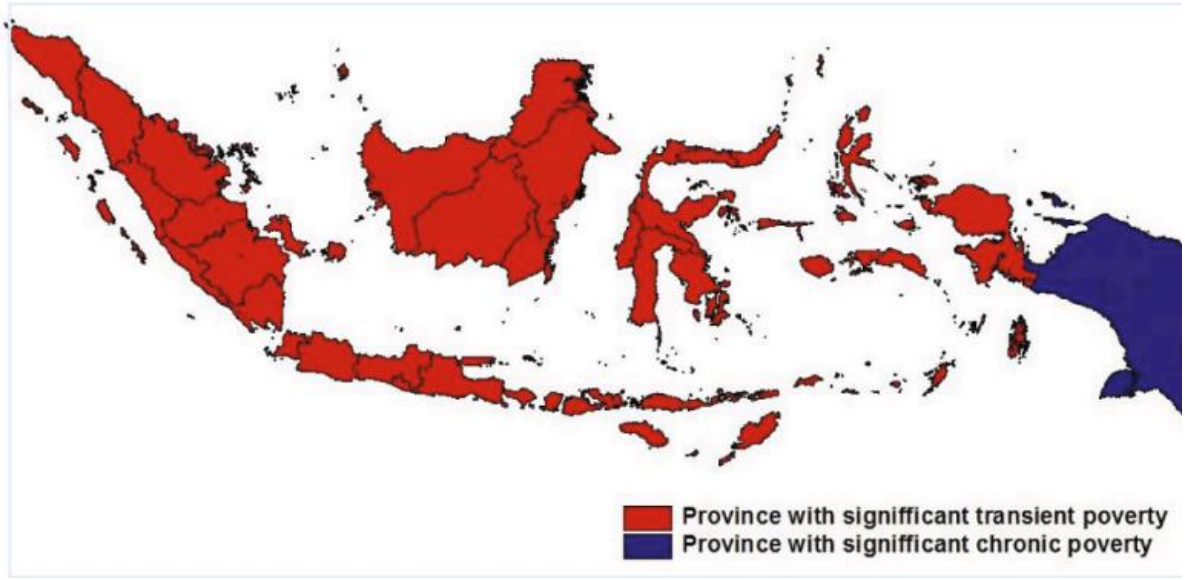
Indonesia's efforts to reduce poverty have become a new challenge, as the pace of poverty eradication has slowed in recent years. From 2008 to 2015, the poverty rate declined at an annual rate of 0.68%, whereas from 2015 to 2019, the poverty decline annual rate was only 0.33% (Statistics Indonesia, 2020). Poverty reduction becomes increasingly complicated and challenging as the poverty rate decreases. To see more details about the poverty rate, Statistics Indonesia counted poverty in urban and rural areas. The poverty rate in urban areas continued to decrease from 2007 to 2018. Meanwhile, rural areas experienced a more dynamic change in the poverty rate from 2007 to 2018 (see Figure 5).




Source : OECD 2018

*Figure 5. Urban and Rural Poverty Rate 2018*

Previous studies periodically analyze Indonesia's poverty using the poverty dynamic to identify who continues to be poor (known as chronic poverty) and should be given different policies, and those who temporarily move out from poverty (transient poverty) (Purwono, Wardana, Haryanto, & Khoerul Mubin, 2021). Chronic poverty contributed to 28.28% of national poverty. Poverty dynamics at sub-national levels captured substantial transiently poor households in almost all provinces, except Papua province. Figure 6 illustrates that Papua province, indicated by the blue color, is the only province with a significant proportion of chronic poverty, among others.

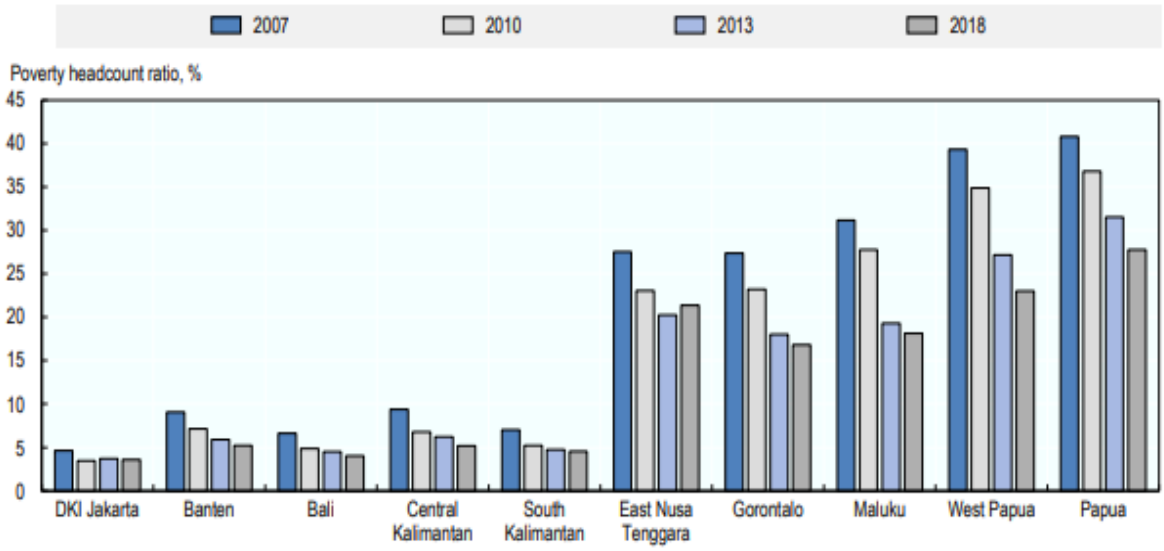



Source : Puworno et.al 2021

*Figure 6. Poverty Dynamics in Indonesia at Provincial Level*

Higher percentage of lasting poverty provinces than the national level are Aceh, North Sumatra, Lampung, Special Region of Yogyakarta, West Nusa Tenggara, East Nusa Tenggara, Central Sulawesi, Southeast Sulawesi, Gorontalo, Maluku, West Papua, and Papua. Most of them are located on the eastern side of Indonesia.

The inequality between the western and eastern sides of Indonesia was indicated by the gap in poverty rate between Jakarta province (west side) and Papua province (east side) in 2018, which was close to 25 percentage points (see Figure 7). Poverty rates in eastern provinces are typically higher than those in western provinces, although the eastern provinces are less populated. Indonesia has a robust spatial dimension of poverty and inequality; although differences exist, the eastern part is significantly more disadvantaged than other areas (OECD, 2019).




Source : OECD, 2018

*Figure 7. Poverty rates vary greatly by province*

The rate of decline in the number of poor people on the eastern side is slower; therefore, the poverty rate is still high and has saturated the national poverty rate. Bappenas (2018) identified the factors that caused high poverty in eastern Indonesia, namely geographical factors, access, human resources, investment, and natural disasters. An interesting aspect of Bappenas's studies is that low-income families have a livelihood as farmers, which is highly dependent on natural

conditions. Climate change has an impact on the agriculture and fishery sectors. Poor households bear a more significant burden owing to disasters because they are among the groups most vulnerable to the effects of drought, floods, earthquakes, and landslides. Disaster risk threatens the poor and others who have similar expenditures on the poverty line. Thus, positive, negative, and even minor shocks can quickly push people above or below the poverty line (Hill, 2021).

The Government of Indonesia's (GoI) efforts to reduce poverty identify not only the poor who need help but also the vulnerable. Poverty programs serve as social safety nets to keep vulnerable household groups. The GoI has implemented poverty eradication programs in various forms, which can be grouped into two types: (1) cash transfers and (2) non-cash assistance. This policy is expected to increase public consumption to meet basic needs (Mukti Pratomo & Safitra, 2021). The Ministry of Finance (2019) stated that the government intends to improve spending quality so that existing poverty eradication programs will be more effective (Nugroho, Amir, Maududy, & Marlina, 2021) and identified poverty eradication programs that were still active in 2018–2019 (see Table 2).

*Table 2. Active poverty eradication program in year 2018-2019*

| **Program** | **Description** | **Year started** | **Number of participants (2018)** | **Target** | **Total cost** |
|---|---|---|---|---|---|
| PKH (Program Keluarga Harapan) | Conditional cash transfer program | 2007 | 10 million households | Poor household with certain conditions | USD 1.3 billion |
| PIP (Program Indonesia Pintar) | School assistance for poor student | 2015 | 19.7 million people | Student from poor family | USD 749 million |
| PBI-JKN (Penerima Bantuan Iuran-Jaminan Kesehatan Nasional) | Health insurance assistance for poor | 2014 | 92.4 million people | Poor and near poor households | USD 1.7 billion |
| Rastra/BNPT (Beras Sejahtera and Bantuan Pangan Non-Tunai) | Food assistance | Rastra (2015) and BNPT (2018) | 16 million households | Poor and near poor households | USD 1.31 billion |

| | | | | | |
|---|---|---|---|---|---|
| Electricity Subsidy | Electricity subsidy | 2000 | 23.43 million household (450 VA) and 6.54 million household (900 VA) | Poor and near poor households | USD 3.7 billion |
| LPG Subsidy | LPG subsidy | 2007 | 54.9 million people and 2.29 million SMEs | Poor and near poor households | USD 3.9 billion |
| Diesel fuel subsidy | Diesel fuel subsidy | Unknown | N/A | Poor and near poor households | USD 2.49 billion |

The program of Penerima Bantuan Iuran-Jaminan Kesehatan Nasional (PBI-JKN) has the largest number of contributor and supporting the contribution to the health insurance program. In terms of the amount received, Program Keluarga Harapan (PKH) provides the most money for each beneficiary. In contrast, the electricity and LPG subsidies are the programs that take the largest amount from the government budget due to total money spent. All these programs have a relatively common, intended target; that is, poor and nearly poor households. The progress and challenges for each program will be elaborated on in the following subsection.

The target of the poverty eradication program is poor people and poor households. To be right on target, Indonesia established the unified database (DTKS) to identify beneficiaries of the different poverty eradication programs. DTKS includes 40 percent of the poorest household database in Indonesia and is managed by the Ministry of Social Affairs (MoSA). Poverty eradication programs such as PKH, PIP, PBI-JKN, Rastra/BNPT, and electric subsidy beneficiaries are based on DTKS.

To be more precise Government of Indonesia protect the poor group. In picture… shows the big picture of the whole social protection program. It can be divided into three groups such as social assistance, insurance, and economic empowerment for the poor. Program Keluarga Harapan (PKH) is included in the social assistance initiated by Ministry of Social Affairs.

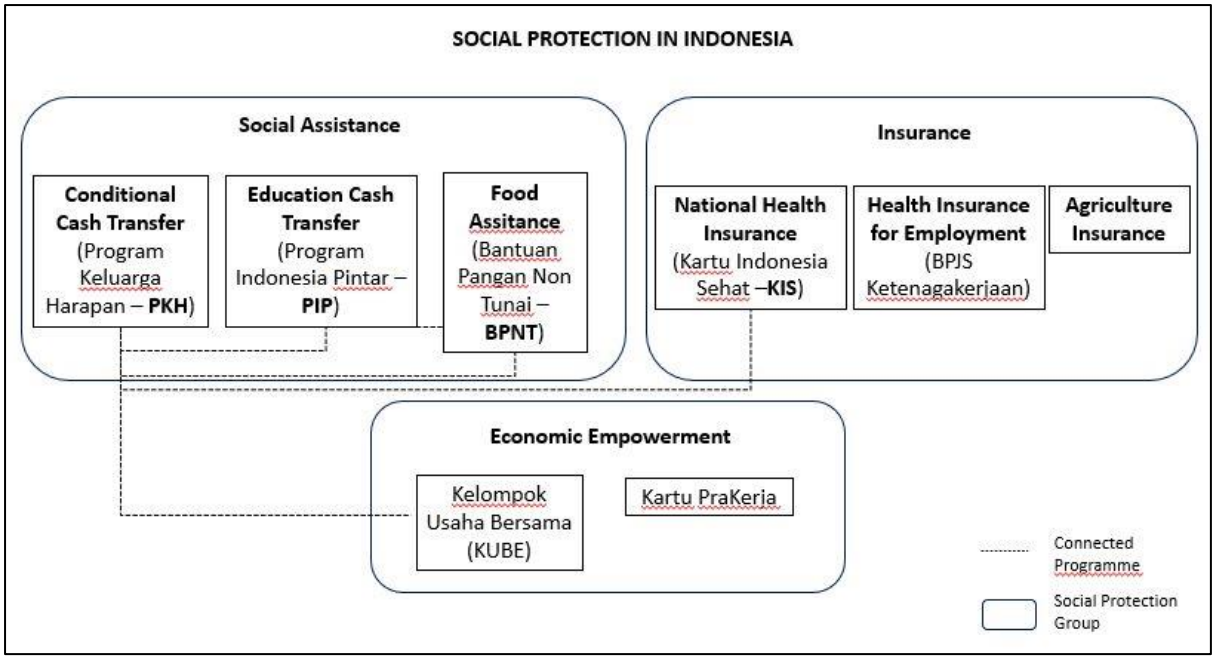



*Figure 8. Social Protection Programmes*

PKH was the first conditional cash transfer program and targeted poor and near-poor households. Cash transfer improves household expenditure and human capital productivity in the long term by investing in health and education (Nazara & Rahayu, 2013). Beneficiaries of PKH were only 0.4 million in 2007 and right now increased to 10 million households in 2018. Thus, budget allocation rose from USD 34 million in 2017 to USD 1,3 billion in 2018. PKH also expanded its aid through integration with other poverty reduction programs (Ministry of Social Affair, 2020). Nevertheless, PKH is the most effective poverty reduction program in Indonesia.

The pace is slowing down in the race to reduce poverty, so the government should develop a new approach. Nugroho et.al (2018) found that the easiest way to reduce the targeting error could be by integrating existing poverty programs into the most regressive program. The solution is the best possible short-term because the targeted household is already identified, and no additional targeting cost is required.

### *1.7.2 Disaster and Countermeasure in Indonesia*

Indonesia is one most vulnerable countries in the risk of natural disasters by the country's high exposure to geophysical and hydro-meteorological hazards (Djalante, Garschagen, Thomalla,

& Shaw, 2017; Fuady, Munadi, & Fuady, 2021). There are 11 earthquakes with magnitudes above seven on the Richter Scale (SR) that have rocked Indonesia in the last 15 years, with casualties of 21,064 people injured, 1,432 people missing, and as many as 10.2 million people displaced by the disaster (Djalante et al., 2017). The National Disaster Management Agency (BNPB) (2020) recorded those disasters from 2010 to 2020 were dominated by floods with a total of 7,653 incidents, followed by hurricanes, as many as 7,166 events, and 5,230 landslides. In the year 2020 itself, floods and hurricanes are still dominant disasters in Indonesia (see Figure 8). When it's come to comparing the impacts of geophysical and climate-related disasters, geophysical disasters have been extremely deadly, while climate-related disasters occurred more often and caused more damage (Djalante et al., 2017).

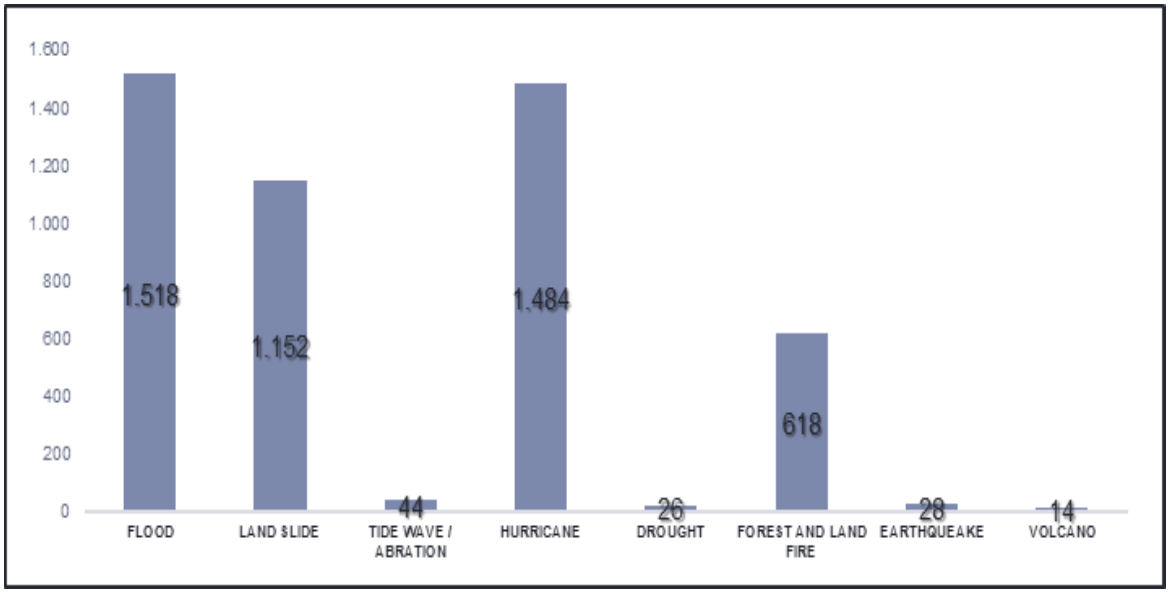
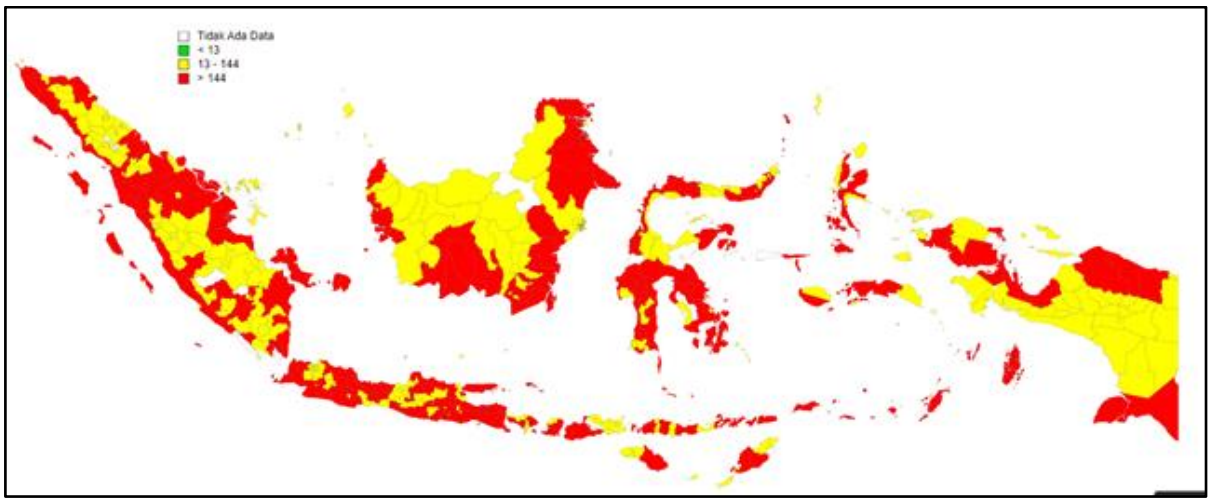



*Figure 9. Disaster in 2020*

The interaction between an increasing population with unrestrained urbanization, and development in high-risk areas with less social and environmental consideration, has led to disaster and climate-related srisk in Indonesia (Djalante, Holley, Thomalla, & Carnegie, 2013; Firman, 2016). The rainy season, with high rainfall intensity, increases the risk of floods. Floods can also occur during high tide. The combination of high rainfall and sea level rise could increase the intensity of flood disasters that usually occur in coastal areas.

Disasters at the sub-national level revealed that Jawa Tengah province has the highest probability of disaster occurrence, and Jawa Barat province is the most risk-prone area for disasters from 2010 to 2020 (Azizah et al., 2021). The BNPB identified disaster risk-prone areas in 2018 and the majority of the areas on Java Island. The national average risk index is

144 points, and provinces on Java Island, such as Banten, Jawa Timur, Jawa Barat, and Jawa Tengah, have a higher average risk index than the national average (see Figure 9).

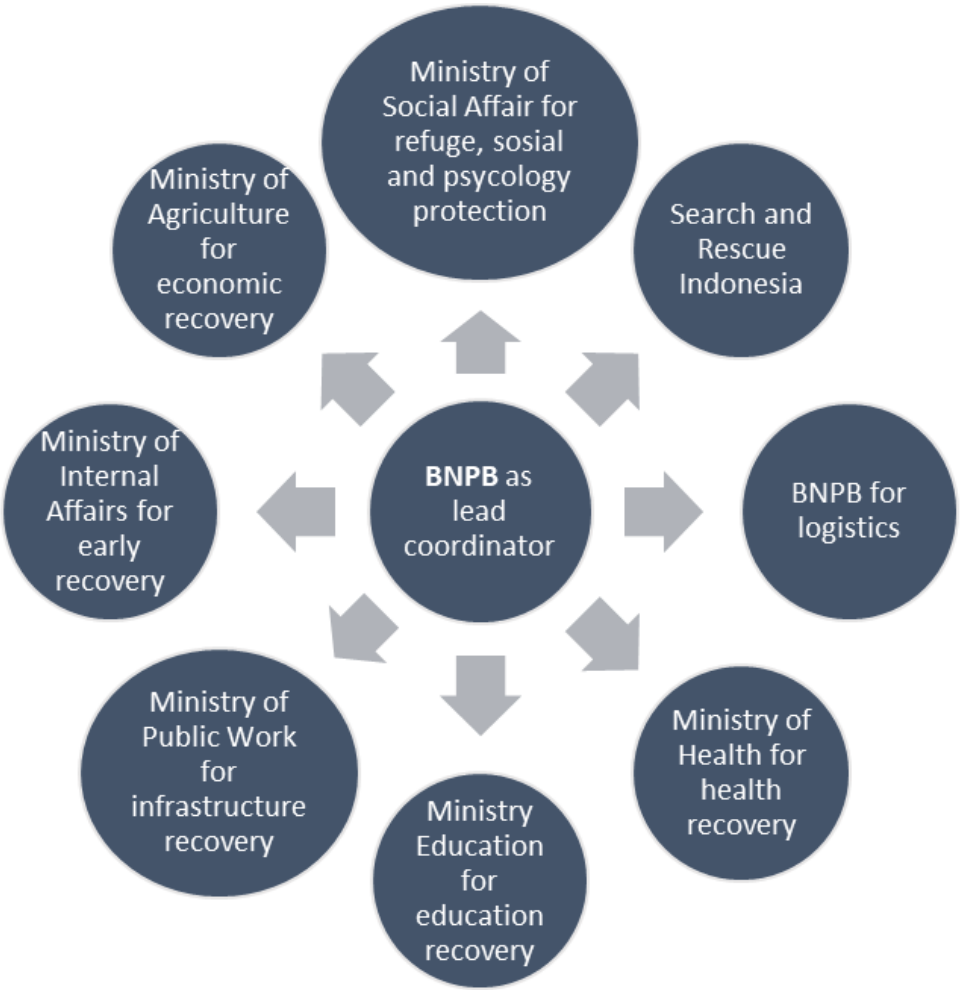



Source : inarisk.bnpb.go.id/irbi

*Figure 10. Disaster Risk Index Map 2018*

Prevention and mitigation activities can be performed to reduce risks, disaster dangers, and impacts. Disaster countermeasures to reduce the impact of disasters are structured and regulated in the National Medium-Term Development Plan (RPJMN) 2020-2024 through aspects of development planning related to disaster management. The central and regional GoI has the authority to implement disaster countermeasures and management, including the GoI's decision on disasters. Indonesia Law Number 24 of 2007 (Undang-Undang Nomor 24 Tahun 2007), defined disaster management and included policies regarding planning and funding. According to the law, the National Agency for Disaster Countermeasures (BNPB) was appointed as a coordinator and worked with other ministries related to disaster mitigation and impact (see Figure 10). The MoSA, as one of the members, is responsible for coordinating

refugees and protection. In addition, it focuses on the SP of vulnerable groups related to disasters.




*Source : Indonesia Law Number 24 of 2007*

*Figure 11. Disaster Management Cluster*

The MoSA plays an important role in mitigation, evacuation, protection, and social support. It has three action programs for disaster countermeasures: social capacity in disaster mitigation, social assistance in disaster events, and social recovery in post-disaster circumstances. In disaster mitigation, the MoSA created a disaster management system for SP, established TAGANA as community-based disaster management, and established Disaster Preparedness Village (Kampung Siaga Bencana) as a disaster-resilient village. In a disaster, it builds a food distribution center, TAGANA, Kampung Siaga Bencana deployment, and social services for vulnerable groups. In the post-disaster event, it provides psychosocial support services, recovery assistance, and social assistance with cash transfer aid.

### *1.7.3 Program Keluarga Harapan (PKH)*

PKH, a conditional cash transfer program in Indonesia, is designed to protect low-income households. The existence of this program is nationally important because it affects poverty control in Indonesia. In addition, itis at the forefront of government intervention to protect the community against idiosyncratic and covariate shocks, especially the poor.

As an instrument of SP, PKH is part of the cash transfer mechanism. It is an instrument that can be synergized with disaster management. It is not designated for disaster reduction, however, it potentially affects coping strategies in dealing with natural disasters. In many cases in Indonesia, many households are still trapped (back) in poverty because of the natural disasters that impoverish this group. For example, according to previous research in one province in Indonesia, Bengkulu is prone to earthquake disasters. In 2000 and 2007, a large earthquake destroyed massive settlements and infrastructure. According to Farid et al., 2019 the low-income group has been trapped where low-income people were trapped in poverty for two to three years after the earthquake. (M. Farid, N.Setyowati dan Z.Muktamar, 2019).

Therefore, the GoI in Medium National Planning acknowledges the idea that SP programs, including PKH, can consider natural disasters as one of the criteria for determining beneficiaries. The plan is in accordance with previous research and ideas, where the concept of integration effectively impacts poverty and disaster control. This idea also addressed the issue of the GoI initiating an integration framework that combines SP, DRR, and CCA. Even though it has been mentioned in the national planning, cooperating SP with natural disasters is still a general approach and has not been placed in detail in implementation planning.

Alternatively, the result from the empirical result in this study indicated that PKH contributes not only to livelihood capital but also to coping strategies in dealing with flood incidents for two types of community farmers and labor. Therefore, this result supports the potential of PKH to advance low-income households and reduce disaster impact through coping strategies.

Based on this argument, the author also explored the development and expansion of PKH. PKH's expansion will consider disaster issues as an answer to the Medium National Planning directives and follow-up to previous empirical studies.

The output obtained is expected to provide an overview of the scenario that will be considered if PKH becomes a pilot program to integrate poverty reduction with disaster management. This chapter comprehensively presents the position of policies and programs in Indonesia regarding

the idea of integration. Gaps and needs analysis can be found in the bottleneck and further steps to determine the choice of scenarios that can be recommended to stakeholders.

PKH provides conditional social assistance to poor families. As a dependent social assistance program, it opens access to low-income families, particularly pregnant women and children, to take advantage of various health and educational service facilities. Its benefits have also begun to be encouraged disabilities person and the elderly by maintaining their level of social welfare. PKH targets are families or people who are poor and vulnerable and are registered in a unified database with criteria components of health, education, and social welfare. The details of each criterion component are as follows:

1. Health criteria component
    - Pregnant woman/breastfeeding mother, with maximum two times pregnancies
    - Early childhood (ages 0-6 years), with maximum two children
2. Education criteria component
    - Elementary student
    - Junior high school student
    - Senior high school student
3. Social criteria component
    - Elderly (70 years and over), maximum one person, and are in the family
    - People with severe disabilities, maximum 2 people and are in the family

PKH provides cash transfer assistance according to the criteria for components in low-income families. One beneficiary family receives cash transfers for health, education, and social reasons, four times a year, every three months. The amount of money received per year by low-income families is illustrated in Figure 11.

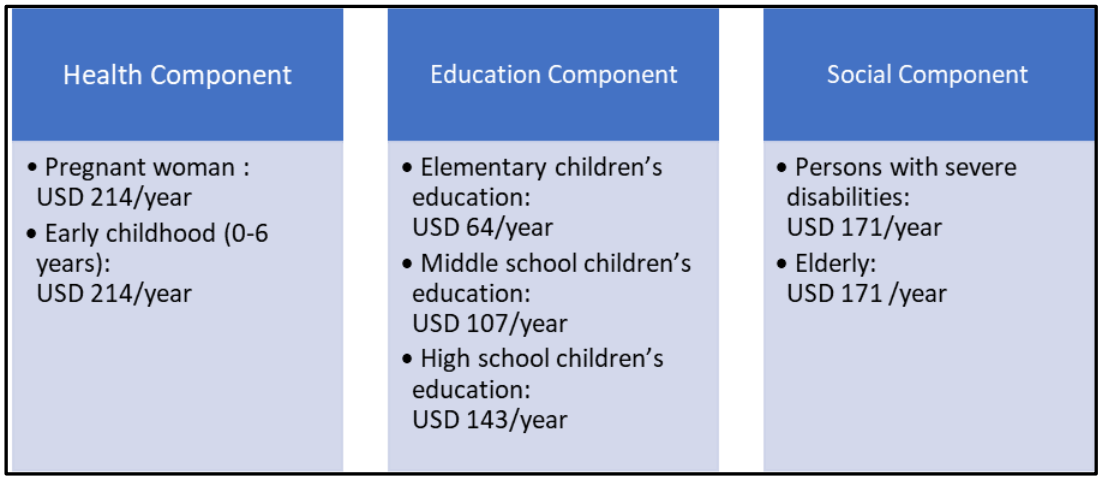



*Figure 12. Component list of PKH cash transfer*

PKH beneficiary families also receive assistance programs at beneficiary group meetings called Family Development Sessions (FDS). PKH facilitators use this meeting to provide materials that the Ministry of Social Affairs has determined. The purpose of FDS is to make beneficiary families independent in terms of education, health, nutrition, economy, child protection, and social welfare for the elderly and people with severe disabilities. This program was conducted monthly during the PKH recipient period.

PKH provides a complementary social assistance program for all beneficiaries. The complementary programs are the Healthy Indonesia Program for health assistance, the Smart Indonesia Program for education assistance, the Sembako Program (Sembako Assistance Program) for basic food needs, Joint Business Groups (KUBE) for economic empowerment, Housing Improvement for housing needs, Social Rehabilitation Assistance, and other social assistance. PKH is the entry point for social assistance programs for the poor. DTKS is the reference for PKH recipients to receive complimentary assistance programs. It contains data on poor and low-income families of PKH and other social assistance recipients. DTKS, managed by the Ministry of Social Affairs, integrates information on recipients of social assistance, which contains the number and target beneficiaries of the program. It helps reduce errors in targeting SP programs.

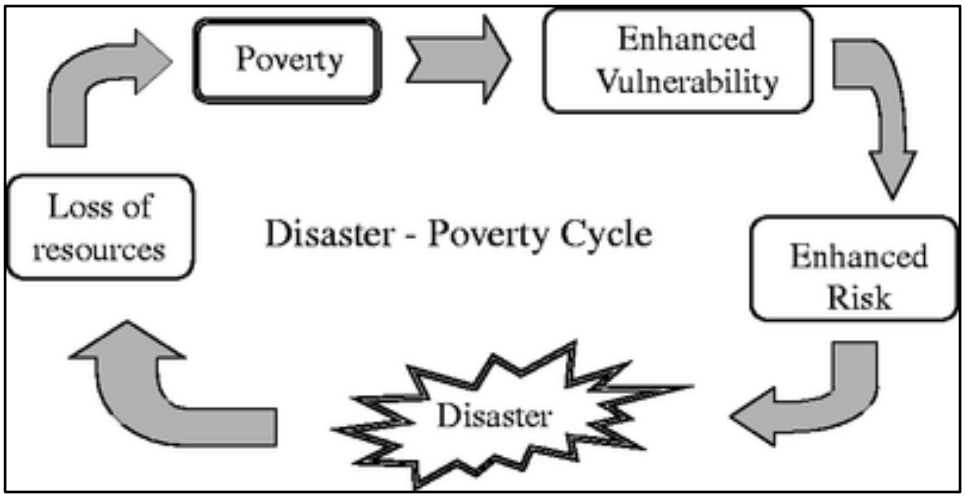
# CHAPTER: 2 LITERATURE REVIEWS

## 2.1 Poverty Nexus Disaster

Various things could describe the relationship between poverty and disaster existence. Poverty itself is dynamic, not static. Some people earn money and move out of poverty, while others experience shocks and are trapped into poverty (Hallegatte, Fay, & Barbier, 2018). Natural disaster impacts can be categorized as shocks if they occur rapidly like tsunamis, earthquakes or stress if they exist slowly like climatic hazards or sea level intrusion. All types of this effect could pulled in people or families in poverty.

The lasting impacts of natural disasters such as decreased income, lower living standards, until unemployment will be born disproportionately by the poorer segment of society (Akter & Mallick, 2013). Moreover, natural disasters, including the climate change impact, also affect the poor group. The existence of poverty exacerbated the effect of natural disasters and vice versa. Therefore, the groups most affected by these two incidents are the vulnerable or the poor. Existing daily basis conditions like inadequate disposal of fresh water, high child and infant mortality rates, and a very high disease burden (malaria, tuberculosis, diarrhea, etc.) are common characteristics of such poor groups and informal settlements (Satterthwaite et al, 2007). The double burden on poor households makes the adverse effect of disaster disrupt their livelihood. It will lead to the poor adopting negative coping strategies (Asian Development Bank., 2018). For example, previous research that results in poor farmer households that depend solely on agriculture and at the same time have frequent natural disasters can be especially devastating and need an extensive time to back into normal life (De Silva & Kawasaki, 2018; PiratheeparajahN & RajendramK, 2014). Other research also shows in a case study of India that household affected by droughts in the past was 15 times more likely to fall into poverty (Krishna, 2006). Similar to previous research in Indonesia, modelling results show that a household that encountered a particular natural disaster has a higher probability of being poor by 4,68 percent than others(Putra, 2017). Therefore, increased disaster risks can also expect to intensify poverty (ISDR, 2009). On the contrary, vulnerability regards environmental degradation and disaster is produced by local inequalities as an outcome in different groups of people (Kuriakose et al., 2013; Mahanta & Das, 2017). Therefore, the risk impact created the probability of becoming deprived.

The keyword to link poverty and disaster is a vulnerability that attaches to each system's livelihood, for example, household. It can define as the attributes of a system (could be a person or group, etc) and how their situation influences its capability to prepare, resist, and recover from the impact of natural hazards/climate change (Du, Ding, Li, & Cao, 2015; IPCC, 2014a, 2014b; Piya, Joshi, & Maharjan, 2016; Testa, Pettigrew, & Savoia, 2014; Wisner, B., Blaikie, P., Cannon, T., Davis, 2003). Unequal condition of welfare existence, disparity of population, discrimination of political access . These social process may be unrelated to the disaster event but they are factors that make negative impact of disaster bigger(De Silva & Kawasaki, 2018).




Source : Piyoosh Rautela, 2006

*Figure 13. Disaster and Poverty Cycle*

As seen in the Figure 3 that disaster and poverty like viscous cycle. Disaster effect exacerbated poverty by loos of resources that will enhance vulnerability. Since the vulnerability is high mades, the potential risk could disrupt easily through the future disaster event. The poor rely on limited and vulnerable resources, which subsequently have more significant impacts from shocks and stresses, including disaster-related shocks (Asian Development Bank., 2018).

The household's socio-economic status determines its vulnerability to disaster (Akter & Mallick, 2013; Brouwer, Akter, Brander, & Haque, 2007; Neil Adger, 1999). Since the poor had inadequate access to capital, they lived in poorly built settlements located in hazard-prone areas. Therefore, more exposure to hazards made them more sensitive to the environmental incident. Simultaneously, they face limited assets as they rapidly deal with the next environmental shocks and stress in their poor settlement area.

### 2.1.1 *Poverty Alleviation and Disaster Management*

Since the basic problem of poverty is closely related to the natural disaster effect, especially in a poor or low-income household, thus inter-linked problem solving is needed. It means the cross-cutting framework regards poverty alleviation and disaster impact reduction become one approach to have a comprehensive solution. In line with this idea, several scholars also address an integration approach to address poverty and vulnerable condition (Aleksandrova, 2019; Béné, Wood, Newsham, & Davies, 2012; Davies et al., 2013; Kuriakose et al., 2013). External support is needed to stimulate the strategies to cope with and adapt to disaster(Ahammad, 2011; Hamza et al., 2012; Wamsler & Brink, 2014). An integrated approach is needed to build resilience to disasters effectively, especially in dealing with longer-term impacts (Béné et al., 2018; Ulrichs, Slater, & Costella, 2019). The aim is to prevent natural hazards from becoming disasters in chronic poverty and food insecurity (Ulrichs et al., 2019).

Major global agreements have been initiated and discussed regarding the effort to connect poverty alleviation and disaster management. Starting from Sustainable Development Goals (SDGs), the Sendai Framework until the Paris Agreement on Climate Change has adopted integration issues as part of international countermeasures across the country. They underline the need to strengthen resilience in the context of poor and vulnerable groups such as women, children, youth, older persons, people with disabilities, and marginal groups (United Nations Climate Change Secretariat, 2018)

Poverty alleviation represents by social protection and disaster management denoted by disaster risk reduction and climate change adaptation. To sum up, these three frameworks are planned to be unified to achieve a wide-ranging approach to poverty and disaster impact countermeasures (Béné, Wood, et al., 2012; Jones et al., 2010).

The shifting approach from short -to long-term treatment also occurs in discourse mapping, which shows the dynamics of the integration process (Solórzano & Solórzano, 2016). Full integration is still relatively limited but shifts from short-term to long-term countermeasures. Instead of only focusing on emergency aid, preparedness is also considered with 3P tools (protective, preventive, motive, and transformation). However, the shifting approach faces challenges and barriers from institutions that manage disasters or poverty problems.

Although social protection, disaster risk reduction, and climate change adaptation frameworks have the potential to be linked, at present, they seem to work essentially in silos. They fail to

overcome the institutional constraints that prevent them from working together (Jones et al., 2010).

The integration approach may be the best option for tackling it. Some scholars claimed similar characteristics among the goals, target groups, and tools of social protection and disaster risk reduction until climate change adaptation encourages sharing opportunities to moderate vulnerability in the society (Asian Development Bank., 2018; Béné et al., 2018; Heltberg, Jorgensen, & Siegel, 2009; Sagala et al., 2014).

## 2.2 Social Protection Instruments and Its Effect in Reducing the Disaster Impact

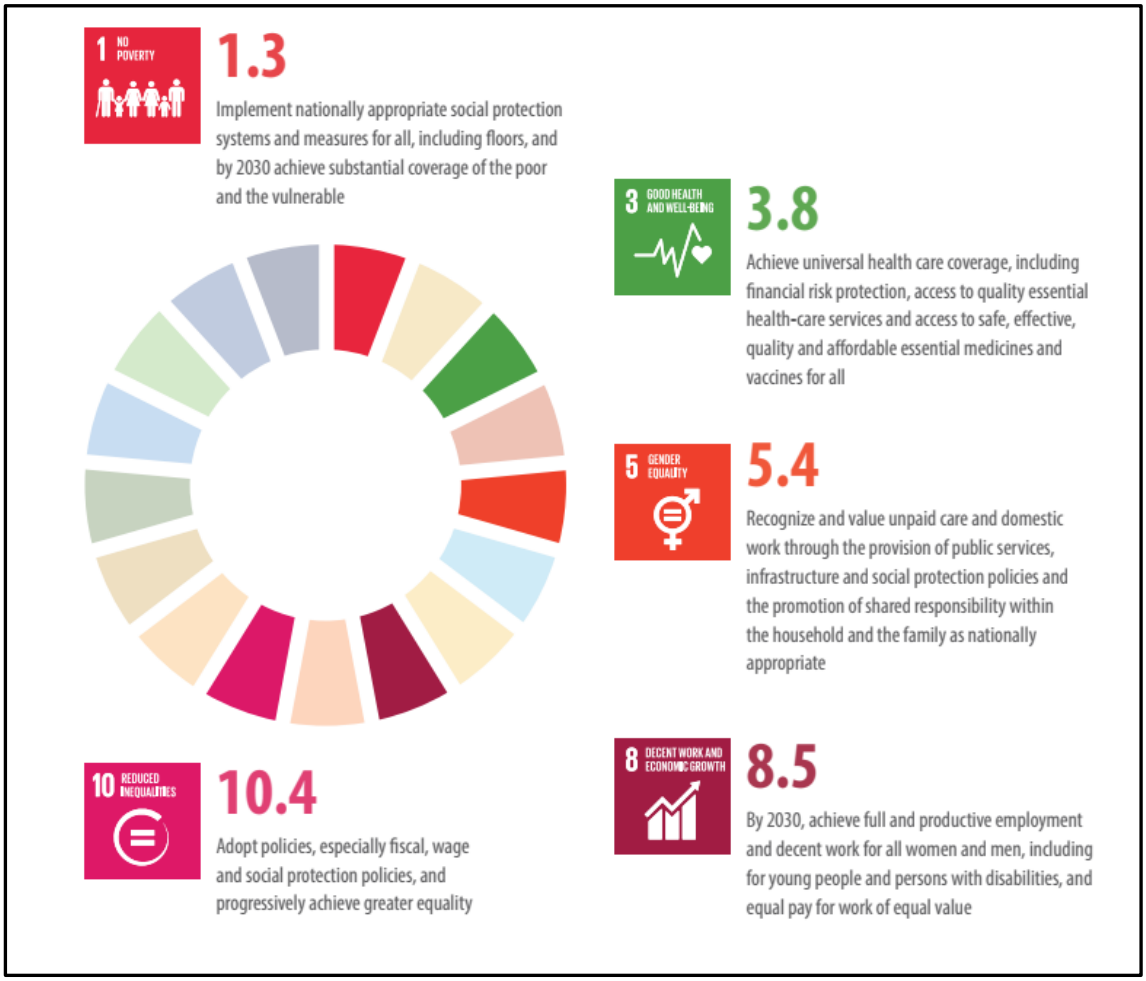
According to previous studies, most studies that promote the integration approach use social protection as a primary tool to improve disaster risk reduction and climate change adaptation because they aim to reduce vulnerability (idiosyncratic and covariate events) (Aleksandrova, 2019; Ulrichs et al., 2019). So then, what is social protection? And why could this approach be a glue for the poverty measures and disaster management, including climate change adaptation?

### *2.2.1 Definition of Social Protection and All the Instruments*

Social protection protects poor and vulnerable households from the adverse impact of shocks or stress on their welfare (Jones et al., 2010). Social protection has broadened its narrow meaning since the 1980s; it has transformed from a similar "safety net" into a "set of all initiatives, both formal and informal, that provide more comprehensive intervention from social assistance, social services and social insurance (Devereux & Sabates-wheeler, 2004). The same scholar renews the definition about social protection become all initiatives that transfer income and assets to the poor, protect the vulnerable against livelihood risks and enhance the social status and rights of the marginalised, with the overall objectives of extending the benefits of economic growth and reducing the economic or social vulnerability of the poor, vulnerable and marginalised groups (Devereux, 2006).

Actually, since the approach of social protection has been developed for a long time, many countries are leading the way in their vision of social protection as an investment to tackle deprivation, in making social protection wide-ranging, and in the combination of economic, social and environmental concerns in their social development agenda (UNDP, 2016).

The 2030 Sustainable Development Agenda implies social protection from an equity perspective as an instrument that instantaneously has the potential to address many drivers of segregation and deprivation. Therefore, social protection will not only directly contribute to Goal 1 but also in many aspects as a whole.




Source : UN, 2015; UNDP 2016

*Figure 14. Sustainable Development Agenda Related with Poverty*

Moreover, at least five goals could be connected to social protection. As seen in Figure 4 above first that related to poverty (1.3), the second is related to health and wellbeing (3.8), the third is related to gender equality (5.4), the fourth is linked to reduced inequalities, and the fifth is closed to working and economic growth (8.5). Shortly social protection is an instrument that aims to accomplish sustainable development through poverty reduction, improvement in nutrition, health and schooling, economic growth, resilience building, social cohesion, and environment sustainability (UNDP, 2016).

Social protection is applied in many instruments to develop its objectives as a tool to bridge the vulnerable one to the welfare itself. Below is the table of the taxonomy of social protection instruments:

*Table 3. Social Protection Instruments and Benefit*

| Category | Instruments | Benefit |
|---|---|---|
| Social transfers | **Cash transfers :** unconditional cash transfers, conditional transfers, child grants, foster care grants, housing allowance, emergency support, scholarships, old age pensions, disability allowance/ benefits, war veterans benefits, burial allowances, cash for work, payment for environmental services<br><br>**Food, in-kind or near-cash transfers**: food stamps and vouchers, supplementary feeding, school feeding, nutrition programmes, emergency support, health subsidies or waivers, education subsidies or waivers, agricultural subsidies, housing subsidies, utility subsidies, food for work<br><br>Other transfers: land tax exceptions | Increased income, consumption, expenditure and asset accumulations, increased human capital accumulations, improved health outcomes, reduced unpaid care and domestic work |
| Social Insurance | Old-age pension, survivor pension, disability pension, unemployment insurance, sickness/injury insurance, maternity/paternity benefits, health insurance | Increased income, consumption, expenditure and asset accumulation, reduced exposure to risk, improved coping mechanisms, consumption smoothing |
| Social services | **Children:** day care services for children/orphans, early childhood development programmes, foster care, specialized care for children (abandoned, neglected, abused, orphaned), nonresidential psychological services, social care for substance abuse<br><br>**Family:** preservation and unification counselling services, domestic violence victims services, rehabilitation services, community development services, mother care and counselling services<br><br>**Working Age:** social care for the homeless, immigrant counsel and care services<br><br>**People living with disabilities (PLWD):** residential care for PLWD, psychosocial care, personal assistance and day care, | Reduced unpaid care and domestic work, improved health outcomes,<br><br>increased human capital formation,<br><br>reduced gender-based violence |

| | | |
|---|---|---|
| | transportation services specialized for PLWD | |
| Labour market policies | Intermediation services, training (vocational, life skills, cash for training), job rotation and job sharing, employment incentives/wage subsidies, employment measures for PLWD, public works and direct job creation, start-up incentives (cash and in-kind loans), unemployment benefits (contributory and non-contributory), early retirement based on labour market | Increased employment both by increasing both the supply and demand of labour,<br>Improved labour conditions |
| Informal social protection | Funeral insurance services, village grain banks, rotating services and credit groups, community based health insurance | Consumption smoothing, reductions in unpaid care and domestic work |

Source: (UNDP, 2016)

According to Table 3, social protection has five categories to cover the possible gap in the household that is easily exposed by poverty. Each category has several instruments to deliver the benefits. The decision-maker might choose the appropriate instruments depending on the designated poverty reduction scenario.

Social protection also plays an essential role in strengthening the resilience of systems, such as households or communities, achieving more significant equity, and supporting national human and economic development (Thomas Bowen, Carlo del Ninno, Colin Andrews, Sarah Coll-Black, Ugo Gentilini, Kelly Johnson, Yasuhiro Kawasoe, Adea Kryeziu, Barry Maher, 2014; Winder, M., & Yablonski, 2012). Though the primary aim of social protection is to reduce the vulnerability of the poor, in detail, the approach of social protection contain of a wide of social interventions like protective, preventive, promotive, and transformative measures(Devereux & Sabates-wheeler, 2004).

Another point of view said that social protection could fill the gaps between the integration of disaster risk reduction and climate change adaptation because its intervention completes the shaping of a comprehensive countermeasure. It plays a central role in the 2030 Agenda for Sustainable Development, and it has been widely used as a support mechanism for disaster-affected people (Davies et al., 2013; Johnson, Bansha Dulal, Prowse, Krishnamurthy, & Mitchell, 2013).

### *2.2.2Cash transfer or Safety Net to deal with Disaster Impact*

One of the instruments in social protection mentioned above is cash transfer. This instrument is categorized as a social transfer. Cash transfer can be divided into conditional cash transfer (CCT) and unconditional cash transfer (UCT). Several studies have evaluated cash transfer or safety net as a tool to reduce the vulnerability not only caused by their poverty but also caused by natural disaster shocks. Cash transfers provide direct assistance and encourage people living in poverty to invest as ex-ante action rather than take ex-post emergency measures when dealing with natural disasters (Vathana, Oum, Kan, & Chervier, 2013).

Regarding supporting the adverse impact of the disaster, both types of cash transfer have roles. The conventional one refers to UCT to address short-term consumption needs caused by shocks, including from rapid-onset disasters, such as earthquakes, flooding, and entitlement failures during droughts. CCT, on the other hand, aims to influence longer-term behaviour by conditioning the transfer of assets or cash concerning a particular policy outcome, such as nutrition education and healthcare (Johnson et al., 2013). Cash transfers deliver a significant means of preventing disaster-induced poverty trapped, but they are less effective for inter-generational features contributing to risk and vulnerability (Béné, Wood, et al., 2012; Devereux & Sabates-wheeler, 2004; Heltberg et al., 2009). Moreover, previous studies concluded that cash transfers could not mitigate the adverse impact and are inadequate in the context of long-term resilience unless they are added with other programs (Devereux & Guenther, 2009; Roelen et al., 2017).

## 2.3 Coping and Adaptive Strategies in Dealing with Natural Disaster

It is human nature that people cope with and adapt to the changing in the environment (Rajib Shaw, Anshu Sharma, 2009; Wamsler & Brink, 2014). A wide range of strategies has advanced in the human system to cope with natural disaster risk as resilience-based measurement(Béné et al., 2018; Smit & Pilifosova, 2003). However, due to maintaining the livelihood stability of the thread, coping strategies are needed to do by the vulnerable group, especially low-income households.(Abid, Ali, Rahut, Raza, & Mehdi, 2020; Brouwer et al., 2007; Sharma & Patwardhan, 2007).

According to Oxford Dictionary the word “coping” means that enables somebody to deal with something difficult (https://www.oxfordlearnersdictionaries.com/). When coping, add by “capacity” or “strategy” or “mechanism” means the ability of people, organizations, or systems, using available skills and resources, to face and manage disasters (Olivier Rubin, 2017). Similarly, UNISDR defines coping capacity as “The ability of people, organizations, and

systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters" (UNISDR, 2009). In defining coping strategy, some studies interpret with other terminologies like coping practices (Ahsan, 2017; Wamsler & Brink, 2014) coping mechanism (IPCC, 2012b), the coping mechanism (Matthieu & Ivanoff, 2006) and adaptive response(Dodman & Mitlin, 2013). Since the meaning of coping mechanism is similar to others, emphasizing the effort to manage the disadvantage of shock, it can be used interchangeably. The existence of coping strategies sometimes also pairs with adaptive capacity. Some discourse remarks on these two terms in contrast, respectively (Cutter et al., 2008; Opiyo, Wasonga, Nyangito, Schilling, & Munang, 2015; Twigg & Calderone, 2019). Coping strategy refer to short-term measures undertaken by an individual or household; meanwhile, in contrast, the adaptive strategy is a long-term measure to adjust natural or human systems in response to actual or expected climatic stimuli or their effects (IPCC, 2007). Strategies like selling livestock, receiving food aid, participating in food for work programs, migration, seeking off-farm employment, reduced socialization for saving, accessing credit, sale of household assets, and reducing consumption are examples of short-term coping, especially for the farmer. Meanwhile, crop diversification, soil conservation, planting trees, changing crop planting dates, and irrigation are examples of long-term adaptation for the farmer (Belay, 2010; Claudia Ringler, Rashid M. Hassan, Deressa, 2010).

However, some researchers do not compare coping and adaptive oppositely but use them only one or interchangeably since both terms are not clearly distinguished or even overlap significantly and trade-offs. (Abid et al., 2020; R. J. Berman, Quinn, & Paavola, 2015; Wamsler & Brink, 2014). This research coincides with the latter approach since meaning is closely connected and can be used as one of them. This research uses coping strategy terms more frequently than adaptive because this research uses a natural hazard perspective, not a global environmental change perspective in which adaptive capacity is more common (Cutter et al., 2008).

Broader previous research argues that coping and adaptation depends primarily on elements of socioeconomic asset profile, belonging resources, and household characteristic background condition such as indigenous knowledge or even gender-based decision making (Alemayehu & Bewket, 2017; Kuriakose et al., 2013; Nguyen, Ubukata, Nguyen, & Vo, 2021). An adjustment of the livelihood portfolio in the household has been drawn on available capital assets to minimize the effects shocks are vital and commonplace(Ahsan, 2017; R. Berman, 2014; Ifejika Speranza, Wiesmann, & Rist, 2014; Zhang, Zhuang, & Zeng, 2012).

## 2.4 An Explanation of Livelihood Capitals

The existence of capital or resources in each household's livelihood is essential. Livelihood capital or resource is the stock base from which different product streams are derived from which livelihoods are constructed (Scoones, 1998). It comprises five components based on the sustainable livelihood framework: natural, physical, human, financial, and social capital (Bebbington, 1999; Moser, 1998; Scoones, 1998). Natural capital is the natural resource stocks (soil, water, air etc.) and environmental services (hydrological cycle, pollution sinks, etc.) from which resource flows and services are derived for livelihoods. Economic or financial capital is the capital base (cash, credit/debt, savings, and other economic assets, including basic infrastructure and production equipment and technologies) that are essential for the pursuit of any livelihood strategy. Human capital is the skills, knowledge, ability to labor, and good health and physical capability important for successfully pursuing different livelihood strategies. Social capital is the social resources (networks, social claims, social relations, affiliations, associations) upon which people draw when pursuing different livelihood strategies requiring coordinated actions. Since the capital is not an exhaustive list, other forms of 'capital' can be identified (Scoones, 1998). This research has modified the natural capital becomes physical capital. The capital in this research refers to the resources that belong to the households.

## 2.5 Literature Framework of This Study: The relationship of social protection, livelihood capitals and coping strategies

Following the statement that social protection can reduce natural disaster, this study develops a literature framework that assumes that social protection influences the livelihood capital, then the livelihood capital, in the end, affect the coping strategies, as seen in Figure 14.

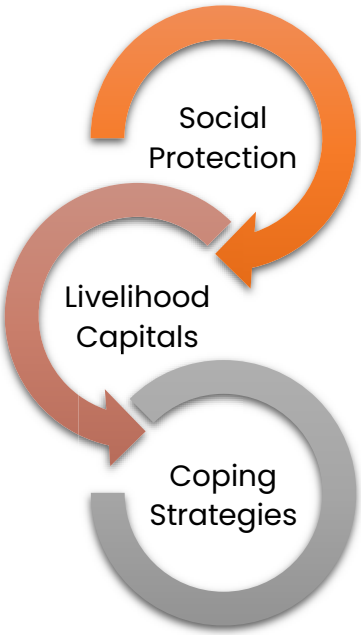



*Figure 15. Relationship between Social Protect, Livelihood Capitals and Coping Strategies*

Social protection intervention purposes to protect, prevent and promote the vulnerable against livelihood risk (Davies, Guenther, Leavy, Mitchell, & Tanner, 2009; Devereux & Sabates-wheeler, 2004). However, which part of the vulnerable that social protection contributes to? The answer is the livelihood of the vulnerable one. Livelihood capital is the target of social protection intervention to leverage the quality of life of impoverished households (Hulme, David, 2008; Nanki et al., 2019). Livelihood capitals are attached to the household to support daily life. Therefore, social protection stimulates people's ability and capital to build livelihoods and control scarce resources in unstable market settings (Johnson et al., 2013).

Moreover, livelihood capital can also contribute to developing strategies to deal with disaster impact. Livelihood resources or capital plays a significant role in adopting adaptation and coping strategies (Kuang, Jin, He, Wan, & Ning, 2019; Quandt, 2018; Thulstrup, 2015). For example, farmers in risk-prone areas are more adaptive if they invest in human, social, and physical capital rather than financial and natural capital because they have a more substitutive complementary effect (Li et al., 2017). Particularly in a low-income household, livelihood profile is a strong point to observe in cooperated mechanism for coping since they only have

limited options of resources to maintain it due to adverse impact (Mahanta & Das, 2017; Quandt, 2018).

According to the explanation above, livelihood capitals play a central role in mediating social protection interventions' effects on household wellbeing (Nanki et al., 2019). Another case is how livelihood capital or assets become a "game-changer" to help the extreme poor find their way out of risks –for example, by being able to buy, build or rent homes that can withstand extreme weather (Hossain & Rahman, 2018).

In summary, the concept can be divided into three parts that describe the relationship among topics. First is the relationship between social protection and disaster mitigation/coping strategy. Second is the connection between social protection and livelihood capital. The third is the relationship between livelihood capital and coping strategy. Below is the table that recaps the main conceptual background that has been use in this research:

*Table 4. Main Conceptual Background Recapitulation*

| Topic | Author | Finding |
|---|---|---|
| Social Protection – Disaster Mitigation/ Coping Strategy | Ulrich et, al 2019; Kuriakose et al 2013; Levine et al, 2019; Sagala et al, 2014; Islam et al, 2019; Davies et al, 2013; Alsandrova, 2019; | 1. SP has advances effect not only for poverty reduction but potentially also to moderate the impact of disaster<br>2. Little empirial evidence to show the relationship SP and disaster mitigation<br>3. Several types of SP intervention been utilize to reduce the effect of natural disaster |
| Social Protection to Livelihood Capital | Devereux & sabetes-Wheeler, 2004; Khan, 2013; Amornsiriphong, 2012; Visser etal, 2018; Fisher et al, 2017, Nyachoti, 2017; Kaur et al, 2020 | 1. SP schemes enhance livelihood capital to cope with disaster impact<br>2. SP protect and generate the financial ability by delivering goods and cash<br>3. SP endorse the social capability to have network and interact with other system<br>4. SP increase human quality such as education and health<br>5. SP contribute to strengthen infrastructure and household's asset development |
| Livelihood Capital to Coping Strategy | Abid et al, 2020; Gideon & Matsuda, 2018; Kuang et al; 2019; Li et al, 2017 | 1. Financial capital contributes an alternative or source monetary to cope with natural disaster<br>2. Social capital like social network significant determinant to promotes strategies to cope with natural disaster<br>3. Human capital such as knowledge and skills determine type of coping strategies<br>4. Physical capital though the household infrastructure support mitigation construction |

# CHAPTER 3 A GLOBAL DISCOURSE OF INTEGRATION COUNTERMEASURES OF POVERTY AND DISASTER MANAGEMENT

## 3.1 Introduction

Since natural disasters disrupt human activities, new complex difficulties will arise. Several social problems were exacerbated by this incident, such as marginalization and poverty. It happened in the micro until micro scale.

On the micro-scale, a poor household worsens their situation by adopting negative coping strategies since they have limited capabilities (Asian Development Bank., 2018; Mekonnen, Tessema, Ganewo, & Haile, 2021). In other words, a natural disaster could retain or set people back into poverty (Hallegatte et al., 2017). A household's socio-economic status determines its vulnerability to environmental hazards. The adverse impact of natural disasters has long-term consequences such as income decrease, a lower standard of living, and unemployment because risks will be borne disproportionately by the poorer segment of society (Akter & Mallick, 2013).

Meanwhile, for the macro scale, the intersection of hazard and vulnerability has the potential to disrupt social and economic development. It doubles the burden of a country that wants to reduce poverty and inequality as well as manage disaster impacts (Ulrichs et al., 2019). This phenomenon has become challenging in many developing countries that struggle to eradicate poverty but, at the same time located in a risk-prone area.

A causal relationship between natural disaster impact and poverty on many scales brings out a cross-cutting framework. It leads to plans for reducing poverty while minimizing risk impact. Some scenarios are prepared to measure these issues but mainly operate in silos. These leave a gap d for inclusive and comprehensive development. A synchronized solution through a planning tool as a "soft infrastructure" is required to build the system's resilience.

The natural disaster has been measured with the Disaster Risk Reduction (DRR) approach, which previously focused on the emergency state but later on all-encompassing preparedness until the response stage was achieved (Aitsi-Selmi et al., 2016). To complete it, Climate Change Adaptation (CCA) also occurs with the emergence of climate change, resulting in mitigation and adaptation to balance the barriers because of environmental changing (Hamin & Gurran, 2009; IPCC, 2014a).

DRR and CCA are frameworks that become two major measures of social mechanism to deal with natural disasters like rapid onset and climate disaster. If these measures need to consider poverty as a determinant factor in reducing vulnerability, the poverty reduction principle could be linked with the previous two. Poverty reduction usually focuses on assets and livelihoods. Through social protection, poverty becomes a target to reduce or avoid, resulting in comprehensive development.

Moreover, social protection is a public and private initiative that provides income or consumption transfers to the poor and protects the vulnerable against livelihood risks. Also, it enhances the social status and rights of the marginalized, with the overall objective of reducing the economic and social vulnerability of the poor, vulnerable, and marginalized groups (Devereux & Sabates-wheeler, 2004). Social protection plays an vital part in strengthening the resilience of systems, such as households or communities, achieving more significant equity, and supporting national human and economic development(Drolet, 2014; Winder, M., & Yablonski, 2012).

A potential cross-cutting issue requires an understanding of the relationship between the developing multi-hazard impact and the essentials factors like population, assets, and livelihoods as basic wellbeing indicators. These factors will be at risk from potential effects of climate change and disasters (Asian Development Bank., 2018). It means that a vast possibility to link the DRR, CCA, and SP become one approach to reduce the massive impact of poverty and natural disaster. An effective way to build a resilient society is to have a cross-cutting mechanism through multiple sectors and disciplines. Therefore, an integration approach is initiated to reduce the impacts of shocks and hazards on individuals and communities by anticipating risks and uncertainties (Davies et al., 2013).

Several previous studies lead discourse to have cross-cutting measures. However, few studies have described how the positioning of each viewpoint response regards the integration process. A thorough explanation is required to provide the critical reason to integrate and benefits and challenges until the main implementation steps. Therefore, this chapter aims to explore mapping the global discourse of integration framework between disaster management and poverty reduction.

## 3.2 Methodology

This chapter uses qualitative research methodologies such as discourse and explanatory analysis with the interviews and observation collection techniques. A qualitative approach is a

method to explore a phenomenon that obtains data with less numerical type with a broad and deep explanation.

A global discourse analysis was conducted by collecting the data and information from online literature. Discourse analysis is an approach to the analysis of written or verbal communication. To find the discourse on disaster risk reduction, climate change adaptation, and social protection and its integration, so author looks for academic papers from online academic databases. Academic papers were found by using academic search engines (Google Scholar) and journal databases (Science Direct and Taylor Francis).

There were 72 articles found that related to the keywords “social protection and disaster” and “social protection and climate change” and can be accessed. Then author screened the discussion, finding, and conclusion part to explore if the manuscript mainstreams the three issues of disaster, climate, and poverty at once.

The screening found 41 articles that discussed integration. The types of articles related to review articles, empirical research articles, evaluation studies, and policy briefs before program/project reports are presented. Later the explanatory analysis was explained to investigate patterns and trends in existing information from the literature. One manuscript could have more than one point of view due to integration. The result is classification and manuscript coding according to keywords, research context, findings, and conclusion to divide into ten main discussion topics.

## 3.3 Inter-relation among Social Protection, Disaster Risk Reduction, Climate Change Adaptation

By having natural disaster and poverty reduction discourses, the integration occurs as a comprehensive and effective solution. Though to discuss furtherly, we need to know more regards each of the frameworks, such as Disaster Risk Reduction (DRR), Climate Change Adaptation (CCA), and Social Protection (SP).

The first framework is disaster risk reduction, that been evolved older than the other framework. Disaster reduction is an intervention to reduce exposure to hazards, decrease vulnerability, manage land and the environment, and improve preparedness for adverse events. It is a systematic effort to reduce disaster risks through analyzing and managing the causal factors of disasters, including the reduction of vulnerability and improved preparedness for adverse events (ISDR, 2009). In the past, the disaster risk reduction (DRR) framework only focused on

the emergency state as an effort to establish countermeasures. In advance, it shifted the response stage to a more comprehensive, all-encompassing preparedness until the response stage was reached. A turning point in the history of disaster risk reduction was the intergovernmental commitment through the United Nations to foster disaster risk management during the International Decade for Natural Disaster Reduction from 1990–1999 (Aitsi-Selmi et al., 2016). Disaster risk reduction is aimed at preventing new and reducing existing disaster risks and managing residual risk, all of which contribute to strengthening resilience and, therefore, achieving sustainable development (ISDR, 2009). Through the Sendai Framework for Disaster Risk Reduction 2015–2030 (SFDRR) that formed in 2015, a countermeasure to disaster impact becomes an attempt to enhance responses to disasters and allow for resilience measurements.

Meanwhile, the emergence of climate change, which continuously disrupts existing socio-economic vulnerabilities, has resulted in mitigation and adaptation to balance the barriers because of environmental changing (Hamin & Gurran, 2009). There are two mechanisms in dealing with climate change impact: climate change adaptation and climate change mitigation, that need to balance facing similar barriers (Chen, Suzuki, & Lackner, 2016; Hamin & Gurran, 2009). Climate change adaptation (CCA) aims to moderate or avoid harming or exploiting beneficial opportunities. Human intervention may facilitate adjustments to expected climate change and its effects. Climate change adaptation is interventions that purposely deal with the impacts and risks of climate change on natural and human systems (Mawdsley, O'Malley, & Ojima, 2009; Stein, 2013). Climate change adaptation and disaster risk reduction are associated with each other since climate change adaptation is a subset of disaster risk reduction (Kelman, 2015). Climate change is one hazard that causes derivative hazards; it is one factor influencing certain (Kelman, 2015).

However, the close relationship between disaster risk reduction and climate change adaptation is still needed in cooperation with another framework because it needs to elaborate on the livelihood element at the household level. Social protection (SP) is a policy that efficiently protects people's livelihoods from significant shocks, including the threat of natural disasters. Initially, social protection is a public and private initiative that provides income or consumption transfers to the poor. It protects the vulnerable against livelihood risks and enhances the social status and rights of the marginalized, with the overall objective of reducing the economic and social vulnerability of the poor, vulnerable, and marginalized groups (Béné, Devereux, & Sabates-Wheeler, 2012). Social protection intervention can reduce poverty and inequality, help

households manage risks, reduce the incidence and impact of shocks, and build humans. Social protection experiences broader its narrow meaning since the 1980s that used to be a similar "safety net" transformed into a "set of all initiatives, both formal and informal, that provide (Devereux & Sabates-wheeler, 2004) :

- social assistance to extremely poor individuals and households
- social services to groups who need special care or would otherwise be denied access to essential services
- social insurance to protect people against the risks and consequences of livelihood

Moreover, the same author also distinguishes the definition of social protection into prevention, protection, and promotion popular and includes a transformative rights-based function. Table 5 shows that even though the three frameworks have different core concepts, backgrounds, and global initiators, they share similar characteristics in terms of stimulating the resilience system.

*Table 5. The characteristics between social protection, disaster risk reduction and climate change adaptation*

| Indicators | Social Protection | Disaster Risk Reduction | Climate Change Adaptation |
|---|---|---|---|
| Core concept | Cushion the idiosyncratic and covariate risk/disruption | Prevent and respond to disaster effect | Adapt the changing process caused by climate |
| Discipline background | Development and welfare economics | Physical science | Social development and physical sciences |
| Global Platform | International Labour Organization (ILO), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), The Organisation for Economic Co-operation and Development (OECD) task group, 3 targets of SDGs | United Nations for Disaster Risk Reduction (UNDRR) Sendai Framework for Disaster Risk Reduction, 25 targets of SDGs (Number:1.5;2.4;3d;4.7; 4.a;6.6; 9.2;9a;11.1;11.3;11.4;11.5;11.b;11.c; 13.1;13.2;13.3;13.a;13.b;14.2;15.1; 15.2;15.3;15.4;15.9). | United Nation Climate Change (UNFCCC)- The Paris Agreement, 5 targets of SDGs.(Number: 13.1;13.2;13.3;13.a;13.b) |

| | | | |
|---|---|---|---|
| | (Number:1.3;3.8; 8b) | | |
| Similarity | All seek to mitigate risks faced by poor people; tackle the impact of, and seek to build resilience against, shocks and stresses on livelihoods. All of them are forms of external intervention that can stimulate the internal system resilience. Thus, agents are needed to lead the change. All of them developed to enhance the adaptive capacity of the vulnerable systems (individual, community, state, etc.). Each concept also has relevant intention to develop targets for achieving Sustainable Development Goals (SDG). | | |

Source: adopt and modified by Davies, 2008, IDS 2012

Though these three approaches come from different backgrounds, they have much in common in terms of order goals. All these concepts seek to take cohesive, multi-sectoral approaches to mitigate risks faced by poor people. They tackle the impact of and strive to make individuals, communities, and societies more resilient and less vulnerable to shocks and stresses (Davies et al., 2009).

The notion of integration among social protection, disaster risk reduction, and climate change adaptation also has been raised in a global and international forum. The Sendai Framework for Disaster Risk Reduction 2015–2030 promotes the development of social protection as an instrument for building resilience to disasters and emphasizes the importance of safety net mechanisms for integrating disaster risk reduction with measures to reduce poverty, enhance livelihood, and improve access to health care and essential services. Social protection was mentioned as a tool to strengthen and promote the comprehensive risk, including climate change effects, in Forum for Damage and Loss in Warsaw. It is in line with The Paris Agreement on Climate Change calls for climate change adaptation by integrating adaptation into relevant socioeconomic and environmental policies and actions. Meanwhile, recently, it has evolved to address adaptive social protection systems to global change challenges like migration, climate change, and ecological degradation through insurance and livelihoods diversification, a safety net to enhance the adaptive capacity.

It indicated the high-level recognition that integrates climate and disaster risk considerations into social protection programs' planning and design. As a result, this initiative can help prevent poor and vulnerable households from falling deeper into poverty, reduce their overall exposure to risk, and contribute to long-term adaptation to climate change (Kuriakose et al., 2013).

## 3.4 **Mapping of Integration Framework**

The 41 articles with different purposes that collected are giving pattern due to integration and cross cutting mechanism. By having content analysis through keyword, highlight finding and research context caused a 10 categorisation of topic academic article.

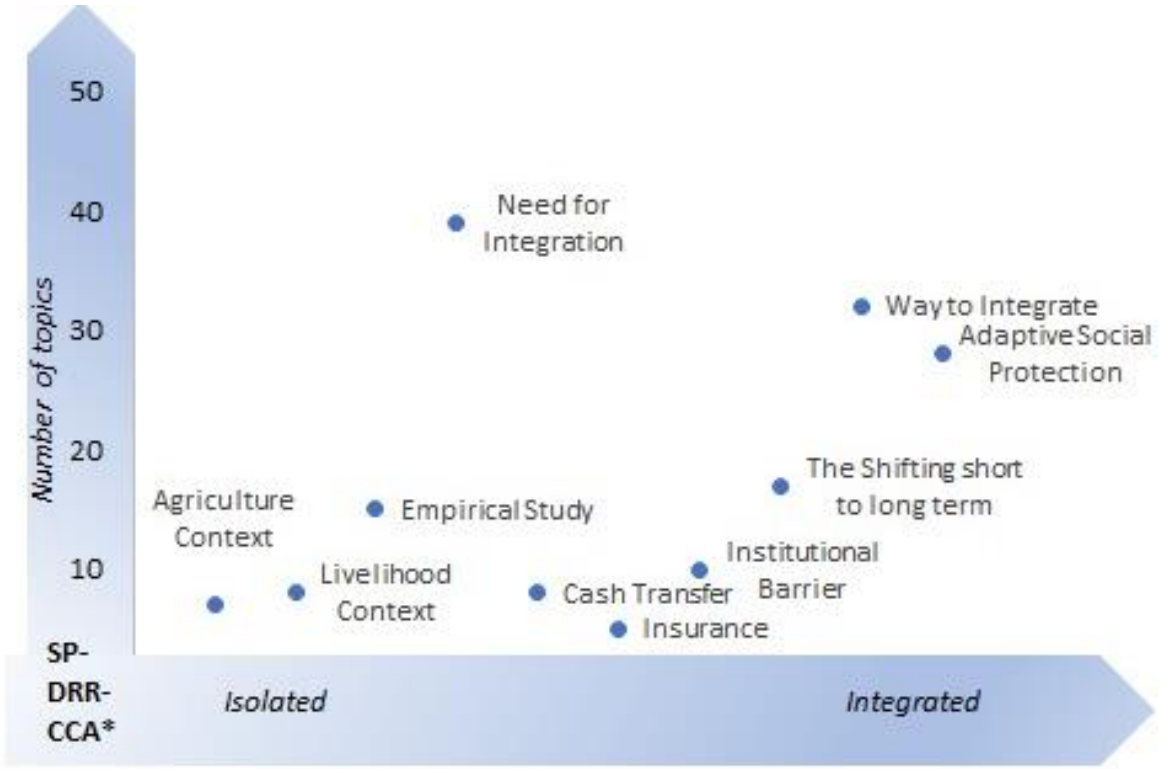



*Figure 16. Research Topics for Integration and Cross Cutting Mechanism*

In the figure 9, the vertical axis represents the number of topics based on the categories, and the horizontal axis represents the stage of the approach. On the horizontal axis, the left side denotes a more isolated approach while acknowledging the potential of integration. Meanwhile, the right side denotes a more integrated approach. Some studies which have mentioned "agriculture", "livelihood", and other "empirical topic", still acknowledge fewer integration concepts. Nevertheless, many studies argue for further actions on the topic of "need integration". Tools of integration like "cash transfer" and "insurance" have indeed been discussed, but in fewer studies. Integration process is underpinned by the challenge of institutional barriers. Moreover, due to the progressive process of an integrated approach, the topic of "shifting shortly to long" has increased. Next is the topic of the "way to integrate," which identifies the shift in scholastic perspective. The literature is also echoing the significance of integration and has begun examining how integration can be synergized into

planning and specific programs. Furthermore, new fusion concepts, such as adaptive social protection (ASP), have been acknowledged among scholars and practitioners.

In the next section, the authors explore to obtain more detailed information regarding each the categorisation.

### 3.4.1 *The Need and Way of Integration*

The need for an integration approach has been raised for most articles that examine the cross-cutting of poverty and disaster impact, including the climate change effect. This study demonstrates the potential of conceptual frameworks that explore the interactions between social protection, climate change adaptation, and disaster risk reduction (Asian Development Bank., 2018; Béné et al., 2018; Davies et al., 2013, 2009; Kuriakose et al., 2013).

The articles raised a fundamental question as to why integration is required since each framework was established a long time ago. The integration becomes a global discourse as the disaster includes climate change effects, and poverty has an insidious, reciprocal effect on the poor. Increased disaster risk is also expected to intensify poverty. On the contrary, vulnerability regarding environmental degradation and disaster is produced by local inequalities when dealing with shocks as an outcome in different people groups (Kuriakose et al., 2013; Mahanta & Das, 2017). Therefore, due to these multiple incidents, the most affected are the poor.

The risk impact created the probability of being deprived. Like a vicious circle, the almost poor become poor, and the poor become poorer. Within this limited condition, they are anxious about future risks. Natural disasters force poor households to make choices that have harmful long-term effects, such as withdrawing a child from school or reduce healthcare costs (Kousky, Lingle, & Shabman, 2016). In short, natural disasters, including climate change, affect hazards as well as vulnerabilities (Kelman, 2015). It is assumed that being poor and vulnerable has a causal connection. Poverty traps become a threat if there is less intervention for vulnerable conditions regarding disaster hazards.

Furthermore, to resolve this connected problem is a cross cutting solution, not only because it is difficult to explain one issue without addressing the others. On the one hand, climate change is one of the many contributors to disaster risk, while this phenomenon will make social protection goals harder to achieve and change the types of risks that poor people face (Kuriakose et al., 2013). On the other hand, poor and limited conditions in a vulnerable state complicate hazard risk mitigation.

Therefore, the integration approach may be the best option for tackling it. Some scholars claimed similar characteristics among the goals, target groups, and tools of social protection and disaster risk reduction until climate change adaptation encourages sharing opportunities to moderate vulnerability in the (Béné et al., 2018; Davies et al., 2009; Sagala et al., 2014). Table 5 shows that even though the three frameworks have different core concepts, backgrounds, and global initiators, they share similar characteristics in terms of stimulating the resilience system.

Although social protection, disaster risk reduction, and climate change adaptation frameworks have the potential to be linked, at present, they seem to work essentially in silos. They fail to overcome the institutional constraints that prevent them from working together.

According to the discourse that was raised in the articles, the result has recently not only explored the reason to integrate but also how to integrate, although the latter is still in the conceptual stage (Aleksandrova, 2019; Asian Development Bank., 2018; Awal, 2013).

These three frameworks within each community seemed to work principally in silos, disregarding their commonalities and overlapping agendas or being unable to overcome institutional constraints or poor communication that prevented them from working together. According to previous studies, most studies that promote the integration approach use social protection as a primary tool to improve disaster risk reduction and climate change adaptation because they have an overall objective of reducing vulnerability (idiosyncratic and covariate events).

The social protection framework is shifting to a more comprehensive meaning and function from the beginning to the present. The conventional social protection framework that focuses on addressing current vulnerabilities will not be sufficient to support poor households dealing with future vulnerabilities and strengthening adaptive capacity. It has a limited range of purposes as a safety net against poverty, with conventional measures such as in-kind and cash transfer aid to the household. Meanwhile, recent social protection frameworks have the broader intention to protect from emerging risks such as disasters induced and affected by climate change(Asian Development Bank., 2018; Devereux & Sabates-wheeler, 2004).

Social protection ensures that people absorb the adverse impacts of hazards without taking actions that put their livelihoods at risk and can still meet their basic needs if planning and designing with risk consideration, early warning systems, and social protection programs provide them with adequate support.

In the past, several mechanisms contributing to strengthening the resilience of people to shocks and disasters consisted of shock-responsive social protection, climate-responsive social protection, and Adaptive Social Protection (ASP)(O'Brien, Holmes, Scott, & Barca, 2018).

Shock-responsive social protection focuses on determining how the safety net protects people who have become vulnerable due to a disaster or humanitarian crisis (Ulrichs et al., 2019). In addition to social protection and disaster reduction, it also includes humanitarian assistance. It emphasizes the response to disaster victims with aid and intervention. The instruments used in this mechanism include conditional cash transfers, vouchers, fee waivers, social funds, and specific services such as child protection and rehabilitation for persons with disabilities (Béné, Devereux, et al., 2012). Moreover, climate-responsive social protection functions as an *ex ante* prevention against shocks (e.g., social insurance and risk diversification programs).

Social protection can contribute to climate resilience and interventions in water, agriculture, urban planning, and disaster risk reduction areas. O'Brien and Bowen also developed a method for scaling up the protection program(Béné, Wood, et al., 2012; Bowen et al., 2020; Worldbank, 2018) which considers disasters, including climate effects such as:

**a) Design tweets** that are small adjustments to a routine social protection program.

**b) Vertical expansion,** which is the temporary increase in the value or duration of a social protection intervention to meet the additional needs of existing beneficiaries.

**c) Horizontal expansion,** which is the temporary inclusion of new beneficiaries from disaster-affected communities into a social protection program, by extending geographical coverage, enrolling more eligible households in existing areas, or altering the enrolment criteria.

**d) Piggybacking,** which occurs when an emergency response uses part of an established system or program while delivering something new.

**e) Alignment,** which describes designing an intervention with elements resembling others that already exist or are planned but without integrating the two.

The last one is adaptive social protection (ASP), which will be explored in the next subsection.

## 3.5 An Innovative Approach of Adaptive Social Protection

Adaptive social protection (ASP) is a response to widespread demand for the use of social protection as a tool to build the resilience of poor and vulnerable households to these kinds of covariate shocks (Bowen et al., 2020).

In addition to the two big mechanisms that discuss the need for integration and integration, the rest are about the rise of new concepts such as ASP and types of empirical studies.

ASP is a concept that covers a broader definition of how social protection cooperates with disaster risk reduction and climate change. It is an integrated approach to social protection, disaster risk reduction, and climate change adaptation, resulting in the chance to have a greater impact on people's vulnerability and help them escape poverty (Bowen et al., 2020). ASP involves examining the role of social protection in strengthening adaptation and mitigation process, which is more robust in the face of current and future shocks. Figure 2 shows a modified version of (Davies et al., 2009).

In the late 2000s, researchers from the Institute of Development Studies in the United Kingdoms (UK) examined ASP. It claimed to reduce vulnerability by playing a critical role in lowering/buffering the negative impact of climate change and disaster (Christophe Béné, 2011). This concept is used by the World Bank to implement a pilot project in six countries (Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal). Such projects are implemented in several developing countries through different agencies to improve and develop them further. Along with implementing the concept, ASP advances the indicators and considers the Sustainable Livelihoods Framework, which describes how people utilize different forms of capital, such as natural or financial resources, to construct a living (Scoones, 1998). The existence of ASP tries to improve the existing social protection framework with the climate and disaster consideration.

The shifting approach from short -to long-term treatment also occurs in discourse mapping, which shows the dynamics of the integration process (Solórzano & Solórzano, 2016). Full integration is still relatively limited, but shifts from short-term to long-term countermeasures. Instead of only focusing on emergency aid, preparedness is also considered with 3P tools (protective, preventive, motive, and transformation), although the shifting approach faces challenges and barriers from institutions that manage disasters or poverty problems.

Moreover, the discourse also shows that others finding limited empirical studies (as seen in Figure 15) might indicate how the relationship is less measurable. The chain of relationships

between social protection and increased climate and disaster resilience is reasonably well conceptualized but lacks evidence and evaluation (Davies 2013). Several previous studies in limited numbers have examples of the implementation, such as in the context of the agriculture sector, connecting to livelihood sustainability (Davies 2009; Sagala 2014). Some studies have used social insurance, cash transfer, or public works to explore the technical method of cross-cutting intervention (Sagala 2014; Solarzano 2016).

## 3.6 Conclusion

As poverty and vulnerability have a causal connection, countermeasures need to correlate the three frameworks of social protection, disaster risk reduction, and climate change adaptation. Each framework has already established a path with various principles and programs based on individual goals. However, according to the findings in global academic discourse, each framework could be optimized by integrating them to reduce the complex vulnerability at the micro-level.

Social protection interventions play an essential role in strengthening systems' resilience. It can be in cooperation with disaster risk reduction and climate change adaptation. Social protection framework completes the other two frameworks to be more robust in the face of current and future shocks since it can applied in the micro and wide-range scale for the low-income household.

The integration approach is still at the stage of debating the motive, “why does it need to integrate through a less-equipped, empirical point of view such as an evaluation study” Recently, the discourse has already begun exploring ways to integrate scholars and practitioners to scale up existing social protection programs and propose an ASP concept. This concept is expected to be more robust in the face of current and future shocks.

Mapping the integration conception among scholars will give a big and comprehensive picture of cross cutting mechanism of social protection, disaster risk reduction and climate change adaptation. Although the idea of integration among the three frameworks — social protection, disaster risk reduction, and climate change adaptation — has existed since 2000, few scientific studies with empirical results have been conducted.

# CHAPTER 4 EMPIRICAL CASES ON THE LABOUR AND SMALLHOLDER FARMER HOUSEHOLD

## 4.1 Introduction

Natural disasters exacerbate vulnerable people's livelihood, especially low-income households. Social and economic status make poor household perceived more risk and felt more concern regarding both natural and technological disasters (Fothergill & Peek, 2004; Palm, R., & Carroll, 1998). Moreover, a data said that round 325 million impoverished people who could be living in the 49 countries most exposed to the full range of natural hazards and climate extremes in 2030 (Sheperd et al 2013). For example, natural disaster effect has been experienced by smallholder farmer households (SFH) which have fewer coping strategies for the negative impacts of climate change because of low levels of savings, lack of property insurance, and poor access to public services. (Asian Development Bank., 2018; Mekonnen et al., 2021). Also, the adverse impact has proven decrease the productivity and weaker the economic growth of labour (Belasen & Polachek, 2009; Shang Xu, 2019).

The livelihoods of low-income group hinge on fewer assets as their savings, their consumption is closer to subsistence levels, their health and education are at greater risk, and refer to their condition need longer time to recover (Hallegatte et al., 2017). This condition made poor people are much less able to develop strategies effectively to disasters (Asian Development Bank., 2018). Therefore, low-income group could improve their strategies to cope with the disaster impact if their livelihoods capital improved (Guo et al., 2019; Kuang et al., 2019).

Livelihood capital become the essential component that expose to the adverse effect of natural disaster. Several studies had been explored regards the causal relationship between poverty and disaster impact which shown in the dynamic of livelihood resources or capitals (Akter & Mallick, 2013; Ifejika Speranza et al., 2014; Sallu, Twyman, & Stringer, 2010). The impoverishment impact of natural disaster to poor household can be identified since it exposes to the household capital. By knowing the livelihood capitals is to avoid the significances of negative coping strategies such as withdrawing a child from school or other activities that harm future livelihood security (Kousky et al., 2016; Kuriakose et al., 2013; Ovadiya, M.; Costella, C.; Cipryk, R.; Heltberg, R. and Elder, 2013). Livelihood capitals or resources define as stock base from which different productive streams are derived from which livelihoods are constructed consist of natural, physical, human, financial, and social capital (Bebbington, 1999;

Moser, 1998; Scoones, 1998). Hence, livelihood is the critical entry for identifying and addressing the limits of adaptation and coping strategies also the needs of the vulnerable one.(Sallu et al., 2010; Tanner et al., 2015).

Coping strategies which are a human natural response process are needed to deal with natural disaster impact (Wamsler & Brink, 2014). Coping strategies also depends on the primarily on elements of socioeconomic asset profile (Alemayehu & Bewket, 2017; Nguyen et al., 2021). The lower the status, the less the livelihood capital, the more difficult it is to develop coping strategies. In short way, coping strategies are the result of the livelihood characteristic or livelihood capital. Coping strategies can be seen in many points of view, types or the time when applied the coping strategies. For example the find alternative income source, preparing the mitigation construction in the settlement (Li et al., 2017) . In terms of time, coping strategies can be divide into before or ex-ante and after or ex post natural hazard.

Due to the important of livelihood capital affect to the coping strategies especially facing with shocks caused by natural disaster, external intervention should be measured to stimulate the livelihood of poor household. Cross-cutting interventions aimed at households living in poverty should support livelihood capital and improve the capacity to withstand with natural hazard including climate change(Béné et al., 2018; Davies et al., 2013).

Social protection (SP) is one approach for reducing poverty by protecting livelihood capital and supporting the income and consumption of households living in poverty (Devereux & Sabates-wheeler, 2004; UNDP, 2016). SP that previously focus in poverty reduction only, recently encourage to link with disaster impact measures since it can moderate the adverse impact especially for poor household including the labour household (Sagala et al., 2014; Sarker, Wu, Alam, & Shouse, 2020b; Weldegebriel & Amphune, 2017b). However little empirical evidence of SP programs contributing to resilience against natural disaster including climate change thread(Levine, Ludi, & Jones, 2010; Sagala et al., 2014).

In this chapter, author tries to show the empirical result of SP program in Indonesia called Program Keluarga Harapan (PKH) that could contribute to coping strategies of low-income labour and smallholder farmer household in Indonesia. The case study in one coastal city that designated as national main producer of traditional cloth called Pekalongan City and rural area where one of the national biggest production called Cilacap Regency. This study reveals to explore the relationship between PKH program affect to livelihood capital and its livelihood capital to coping strategies. Even though Indonesia is well-known with its disaster-prone area,

but as a country Indonesia lacks adequate protective programs for poor and vulnerable households (Perdana, 2004).

The Program Keluarga Harapan (PKH) in Indonesia is a nationwide cash transfer program that has three advantages for its beneficiaries: it improves their financial status through cash transfers; it strengthens human and social capabilities through training and workshops; and provides assistance with accessing other forms of aid, especially from the government. The targets of the PKH are households living in poverty. PKH can categorize as cash transfer, one of the instrument in SP. Previous study stated that cash transfer should be able to contribute significantly, though indirectly, to the goals of adaptation in disaster (Wood, 2011). Therefore, PKH as cash transfer type has an opportunity to be entry point integrate the measurement from SP to disaster reduction.

Therefore in this chapter aim to explore how the SP through PKH program can improve the coping strategies of poor labor and smallholder farmer household in ex-ante and ex-post coping strategy. Second to explore the determinant factors that can bridging PKH program and coping strategies. Among broad previous studies, this study can contribute on the discourse how the SP, especially cash transfer program, could strengthen coping strategies empirically.

## 4.2 Methodology

*1) Data collection: Questionnaire survey*

Questionnaire survey was conducted in Pekalongan City and Cilacap regency in December 2020 for data collection. The questionnaire is developed by the variables that described in Table 6. In Pekalongan, the target of the survey is low-income batik-labour households living in flood-prone area and encounter the great flood in the beginning 2020. Also, in the Cilacap regency, the target is small holder farmer that experienced flood in 2019. For both area, author include PKH beneficiaries and non-beneficiaries in the target. Local enumerators were hired and trained to conduct the survey.

*Table 6. Variables on questionnaire*

| No | Section | Variables |
|---|---|---|
| 1. | Information | Questionnaire code; survey's date; name and code of enumerator |
| 2. | Respondent Demographic | Name; Address; Sex; Age; Status in household; PKH Beneficiaries (D); Profession; Number of hpusehold members; Number of toddlers in household; Number of school age in household; Number of pregnant women in household; Number of elderlies in household; |
| 3. | Social Capital | Neighborhood and Kinship; Association Membership; Relationship with neighbor; Interaction with government; Relation Neighborhood when having disruption; Event related with the environment /natural disaster |
| 4. | Financial Capital | Regular Income (D); Existance of Odd Jobs (D); Household income; Additional Money Support (D); Saving; Debt;Access to loans/debts (D); Bank Account (D); Belonging Assets; Repaired Assets; Selling assets during flood (D) |
| 5. | Human Capital | Working Household Member; Work Experience; Production Tools; Disability and Chronic Illness in Household; Capacity building training; Knowledge about disaster; Discussed natural disaster; Preparation to deal with natural hazard |
| 6. | Physical Capital | House's status; House level; Flood Control Infrastructure (D); Infrastructure preparedness for mitigating flood |
| 7. | Impact and Coping Strategy | Exposure (heigh of flood); Impact when great flood; external assistance (D); Institutions that helps household; Type of assistance for Ex Ante Coping Strategy; Ex Post Coping Strategy; |

For poor labour household in Pekalongan City, firstly we selected eight coastal villages or Kelurahan which are prone to floods and were flooded in the 2020 floods which many small batik factories located. The eight villages/kelurahan are Tirto, Pabean, Pasir Kraton Kramat,

Padakuhan Kraton, Krapyak, Krapyak Kidul, Krapyak Lor, Degayu. In the eight villages, enumerators visited the small batik factories and ask labors to answer the questionnaire. Finally, we had 150 respondents who works in batik factories and receive PKH and, another 150 respondents who works at the small batik factories and do not receive PKH.

In a mean time for the smallholder farmer in Cilacap regency, author choose flood-affected sub-districts (Kecamatan) as the research locations according to a local community leader's recommendation and secondary data. Kecamatan Nusawungu was selected because it is categorized as flood-affected, and in 2018 it had the highest number of households living in poverty and the highest levels of rice productivity (Statistics Indonesia, 2019). In the second stage, a snowball technique was used in Kecamatan Nusawungu to select respondents for the questionnaires. Finally, we selected 150 SFH who are PKH beneficiaries and 150 SFH who had not received PKH assistance.

The questionnaire to determine livelihood capital and coping strategies related to floods consisted of six sections as seen in table 6: (1) demographics (e.g., sex, age, number of household members, number of children of school-going age), (2) social capital (e.g., interaction in neighborhood and government association membership), (3) financial capital (e.g., income, savings, and assets), (4) human capital (e.g., working-related experience and knowledge about disasters), (5) physical capital (e.g., house status and house construction material preparedness), and (6) coping strategies (e.g., preparedness and response and recovery activities).

*2) Analytical Methods*

To verify the hypothesis, Structure Equation Modeling (SEM) is applied. SEM is applied because in the hypothesis, we expect that PKH have indirect impact on coping strategies through livelihood capital and SEM can show such complex indirect relationship. SPSS AMOS (Ver. 27) was used for the SEM

## 4.3 Risk Prone Location and PKH Implementation- Pekalongan and Cilacap

To verify the hypothesis above, we make a case study in one disaster-prone city, Pekalongan city. Pekalongan is a coastal city in Java Island (Figure 10) and it is designated as one of the largest centers of the Indonesia traditional cloth industry called Batik. This city has been developed by the family-run small-medium enterprises of batik for generations since 1800s.

(Rukayah, Wibowo, & Wahyuningrum, 2015). Until now, mostly the batik is still produced by the traditional methods. After the batik clothes are stamped, painted, and dyeing, large clothes need to be drying outdoor by sunray. Therefore, the batik production relies on the weather condition and continuous rain and floods stop the production process of the batik. Serious floods have stopped the production several times in Pekalongan in this past 10 years. During the suspension of the operation, labors cannot work and receive wages.

We selected batik-labours because batik is the dominant industry in the city and labours in batik industry are low-income (Sari, 2011) and their work is susceptible to climate and floods as stated before. To identify the low-income households, the data set of Pekalongan Social Service Office is used and the date shows whether the household receive PKH or not. 13,354 households are listed in disaster-prone area in the data set. samples re-confirmed that the household experienced great flood at January 2020.

Due to its physical characteristic, Pekalongan city is prone to floods, sea water intrusion and land subsidence. As shown in Figure 10, most center to northern part of Pekalongan City have high multi-hazard vulnerability. Flood either from high rainfall or river overflow until sea level intrusion are the yearly event. All the traditional batik production centers are in high-risk area.

In January 2020, the great flood occurs in Pekalongan City and the flood water reached two meters height and 1,500 residents evacuated. Almost two months, batik production was stopped. The batik labors immediately lost their income and it threatened their livelihood sustainability.

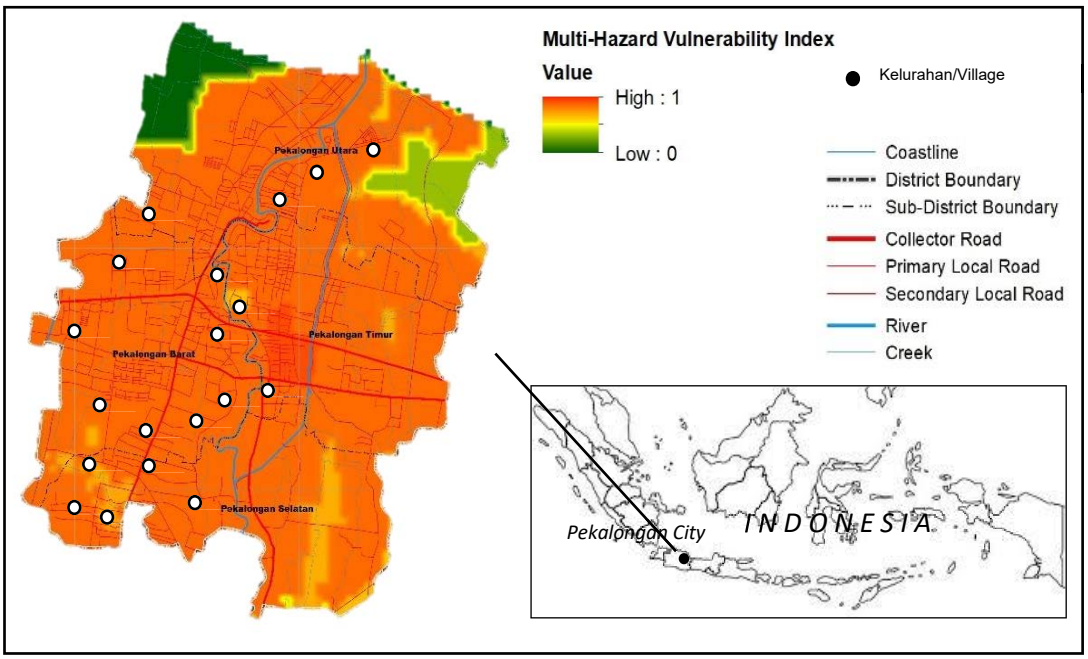



*Figure 17. Disaster risk map of Pekalongan City*

Source : detik.com/Harviyan Perdana Putra

*Figure 18. Floods hit the Pekalongan batik industry*

In the meantime Cilacap Regency is an area in the Central Java province of Indonesia with a population of around 1.9 million people. Most of Indonesia's paddy fields with reservoir-based irrigation (60%) are in Java, and Cilacap is one of the top-five rice producers in Java. These paddy fields have been severely affected by climate change (Boer & Suharnoto, 2012), and in 2019, Cilacap recorded a decrease in annual production by 699,965 tons because of the unpredictable and changing rainy season (Pramukti, Suryanto, & Gravitiani, 2021). The rice fields in Cilacap were affected by floods in October 2019, and at the end of 2020, a flood in Cilacap inundated 45 villages spread across 15 sub-districts (Kompas.com, 2020). In a figure 18 shown that this area risky to the flood disaster.

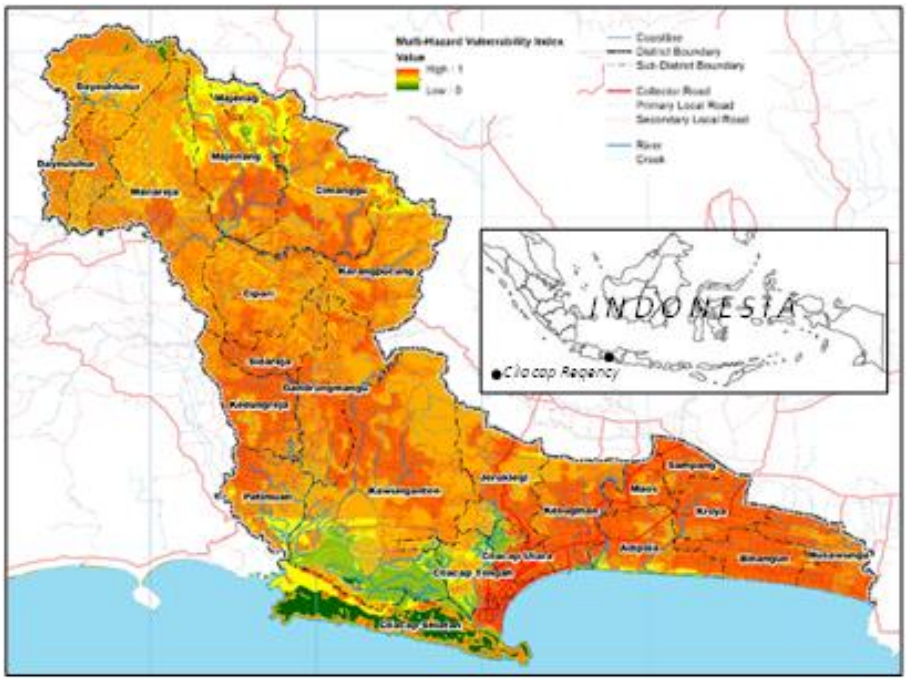



*Figure 19. Disaster risk map of Cilacap Regency*

Source : liputan6.com/Muhamad Ridlo

*Figure 20. Flood in the padi field Cilacap*

## 4.4 A Hypothesis on Contribution of Social Protection Intervention to Coping Strategies in Labour and Smallholder Farmer Household

With a low income, labour and smallholder farmer live far from their wellbeing. Their livelihood just enough for the basic need like food consumption and shelter. If there is covariate factor trigger their livelihood they would not be resilience since they have less skill and rely on the daily income for labour and seasonal income for farmer. Natural disaster like flood occur as their daily thread since it can disrupt their workshop either in the factory or ricefield. The factory and rice field location that inundated by flood make the production stopped temporally. Therefore, external stimulation like social protection (SP) can support them to smoothly spending their basic expenditure.

The flow like as seen in Figure 20 will describe the hypothesis on how SP in the end contribute to coping strategies. First, The SP will intervene the labour and smallholder farmer household's livelihood. It will enhance the capitals that belonging in the household from financial, social, economic and human capital or usually said as livelihood capitals. These four capitals are assumed to have closely related to the habit of the labor or smallholder household. We can find it in their daily activities. SP improves and effectively protect livelihood and produce opportunities to build a better life for individuals and their families (Devereux & Sabates-wheeler, 2004; Thomas Bowen, Carlo del Ninno, Colin Andrews, Sarah Coll-Black, Ugo Gentilini, Kelly Johnson, Yasuhiro Kawasoe, Adea Kryeziu, Barry Maher, 2014). SP enhance people's ability to build livelihoods and control rare resources in unstable market settings (Johnson et al., 2013). The influence SP for example through cash transfer program also prove to contribute more to livelihood improvement (Hussein Elmi & Minja, 2019). Cash transfers provide direct assistance and encourage people living in poverty to invest as ex-ante action rather than take ex-post emergency measures when dealing with natural disasters (Vathana et al., 2013). However, previous studies have indicated that SP projects, such as the Productivity Safety Net Program (PSNP) in Ethiopia (cash transfers, public works, and nutritional feeding programs) and Malawi's Social Action Fund in Malawi, cannot improve agricultural productivity while dealing with natural disasters with additional measures (Browne, 2014; Christophe Béné, 2011). To have a direct and impactful result, cash transfers should occur along with other instruments that strengthen income-generating capacities or provide access to financial services (Johnson et al., 2013).

Second, after SP giving influence to the livelihood capitals then the livelihood capitals affect to the coping strategies when dealing with the impact of natural disaster. It pointed by several authors empirically that range of livelihood capitals or assets like natural, physical, social, human and financial capital shows key role in adopting adaptation strategy to cope with natural disaster (Kuang et al., 2019; Li et al., 2017). For example social capital was an essential resource in farmers' households, as coping strategies for climate shocks, since it is an entry point to interact with other farmer (Abid et al., 2020). Moreover, different result from the previous study stated that natural and physical capital are the most influential capital for the farmer's coping strategies for climate effects on agricultural production (Kuang et al., 2019). Several authors have also empirically pointed out that all five categories of livelihood capital or assets play a key role in adopting adaptation strategies to cope with natural disasters (Li et al., 2017; Twigg, 2020). Previous studies have shown that livelihood capitals can strengthen coping strategies for natural disasters, but the types of livelihood capital that enhance coping strategies seem to differ by specific household characteristics such as job, types of natural disasters, and places.

Third is the effect of SP to coping strategies which is not directly. SP program can improve the coping strategies of poor household in ex-ante or before the natural disaster incident and ex-post strategy or after the natural disaster incident. Some studies state that SP can strengthen coping strategies through livelihood capital (Aleksandrova, 2019; Béné, Wood, et al., 2012).

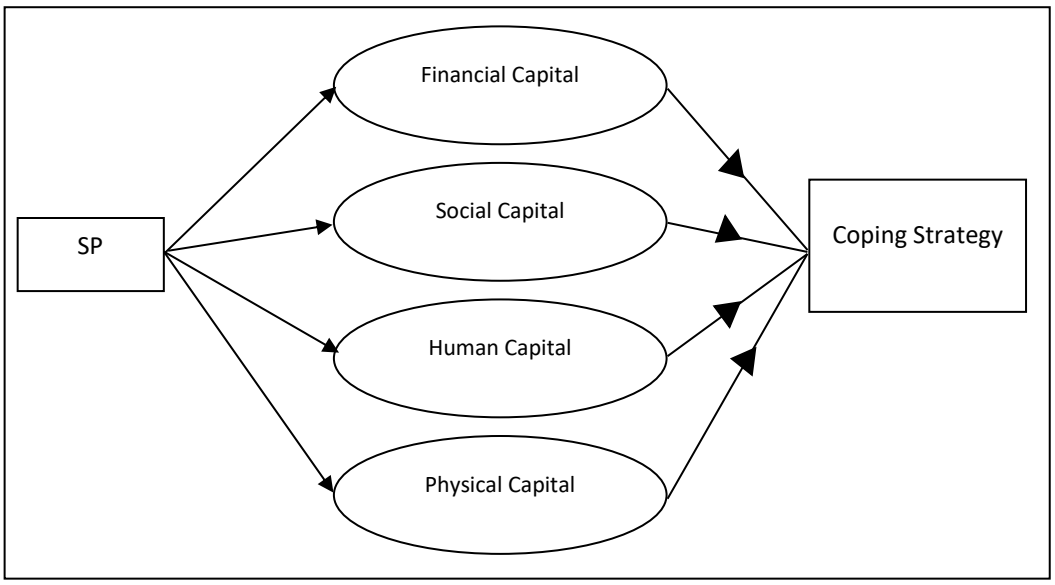



*Figure 21. Hypothesis SP Contribute Coping Strategies*

## 4.5 Demographic Characteristics

Demographic characteristics between labor and smallholder farmer is slightly different. Table 7 summarizes the general demographic of the 600 respondents consist 300 respondents from labour and another 300 is smallholder farmer. The number of female respondents is 87% for labour and 91 % for farmer. The respondents are predominantly female because they are recipients of PKH's cash transfer. They represented their families while answering the questionnaire. Demographic results discovered spouse that working have 74 percentage and usually worked as batik labor. Average respondent age is 47 years old for both labor and smallholder farmer and included in productive age group. Each household has an average of 4 household members which is normal number in Indonesia. Average number of children in household is 2 person for labor and 1 person for smallholder farmer. Regards the education in labor mostly around 55 % graduated from elementary school and in farmer 55 % is non-formal education. Moreover regards the income is evenly distributed for labor, meanwhile income for farmer concentrated under 71.4 $.

*Table 7. Demographic of respondents of Labour and Smallholder Farmer Respondent*

| Respondent household characters | Labor Value | Farmer Value |
|---|---|---|
| **Ratio of female respondents (%)** | 87.0 | 90.7 |
| **Average age (years old)** | 47.3 | 47.5 |
| **Average household members (people)** | 4 | 4 |
| **Average of children in household (children)** | 2 | 1 |
| **Respondents' Education (%)** | | 25.0 |
| **Non-formal education** | 23.3 | 55.0 |
| **Elementary School** | 55.0 | 18.7 |
| **Junior High School** | 16.3 | 1.3 |
| **Senior High School** | 5.4 | |
| **Monthly household income (%)** | | |
| **Under $ 71.4** | 46.4 | 75.3 |
| **$ 71.5 – 107.5** | 43.3 | 22.0 |
| **$ 107.6 – 142.85** | 7.0 | 2.4 |
| **$ 142.9 – 178.58** | 3.3 | 0.3 |

## 4.6 Livelihood Capital of Labour and Farmer -Confirmatory Factor Analysis Result

The livelihood capital of household is indicators to show their capacity in developing strategies to cope and mitigate the natural disaster impact. There are two continuous steps until have the final result of model. First step is confirmatory factor analysis (CFA) is needed to select the observed variable that will be use in the next process which is Structural Equation Modelling (SEM). In this research CFA has been applied to four latent variables: social capital, human capital, financial capital, and physical capital.

The CFA for labor household selected 11 observed variables that has enough factor loading (more than 0.6). The observed variable has significant to each latent variable, and Table 8 shown the list of observed variable.

*Table 8. Factor Loading of Labor Observed Variables*

| **OBSERVE VARIABLES** | **FACTOR LOADING > 0.6** |
|---|---|
| **Social Capital** | |
| Existence of Membership (ExMem) (D) | 0,891 |
| Volunteer Activities (VolMem) (D) | 0,814 |
| Variance of Membership (VarMem) | 0,885 |
| ***Frequency of Membership Activities (FreMem)*** | ***0,965*** |
| **Human Capital** | |
| Prepare Medicine (PrepMed) (D) | 0,723 |
| Save Important Document (SavDoc) | 0,787 |
| ***Variance Of Natural Disaster Preparation (VarPrep)*** | ***0,981*** |
| **Financial Capital** | |
| ***Number of Asset (NumAst)*** | ***0,953*** |
| Variance of Asset (VarAst) | 0,624 |
| **Physical Capital** | |

| | |
|---|---|
| Existence of Mitigation Infrastructure (ExInf) | 0,608 |
| ***Variance of Mitigation Infrastructure (VarInf)*** | ***0,963*** |

The latent variable 'social capital' is composed by 'existence of membership (ExMem)', 'volunteer membership (VolMem)', 'number of types of membership (VarMem)' and 'frequency of membership activities (FreMem)'. The highest coefficient value in social capital is frequency of membership activities (FreMem) with 0.965. It means the more intense household involved in the activity of organization membership gives big influence to the social capital in the household. In the Pekalongan, several organizations exist and labor household involve with it for example religious organization and housewives' community. Activities that are usually carried out for religious organizations are for example reciting the Al-quran or deepening religious studies. Meanwhile, the housewife's community activities initiate by the local and neighbourhood government. They do many collective things like learning to make crafts, evaluating the health of mothers and babies (weighing, giving vaccines etc).

The latent variable, 'human capital' is composed by 'preparing medicine (PrepMed)', 'saving important documents (SavDoc)' and 'number of types of disaster preparedness (VarPrep)'. The highest coefficient value in human capital is number of types of disaster preparedness (VarPrep) with 0.981. It means the more vary of disaster preparedness activities gives big influence to human capital in the household. Since Pekalongan has often faced the impact of natural disasters especially sea level rise and flooding, residents already have a local knowledge of disaster events. So that Pekalongan residents are used to doing multiple mitigation preparations to deal with floods. Examples of preparations that are usually done are usually those that do not cost money, for example: preparation of food stocks and clean water, moving assets to the safer place, storing important documents in watertight packaging.

The latent variable of 'financial capital', is composed by 'number of asset (NumAst)' and 'number of types of Asset (VarAst)'. The highest coefficient value in human capital is Number of Asset (NumAst) with 0.953. It means the greater number of assets belonging by household gives big influence to financial capital in the household. Owning assets is a method for poor households to practice a saving. Usually, they have livestock such as ducks and or electronic goods such as cellphones, televisions, and others. Then when they need additional money, they will sell these assets.

The latent variable 'physical capital' is composed by consist of 'existence of mitigation infrastructure (ExInf)' and 'variance of mitigation infrastructure (VarInf)'. The highest coefficient value in human capital is Variance of Mitigation Infrastructure) with 0.963. It means the greater variance number of mitigation infrastructure gives big influence to financial capital in the household. As previously stated, Pekalongan often experiences flooding, especially from sea level rise because it is located on the coastal area. Therefore, residents have made mitigation preparations at home such as making temporary embankments in front of the door of the house, preparing sandbags as a water barrier around the house.

Meanwhile the CFA result for farmer household selected 14 observed variables that has enough factor loading (more than 0.6). The observed variable has significant to each latent variable, and Table 9 shown the list of observed variables.

*Table 9. Factor Loading of Farmer Observed Variables*

| **OBSERVE VARIABLES** | **FACTOR LOADING > 0.6** |
|---|---|
| **Social Capital** | |
| Ronda Participation (RonPar) (D) | 0,641 |
| Religion Participation (RelPar) (D) | 0,641 |
| **Types of Participation (VarPar)** | **0,981** |
| Frequency of Participation (FrePar) | 0,779 |
| **Human Capital** | |
| Flood prediction information from radio (RaInfo) (D) | 0,606 |
| Flood prediction information from neighbors (NeInfo) (D) | 0,722 |
| Flood prediction information from broadcast (BrInfo) (D) | 0,792 |
| **Type of flood prediction information (Var Info)** | **0,982** |
| **Financial Capital** | |
| Ownership of smartphone (SmpAst) (D) | 0,657 |
| Ownership of electronics (ElcAst) (D) | 0,654 |
| Ownership of motorcycle (MtrAst) (D) | 0,647 |
| **Types of assets (VarAst)** | **0,982** |
| **Physical Capital** | |
| **Existence of Mitigation** Infrastructure **(ExInf) (D)** | **0,956** |
| Types of Mitigation Infrastructure (VarInf) | 0,892 |

For the laten variable social capital, the chosen observed variable is consisted of existence of ronda participation, religion participation, types of participation and frequency of participation. These observed variables described the social life of respondent that focus on kinship and participation to each activity in the area is important for them. Social interaction within the neighbourhood is important for daily life and by participating in the neighborhood will strength the social bond especially to deal with shocks.

Observed variables of human capital is flood prediction information from radio, flood prediction information from neighbors and flood prediction from broadcast. All the observed variables related to flood prediction information. Farmer households mainly have common activities and knowledge between them. New information related to disaster mitigation and mainly in flood prediction is important for farmer to prepare for all possibilities related to rice fields that will be affected by the disaster.

Financial capital has 4 observed variables that are ownership of smartphone, ownershop of electronics, ownership of motorcycle and types of assets. All the observed variables are related with properties/assets belonging. Farmer poor household prioritize asset ownership in their livelihood as a part of production tools and as their saving. Type of asset that own by farmer household usually easy to resell. Asset ownership become their tool to prepare the shocks.

The last is physical capital which consist of chosen variable such as existence of mitigation infrastructure and types of mitigation of infrastructure. Farmer household realised the risk condition of their neighbourhood and prepare construction in their house to prevent flood not entering the house. The common way for farmers are raise their house foundation level or create dike around the house to protect from flood. All these 14 observed variables show the character of poor labor life on the coast which is prone to disasters.

## 4.7 Model of Labour Household – SEM Result and Discussion

To achieve the purpose of this study, so the modelling will show the influence of PKH as cash transfer program which one of the SP instruments to livelihood capital then livelihood capital to coping strategies. The model of before flood (Ex-Ante) and after flood (Ex-Post) using SEM as analysis process to test the hypothetical model.

***Model of Before Flood (Ex-Ante) Strategy For Labor***

Model before flood (ex-ante) tested, all indicators were appropriate: The comparative fit index (CFI) value is 0.969 (≥ 0.95), the root mean square error of approximation (RMSEA) is 0.063 (≤ 0.09), the Tucker–Lewis's index (TLI) is 0.956 (≥ 0.90), and the goodness-of-fit index (GFI) is 0.943 (≥ 0.90).

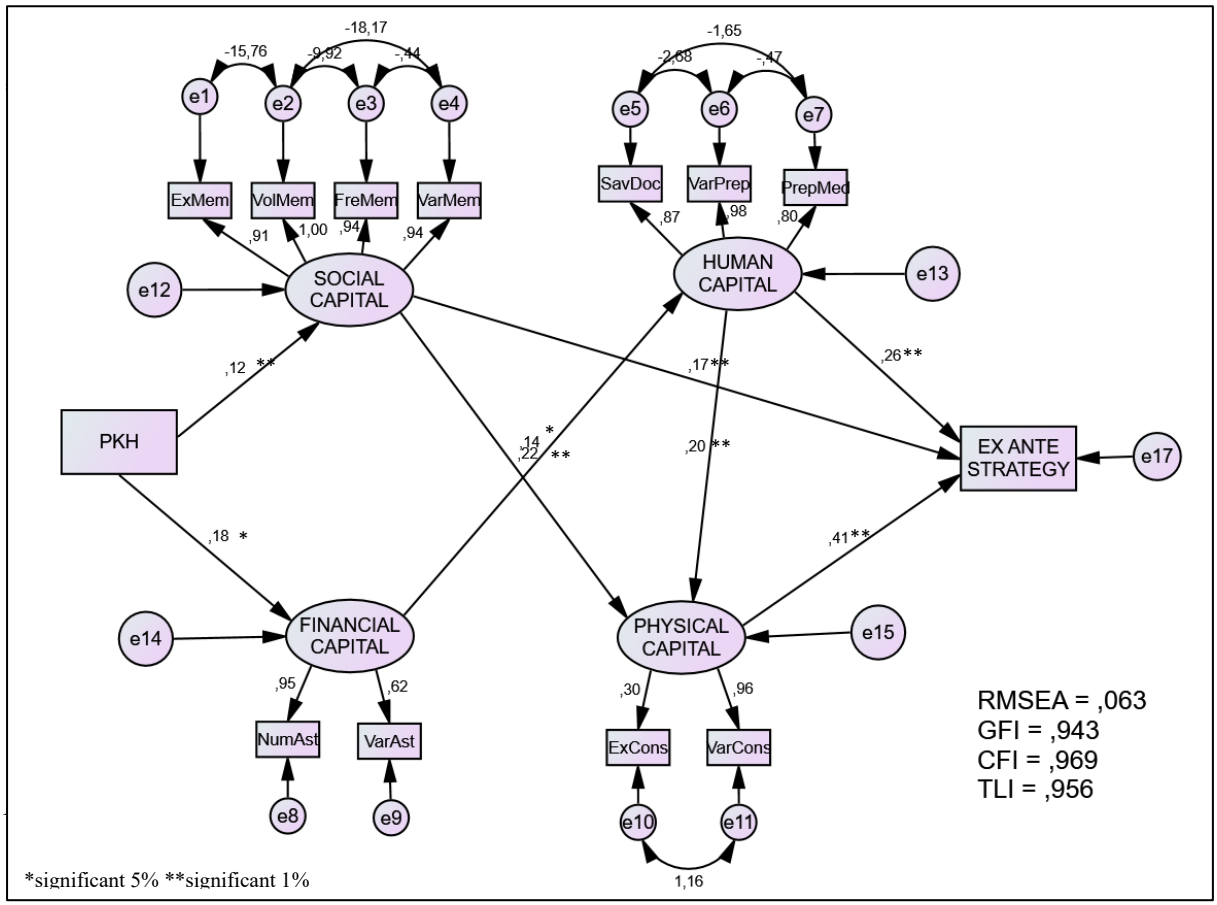



*Figure 23. Model Labor Ex-Ante Strategy*

From this ex-ante model in Figure 22, PKH intervention has direct effect only on 'financial capital' (β= 0.18, p < 0.05) and 'social capital' (β = 0.12 p < 0.01). On the other hand, ex-ante strategy is influenced by 'human capital' (β=0.26, p<0.01), 'social capital'(β=0.17, p<0.01) and 'physical capital'(β=0.41, p<0.01) directly as seen in Figure X. The accumulation effect from others capital like human and financial, make the physical capital the highest effect to ex-ante strategies.

From the model of ex-ante strategy shown that 'social capital' is the only latent variable has directly influenced from PKH as well as directly give impact to 'ex-ante strategy' model.

Through the social capital is the shortest path to deliver effect from PKH intervention to ex-ante coping strategy.

The indirect effect also can be identified from the model. Table 10 show that PKH gives indirect effect to human capital, physical capital, and ex-ante strategy with (β=0.027), (β=0.031), (β=0.040), respectively. From the table 11vwe know that PKH has the biggest indirect effect to ex-ante strategy. It means PKH intervention gives effect through the livelihood capital first until reach to the ex-ante strategy.

*Table 10. Standardized Indirect effect path in labor ex-ante model*

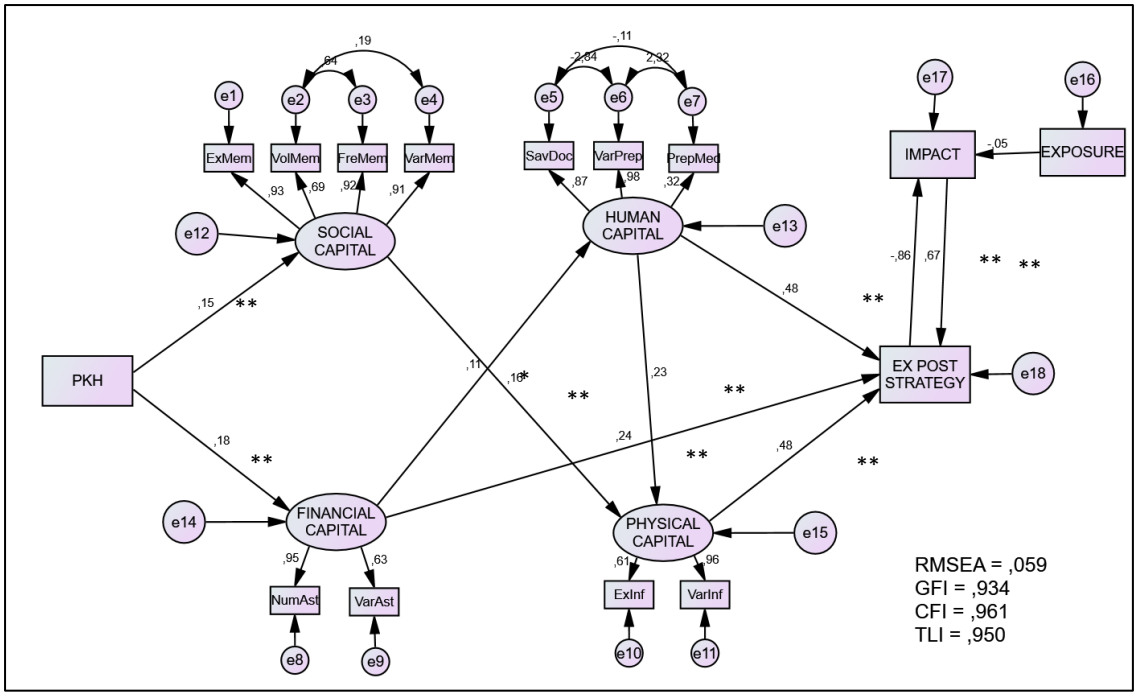
| Variables | PKH | Financial Capital | Social Capital | Human Capital | Physical Capital | Ex-ante Strategy |
|---|---|---|---|---|---|---|
| PKH | - | - | - | 0.027* | 0.031* | 0.040* |

**significant 5%, **significant 1%*

***Model of After Flood (Ex-Post) Strategy For Labor***

Coping strategies of the household can be define in two stage ex-ante strategy or before the flood incident and ex-post strategy that refer to the measures from the household to recover and bounce back to the normal life. Therefore, adding the variable impact and exposure become important to make the ex-post strategy model suitable with the real condition.

Variable of impact (IMPACT) and exposure (EXPOSURE) are added in the hypothetical model for ex-post strategies and become the final model that shown in Figure 4. When the goodness of fit of the model was tested, all indicators were appropriate: The comparative fit index (CFI) value is 0.961 (≥ 0.95), the root mean square error of approximation (RMSEA) is 0.059 (≤ 0.09), the Tucker–Lewis's index (TLI) is 0.950 (≥ 0.90), the goodness-of-fit index (GFI) is 0.934 (≥ 0.90).




**significant 5%, **significant 1%*

*Figure 24.Model Labor After Flood (Ex-Post)*

From this ex-post model that shown in Figure 23, PKH intervention has direct effect on 'financial capital' (β= 0.18, p < 0.01) and 'social capital' (β = 0.15 p < 0.01). PKH deliver some amount of money to the household that purpose to expend in health and education issue which can enhance the financial ability. Also, PKH give several routine mentoring activities, training and workshops which strengthen the social ability. On the other hand, ex-post strategy is influenced by 'impact'(β= 0.67, p < 0.01), 'human capital' (β=0.48, p<0.01), 'financial capital' (β=0.24, p<0.01) and 'physical capital'(β=0.48, p<0.01) directly as seen in Table 11. Impact has the highest coefficient value to ex-post which means has the biggest influence to ex-post strategy.

From the model of ex-post strategy shown that 'financial capital' is the only latent variable has directly influenced from PKH as well as directly give impact to 'ex-post strategy' model. Through the financial capital is the shortest path to deliver effect from PKH intervention to ex-post coping strategy.

The indirect effect also can be identified from the model. Table 11 show that PKH gives indirect effect to human capital, physical capital, ex-post, and impact with (β=0.020), (β=0.028), (β=0.043), (β=- 0.037), respectively. From the table we know that PKH has the biggest indirect effect to ex-post strategy. It means PKH intervention gives effect through the livelihood capital first until reach to the ex-post strategy. Another result also found that PKH and Impact has negative relationship indirectly. It means the existence PKH makes the impact lesser.

*Table 11. Standardized Indirect effect path in labor ex-post model*

| Variable | PKH | Financial Capital | Social Capital | Human Capital | Physical Capital | Ex-post Strategy | Impact |
|---|---|---|---|---|---|---|---|
| PKH | | | | 0.020* | 0.028* | 0.043* | -0.037* |

**significant 5%, **significant 1%*

***Discussion for Labor Model Result***

This research like to complete three hypotheses to show the relationship between SP, livelihood capital and coping strategy. This present study establishes two models which can explain how PKH encourage ex-ante and ex-post coping strategies through livelihood capitals. This sub chapter demonstrates that PKH as SP program has develop livelihood capitals for poor labor household and in the end to the coping strategies as seen in the Figure 24.

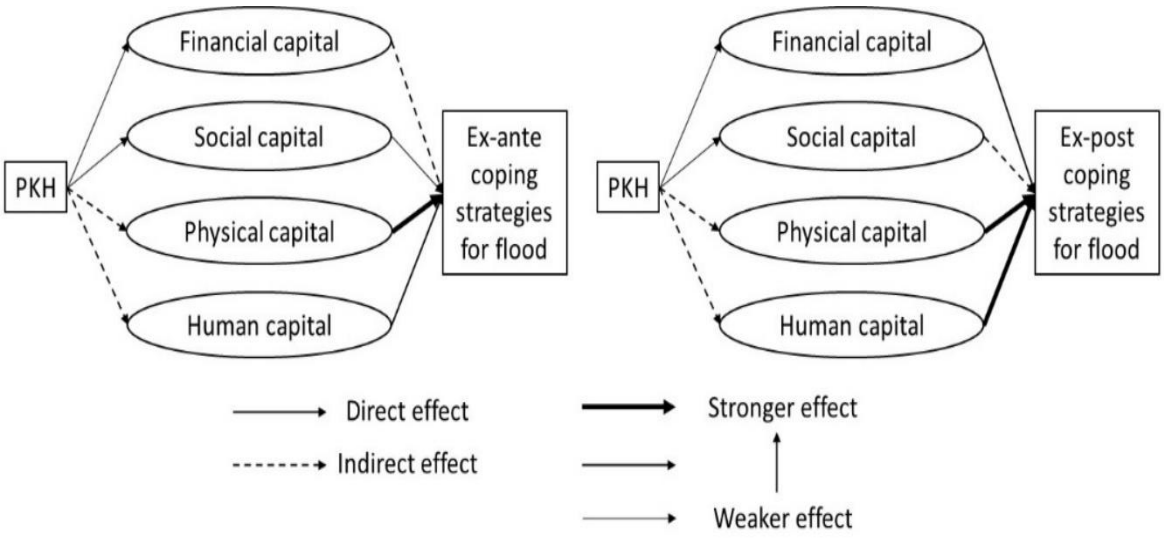



*Figure 25. Labor Case Model*

It reveals from both ex-ante and ex-post strategy model that the direct effect of PKH intervention gives influence only to financial capital and social capital for the poor labor household. It is aligned with the main activity of PKH which are giving cash transfer that will be support to household economic ability. Other activity is mentorship through family development session apparently gives effect on the social interaction ability of PKH beneficiary. Through that regular event like workshop or training makes beneficiary meet to

many people and organization and participate in many collective actions. The more social exposure that they have apparently expand their networks and information. Wide networks can helps to maintain and improve the livelihood strategy. It also has been strengthened by the information the coordination of PKH that some activities in the collective actions is to meet resource person that involve with the economic impact recovery after the flood incident. In other side, PKH intervention has not significant correlate directly to human capital and physical capital. Even though the aim of SP program including PKH is to enhance the human resources like stated but the model did not show it. It is because PKH influence can not give direct and fast result to the human resource performance for example education. Also, physical capital cannot has the direct effect since PKH program has not explicit purpose to build up any infrastructure that household owns. Actually human and physical capital has affected by PKH program but not directly. The influence of PKH first need to transform financial and social capital then next change over the human and physical capital. For example the mentorship can develop the social network exposure in the end contribute in developing new information and knowledge as result of exchange ideas.

Second hypothesis is livelihood capitals affect the coping strategy in dealing with natural disaster impact (Kuang et al., 2019; Li et al., 2017). It is aligned with the result of the ex-ante strategy and ex-post strategy model especially the direct effect from livelihood capitals to coping strategy. However, there is difference between ex-ante and ex-post strategy regards what capitals that influence to coping strategy. In ex-ante model, physical capital, human capital and social capital give significant direct influence to the coping strategy respectively. Meanwhile in ex-post strategy, physical capital, human capital, and financial capital has direct effect to the coping strategy respectively. Physical capital through number of types of mitigation infrastructure (VarInf) and human capital through number of type of preparation for disaster (VarPrep) plays important role to enhance the coping strategy for ex-ante and ex-post. Pekalongan has regular flood recently, combination from sea level rise, high rainfall and up-stream flood develop a flood risk life cycle. It means people in Pekalongan already get adapt to flood risk situation. They equipped with temporal mitigation infrastructure and local knowledge to prepare deal with flood. For example like sandbags or temporal dike to protect the house and local early warning system and readiness in storing important documents when heavy rain. Social capital through frequency of membership activity (FreMem) is giving influence on ex-ante strategy directly. It is because the more frequent to expose with collective action so the more chance of people to have preparedness strategy like having more information

related with the flood prediction. Then for financial capital through number of asset (NumbAst) can affect to the ex-post coping strategy directly. It is because the existence asset is sold to get extra money when they had difficulties after the flood incident. Usually the cloth labor can not work because the batik workshop has been flooded so they don't have sufficient income.

Third hypothesis is SP influence the coping strategy (Kuriakose et al 2013; Davies 2013; Bene 2018; Aleksandrova 2019. This study confirms that SP through the PKH program empirically gives influence to coping strategy. Through two models show the indirect connection between SP to ex-ante strategy and between SP to ex-post strategy. The models reveal that PKH intervention as SP program improves labor households' livelihood capitals, and livelihood capitals encourage the households to have more kinds of ex-ante and ex-post coping strategies. The model for the ex-ante strategies support what Aswaf and Davies (2017) resulting that cash transfers help household to increase the adaptive capability to shape the preparedness strategy and aware with early warning system. Meanwhile, the findings of the model for the ex-post strategies also concise with the previous research saying that the roles of SP can support responding actions after the disaster (Brouwer et al., 2007; Davies et al., 2009; Kuriakose et al., 2013; Weldegebriel & Amphune, 2017b). PKH intervention does not have direct effect on coping strategies in both models. Main activities in PKH aim to improve the poor household welfare consist of cash transfer program, welfare mentorship and access to welfare aid support. Therefore, advantages of PKH intervention are not explicitly deal with disaster impact. However, PKH has indirect effect on the coping strategies in dealing natural disaster. Especially in the household live in Pekalongan where risk prone coastal use is to experience with the adverse, so regular support like PKH will contribute to reduce the disaster impact. Since indirect so the influence of PKH need mediator to support the copings strategy both ex-ante and ex-post. Livelihood capitals become the mediator between PKH intervention to coping strategy.

Not only the indirect effect but also the direct effect can be found in the model. Since the indirect effect needs mediators for the impacted variable, PKH needs other factors like livelihood capitals to transfer the effect to coping strategies. Meanwhile, in some parts, PKH could effect directly to some capitals. Also, some capitals directly influence coping strategy. It means that the direct effect of PKH does not reach disaster control because it has directly fulfilled the function of capital in the households.

Furthermore, this capital plays a role in managing strategies to deal with floods. Such is the difference between indirect and direct effects. The relationship of SP with PKH program,

livelihood capital and coping strategy also can be revealed from path analysis in direct effect. Path analysis reveal that PKH intervention has influence to livelihood capital and livelihood capital affect to the coping strategy. There are two capitals that shown as the shortest mediator between PKH to ex-ante and ex-post strategy which are financial capital and social capital.

Social capital is the only variable has directly influenced from PKH as well as directly affect to ex-ante strategy model. It means social capital become mediator between PKH intervention and ex-ante coping strategy. Zhang (2012) found that SP enhances human capital and it encourage activities to prepare natural disasters(Zhang et al., 2012). In the models, the latent variable 'social capital' is composed by four observed variables related with social organization's membership or activities. PKH has programs other than the cash transfer and 'family development session' is one of them. It is a program to enhance welfare in households by workshops and it helps PKH beneficiaries to expand network with social organizations for example religious organization or neighbourhood community. This social network is expected to enhance collective activities in the community or to have assistance from outside of the community to implement coping strategies before the great floods.

Meanwhile financial capital is the only variable has directly influenced from PKH as well as directly affect to ex-post strategy model. It means financial capital become mediator between PKH intervention and ex- post coping strategy. The latent variable 'financial capital' is composed by two variables about assets in households. If households have some assets such as life stock, building materials, they can sell them/use them for implement coping strategies such as repair of houses. This result is consistent with the previous research's finding that SP is the "short way" to assist the emergency response dealing with natural disaster (Pelham, Clay, & Braunholz, 2011; Suroso, Sagala, Alberdi, & Wulandari, 2018; Weldegebriel & Amphune, 2017).

## 4.8 **Model of Smallholder Farmer Household- SEM Result and Discussion**

Similar like labor model analysis, so in the smallholder farmer model will show how PKH as cash transfer program which one of the SP instruments support livelihood capital then livelihood capital contribute to coping strategies. The model of before flood (Ex-Ante) and after flood (Ex-Post) using SEM as analysis process to test the hypothetical model.

***Model of Before Flood (Ex-Ante) Strategy For Smallholder Farmer***

Preparation days (PREP TIME) is added in the hypothetical model become the final model that shown in Figure 12. When the goodness of fit of the model was tested, the indicators were good enough: The root mean square error of approximation (RMSEA) is 0.083 (≤ 0.09), the Tucker–Lewis's index (TLI) is 0.906 (≥ 0.90), the goodness-of-fit index (GFI) is 0.915 (≥ 0.90), and the comparative fit index (CFI) value is 0.941.

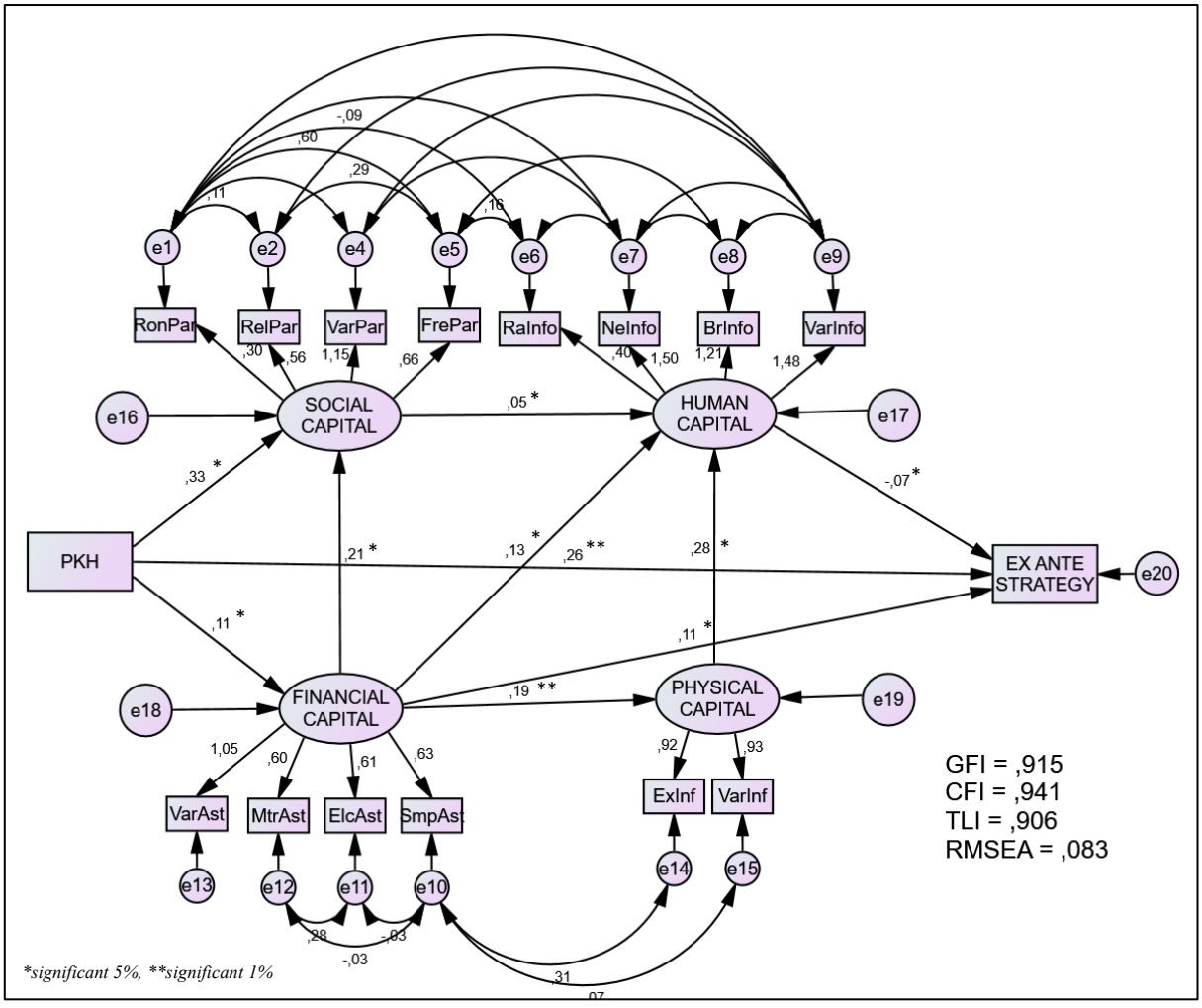



*Figure 26. Model Farmer Before Flood (Ex-Ante)*

From this ex-ante model that shown in Figure 25, PKH intervention has direct effect on 'social capital'(β=0.33, p<0.01), 'financial capital' (β=0.11, p<0.05), and also 'ex-ante strategy' (β=0.26, p<0.01).On the other hand, ex-ante strategy also influenced by 'human capital' (β=-

0.7, p<0.05) and 'physical capital'(β=0.11, p<0.05) directly as seen in Figure 24. The accumulation effect from others capital like human and financial, make PKH the highest effect to ex-ante strategies. From the model of ex-ante strategy shown that 'PKH' directly give impact to 'ex-ante strategy' model.

The indirect effect also can be identified from the model. Table 12 show that PKH gives indirect effect to social capital, human capital, physical capital, and ex-ante strategy with (β=0.023), (β=0.036), (β=0.021), (β=0.009), respectively. From the table 12 know that PKH has the biggest indirect effect to 'human capital'

*Table 12. Standardized Indirect effect path in farmer ex-ante model*

| Variables | PKH | Financial Capital | Social Capital | Human Capital | Physical Capital | Ex-ante Strategy |
|---|---|---|---|---|---|---|
| PKH | - | - | 0.023* | 0.036* | 0.021* | 0.009* |

**significant 5%, **significant 1%*

***Model of Before Flood (Ex-Ante) Strategy For Smallholder Farmer***

Variable of impact (IMPACT) and exposure (EXPOSURE) are added in the hypothetical model for ex-post strategies and become the final model that shown in Figure 4. When the goodness of fit of the model was tested, all indicators were appropriate: The comparative fit index (CFI) value is 0.926 (≥ 0.95), the root mean square error of approximation (RMSEA) is 0.079 (≤ 0.09), the Tucker–Lewis's index (TLI) is 0.902 (≥ 0.90), the goodness-of-fit index (GFI) is 0.901 (≥ 0.90).

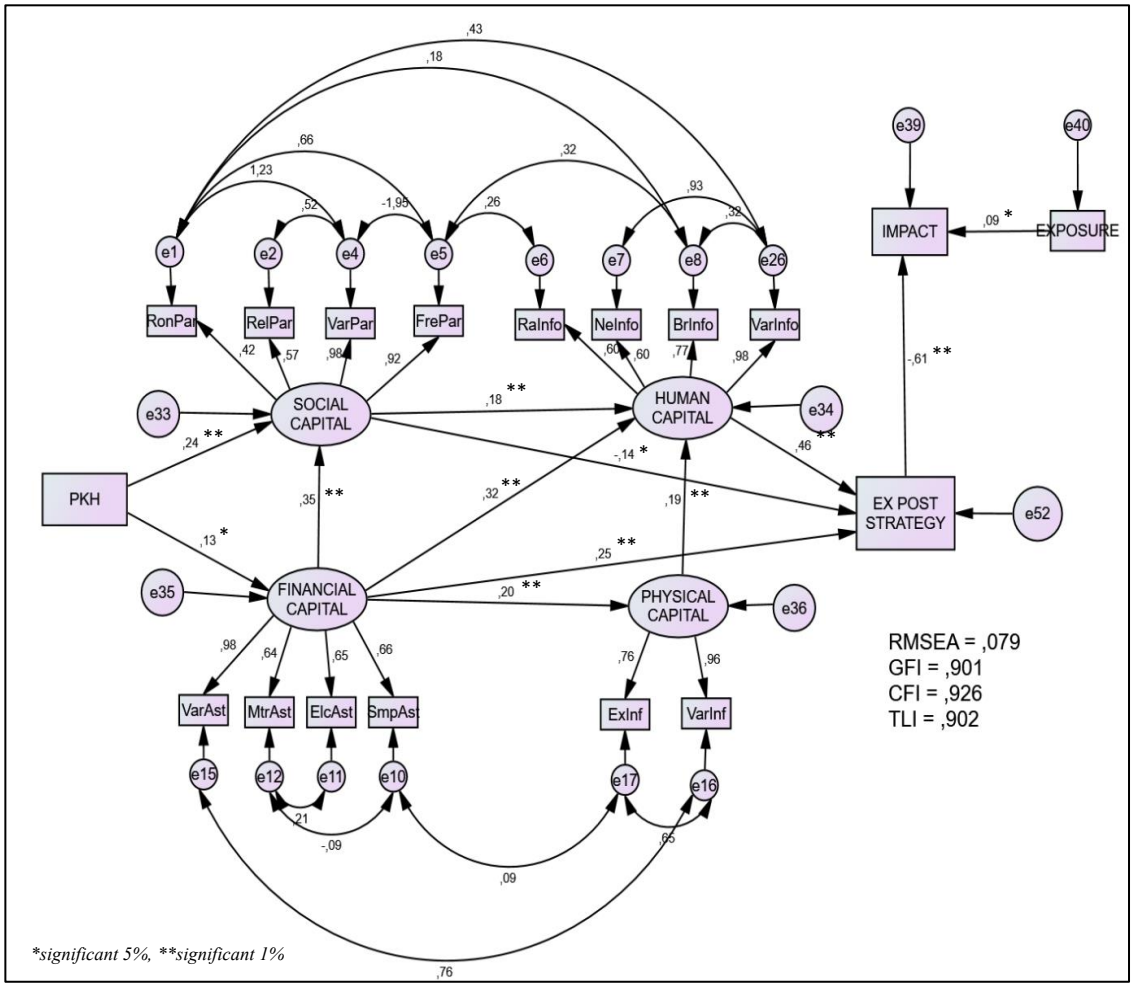



*Figure 27. Model Farmer After Flood (Ex-Post)*

From this ex-post model that shown in Figure 26, PKH intervention has direct effect only on 'financial capital' (β= 0.13, p < 0.05) and 'social capital' (β = 0.24 p < 0.01). PKH deliver some amount of money to the household that purpose to expend in health and education issue which can enhance the financial ability. Also, PKH give several routine mentoring activities, training and workshops which strengthen the social ability.

On the other hand, ex-post strategy is influenced by 'impact'(β= -0.61, p < 0.01), 'human capital' (β=0.46, p<0.01), 'financial capital' (β=0.25, p<0.01) and 'social capital'(β=0.14, p<0.05) directly. Impact has the highest coefficient value to ex-post which means has the biggest influence to ex-post strategy.

From the model of ex-post strategy shown that 'financial capital' and 'social capital' has directly influenced from PKH as well as directly give impact to 'ex-post strategy' model.

Through the 'financial capital' and 'social capital' is the shortest path to deliver effect from PKH intervention to ex-post coping strategy.

The indirect effect also can be identified from the model. Table 13 show that PKH gives indirect effect to social capital, human capital, physical capital, ex-post, and impact with (β=0.044), (β=0.097), (β=0.026), (β=0.038), (β=- 0.023), respectively. From the table we know that PKH has the biggest indirect effect to 'human capital'. It means PKH intervention gives effect through the livelihood capital first until reach to the ex-post strategy. Another result also found that PKH and Impact has negative relationship indirectly. It means the existence PKH makes the impact lesser.

*Table 13. Standardized Indirect effect path in farmer ex-post model*

| Variable | PKH | Financial Capital | Social Capital | Human Capital | Physical Capital | Ex-post Strategy | Impact |
|---|---|---|---|---|---|---|---|
| PKH | | | 0.044* | 0.097* | 0.026* | 0.038* | -0.023* |

**significant 5%, **significant 1%*

To confirm the SEM Result in the smallholder farmer, so author conduct the indepth interview.

According to the interview data, the counseling sessions, including FDS, improve coping strategies. However, this is not because of the content of the sessions but because the counseling expands the beneficiaries' connections with other people or institutions. The counseling or mentoring or workshop sessions become a "means to an end," which enhances networking ability to improve their capability and reduce the adverse impact of disasters. For example, the PKH beneficiaries gained additional income opportunities after interacting with local businesspeople in the PKH workshops. One PKH beneficiary who works as a smallholder farmer and food seller said:

*When I attend the PKH meeting, I will make new friends from other villages, including from formal institutions like local government offices. I can get another source of income. Several times there are small business opportunities that I got after the meetings. Or I have been invited to help them by providing food and cooking if they have events. (W, 2022 March 5$^{th}$)*

Another interviewee also described her experience when the flood occurred in her area:

*When our family income is reduced because my husband cannot work in the rice field, I try to sell food to customers. I offer it to friends, including those I know from the meeting at the PKH,*

*and it sold out. I have advantages because I know the network and will sell my cooking as a result. (V, 2022 March 5th)*

In the case study, especially in the rural farmer context, the counseling facilitator attends the FDS events and is available in the community daily, which widens the exposure to the external world and amplifies the community's capability.

Another finding also revealed that as the PKH beneficiaries are registered on the national welfare database, they also have access to other government and institutional aid. One of the interviewees said:

*Floods have occurred in our village like five to seven years ago, so I experienced the impact before and after I became a PKH recipient, and it's very different! Before, I only got help or food assistance once or twice, but after I became a PKH beneficiary, the assistance from many institutions doubled. (S, 2022 February 27th)*

***Discussion for Smallholder Farmer Model Result***

By having the SEM result, the case study with smallholder farmer also explored the relationship between PKH and coping strategies. The result enriches the labor model which means two types community can convince that PKH as social protection program through cash transfer can enhance the coping strategy facing natural disaster.

From the smallholder result SP and especially cash transfers are absorbed and reduce the impact either on or off the farm (Hoddinott, John; Berhane, Guush; Gilligan, Daniel O; Kumar, Neha; Taffesse, 2012; Weldegebriel & Amphune, 2017b). As illustrated in Figure 27 that many paths explain the complexity, especially when PKH influences livelihood capital and livelihood capital influences coping strategies. In this model also divide the coping strategies between ex-ante and ex-post strategies.

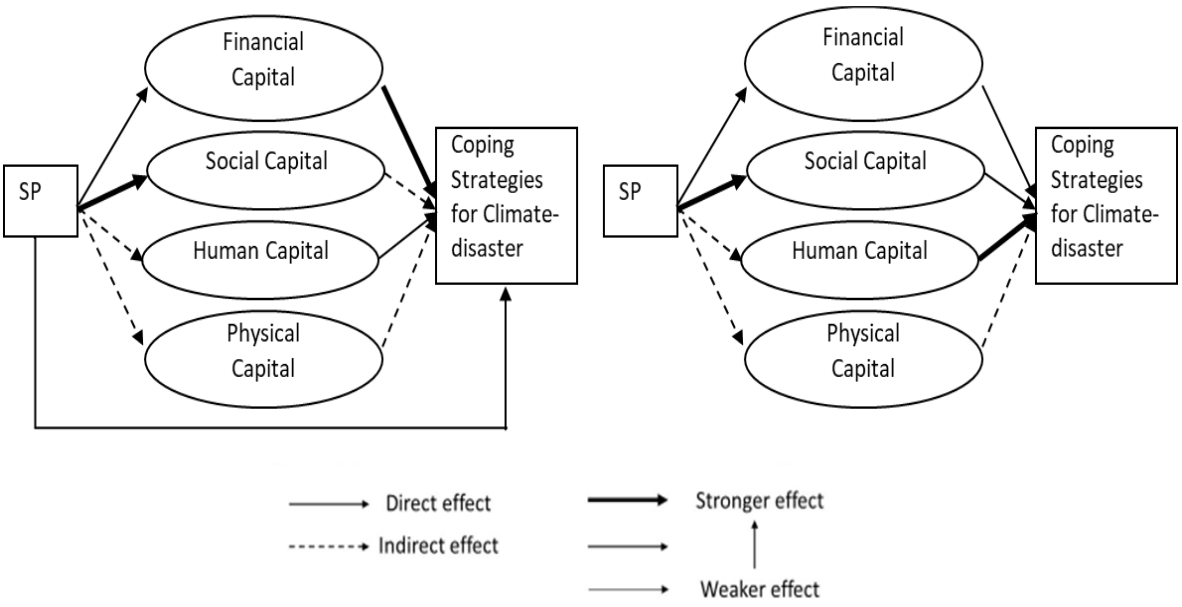



*Figure 28. Farmer Model Case*

PKH directly affects financial and social capital for both ex ante and ex post, which then become coping strategies. This result corresponds with results from Kaur et al. (2020), Kuriakose et al. (2013), and Aleksandrova (2019), which demonstrated that SP enhances livelihood capital. This finding also adds to the literature by explaining the less understandable relationship between cash transfers as part of social protection and natural disaster mitigation (Arnold, Mearns, Oshima, & Prasad, 2014; Davies et al., 2013; Wood, 2011).

The financial capability results are very reasonable because PKH is a cash transfer program, so it delivers money to the beneficiaries for designated purposes. The variable "Total assets" is the highest variable of financial capital. This means that the PKH increases financial abilities because the smallholder farmer can create savings and utilize other important activities like coping strategies before and after flood. As demonstrated in previous research (Maluccio, 2011; Matin, Sulaiman, & Division, 2008; Todd, Jessica Erin; Winters, Paul C.; Hertz, 2011), cash transfers help with asset investments, including livestock and agriculture. In this research, the findings demonstrate that financial capital is a tangible and short-term solution to absorbing the adverse impacts of disasters.

The human capital become livelihood capitals that essential to give effect to coping strategies for both ex-ante and ex-post strategy as also found in the previous research (Kuang et al., 2019). The variable " type of flood prediction information" is the highest variable of human capital". Even though the human capital has not affected with PKH directly, but it has strong effect to coping strategies directly. Human capital become key factor to improve existing PKH to more

integrate with disaster mitigation. Especially human capital is the highest value of indirect effect from PKH. It means PKH encourage other capitals (financial and social capital) first, then after that effect to human capital which directly effect to coping strategies. PKH has succeeded in strengthening assets and capabilities for collective networking which then becomes a means to obtain information about the emergence of disasters so as to make households better prepared and responds for strategies to deal with floods.

Interesting findings emerge when PKH affects social capital for coping strategies directly in ex post strategy. Cash transfer programs usually focus on cash assistance, but this finding provides a new perspective on how they can also affect social capacity. Compared to Wood's (2011) results, when the result was focused on financial capability, cash transfers failed to respond to non-generic determinants (such as institutions, knowledge, innovation, or forward-thinking decision-making). However, it already met the basic needs of adaptive capacity. Meanwhile, this finding demonstrates that, in addition to financial capability, social ability leads to households developing strategies before and after flood model. As PKH includes mentoring and household workshop activities, this program delivers social bonding and interaction among the beneficiaries. The "Number of participants" variable is the highest variable for social capital and refers to activities in PKH that boost social interaction, especially participation in community activities, and these practices are beneficial when disasters occur. Within a network that has been built through collective practice helps to find strategies to cope with climate hazards. For example, after the flood, smallholder farmer usually looks for additional income sources like helping to harvest other farmers' fields. It also strengthens by the interview result that the household expand their network through the events of mentoring and workshop assistance to get alternative income when they can not work at their rice field because of flood. The detailed information about which fields require extra assistance is derived from the good network among the smallholder farmers. The more exposure a smallholder farmer has to collective activities, the more information they have for earning an additional income, especially after crop failures.

From the confirmation through interview to representative of smallholder farmer said that counseling or mentoring activities and data registration are likely the main ways the PKH influences coping strategies. This is in line with the finding on the first objective that PKH provides financial and social capital, which also influences coping strategies. Johnson et al. (2013) and Berhane et al. (2011, 2014) have argued that cash transfers programs should include other activities that strengthen income-generating capacities and future resilience. This finding

demonstrates that FDS can be used to mainstream climate change knowledge to enhance capability and expand networks as part of social capacity.

For Ex Ante model PKH also directly influences coping strategies without considering the intermediary factor, livelihood capital. This finding acknowledges that the existing PKH was not originally intended for disaster management but contributes to coping strategies especially in the preapredness. Similar to research conducted by Vathana et al. (2013), this cash transfer program encourages SFH to invest in other activities and income sources when dealing with natural disasters. Different result with the Ex Post or after flood, PKH has not directly influence to coping strategy. It means that the influence of existing PKH program only support until the preparedness phase in the Ex-Ante Model. The residual effect of the program can not reach to develop strategy after flood. If the effect wants to achieve until after natural disaster should incooperate with further activities the focus in reconstruction after the flood.

Another finding is that PKH indirectly affects human capital and physical capital. Although the SP program aims to enhance human resources, it does not improve human capital directly (Nyachoti, 2017; World Bank, 2018). This is expected because PKH's activities are not directly related to disaster risk reduction, and its mentoring programs do not deal with disaster preparedness. While PKH indirectly affects human capital, eventually, human capital strongly influences coping strategies; PKH's does not have significant human capital effects but is an important point for strengthening coping strategies. Moreover, PKH indirectly affects physical capital because PKH does not relate to physical aid. The indirect effect is also derived from physical capital to coping strategies. This is likely because the usual floods in Cilacap are widespread and impact agricultural land, causing infrastructure mitigation efforts to be carried out on a massive scale. Subsequently, individual or household efforts for infrastructure mitigation become less important than the massive efforts of the government to improve the surrounding environment.

## 4.9 Conclusion for Empirical Case (Labor and Smallholder farmer)

Social protection (SP) intervention and its components are effective tools to address disaster impact conceptually but still contribute the unclear roles since lacking in evidence (Browne, 2014; Davies et al., 2013; Schwan & Yu, 2017).

This research has found that the existing SP, which is PKH intervention, has influenced the coping strategy in dealing with flood disasters. PKH provides a complementary effect on the

ex-ante and ex-post coping strategy of the poor household, both labor and smallholder farmer. PKH influences are coping strategies through the livelihood capital as a mediator. First, PKH is proven effective in empowering the livelihood capitals (primarily financial and social capital), then livelihood capitals transform into ex-ante and ex-post strategies. This result enriches the empirical studies to support a conceptual perspective that discuss how SP helps disaster management (Davies et al., 2009; Ulrichs et al., 2019).

The model also found that social capital and financial capital are the shortest paths connecting PKH intervention to coping strategy. Social capital through membership in an organization for labor and participation in collective action becomes the intermediary factor between PKH and coping strategy. Mentorship through training and public assistance in the Family Development Session of PKH opens the opportunity to expand the social network, which is apparently applied to prepare the coping strategy. Also, financial capital belonging to assets becomes the intermediary factor between PKH to ex-ante coping strategy. A cash transfer for primary welfare purposes beneficiaries did saving in assets. The assets are used to cushion the impact after a flood since the household has no income because of the flood. It is an interesting finding to complete previous research, regardless of the social capital (Pelham, Clay, & Braunholz, 2011a; Sagala et al., 2014). This result is similar between the labor and smallholder farmer generally. Therefore this research can be a basic argument to incorporate the poverty reduction and disaster risk reduction approach.

To strengthen the financial ability of the beneficiaries, PKH should consider the development of an urgent mechanism of financial assistance in risk-prone areas after a disaster, which would leverage their ex-post coping strategies. These recommendations align with the ADB's suggestion to create regular, predictable, and timely cash transfers to absorb the impact of disaster-related shocks. Meanwhile, to reinforce the social capability of the beneficiaries, PKH should increase the workshop, mentoring, and family development sessions with the external community, which will cause the exchange network during the event. For example, it could be a joint workshop or event collaboration with an institution, organization, or other community that could enhance not only their knowledge but also their network.

Different results are also shown in the case of labor and smallholder farmer. When in labor case, PKH only gives indirect effect to coping strategies; meanwhile, farmer case in Ex-Ante got the direct effect from PKH to coping strategies. Different types and community characteristics apparently influence the impact of the implementation of PKH to develop a coping strategy. The labor considered as urban poor depends on cash-based income for their

livelihood. The problems of urban communities are more complex than rural ones, making PKH impacts not directly and through many paths to coping strategy compared to rural ones. Another difference was also shown between labor and farmer. Therefore it is also essential to consider the design program's wide-range effect due to the city's complexity of life. In the labor case, human and physical capital plays a vital role in developing coping strategies. Meanwhile, in the smallholder farmer case, only human capital means physical capital has not been affected by PKH or even gives effect to coping strategies. Physical capital in the labor community plays a significant role since Pekalongan city has a slightly advanced mitigation infrastructure on a community scale or individual rather than in rural areas. Flood mitigation with a simple and modest tool is in Cilacap, with a broader landscape as rural than Pekalongan. The mostly less technological intervention was carried out to decrease the inundation. Therefore the physical capital does not affect coping strategies in smallholder farmer households in Cilacap.

However, to make PKH effective and inclusive in developing coping strategies, the finding from the relationship of livelihood capital to coping strategies needs to be considered more. In general, two other capital, physical and human capital, become essential for coping strategies since they were also affected by PKH indirectly. Therefore to accelerate the effect of PKH on disaster risk reduction, it needs to activate these capitals. For example, to optimize the human capital, PKH should consider involving disaster-related organizations in PKH's programs to deliver awareness and disaster knowledge and practice through workshops or family development sessions to increase household capability. Another example of activating the physical capital is linking the PKH beneficiaries to the advantage of existing infrastructure mitigation development on a household, community, or regional scale. For example, on a household scale, the improvement could be adding in-kind aid to support mitigation activities, such as providing sandbags and materials as temporary dikes to households in disaster risk-prone areas, which is expected to link PKH with physical capital. Then on the community or region scale, Public Work for the construction of embankments in coastal areas becomes a collective activity that might be worked on together between the local government and the community. This is also an effort to synchronize PKH beneficiaries with other national development programs for low-income families in Indonesia, such as "Kotaku" (National Slum Upgrading Program), which focus on improving the poor residential and settlement infrastructure, or access funding to "Dana Desa" (Village Fiscal Transfers), which are usually applied for village development where local preferences are accommodated.

For further research, this model result can be applied with some considerations. The target and area characteristics need to be considered as critical factors. For the target characteristics, the object of the model needs to be low-income households that the social protection program has intervened. The low-income household run climate-sensitive working, which means their job relies on weather condition. Moreover, the area could be a rural or urban characteristic categorized as disaster-prone. The type of disaster is most suitable with slow disaster onset like climatic hazards or sea level intrusion that cause frequencies of a flood incident.

# CHAPTER 5 PROGAM IMPROVEMENT: A STUDY ON INDONESIA'S POLICY TO MAINSTREAMING INTEGRATION FRAMEWORK WITH PKH

## 5.1 Introduction

Program Keluarga Harapan (PKH), a conditional cash transfer in Indonesia, is designated to protect low-income households. The existence of this program is essential nationally because it affects poverty control in Indonesia. PKH is the spearhead of government intervention to protect the community, especially the poor, against idiosyncratic and covariate shocks. According to the report by World Bank, PKH was the third largest conditional cash transfer in the world with a vast and fast coverage upgrade, from 3.5 million families in 2015 to 6 million families (about 9% of the population) by the end of 2016 and 10 million households in 2018 (World Bank, 2017). PKH helps reduce the burden of household expenditure for low-income families while investing in future generations through improved health and education for the human capital development effect (OECD, 2019). However, compared to several social protection programs in other countries like Mexico, Brazil, and Philippines, PKH benefit levels are relatively low (OECD, 2019).

As an instrument of social protection, PKH is part of the cash transfer mechanism. PKH is one of the instruments that can be synergized with disaster management. In many cases in Indonesia, many households are still trapped (back) in poverty because there are natural disasters that impoverish this group. For example, according to previous research in one province in Indonesia, Bengkulu was very prone to earthquake disasters. In the years 2000 and 2007, there was a big earthquake that destroyed a massive settlement and infrastructure. According to Farid et al., the low-income group was trapped in poverty for two to three years after the earthquake (M. Farid, N.Setyowati dan Z.Muktamar, 2019).

Therefore, when the Medium National Planning formulation, there is an idea that social protection programs, including PKH, can consider natural disasters as one of the criteria in determining beneficiaries. The plan is in line with previous research and ideas where the concept of integration effectively impacts poverty control and disaster control. In addition, in this subchapter, the author tries to show evidence through previous empirical research. The aim is to determine whether PKH contributes to strategy formation in two groups of poor

households, namely cloth batik labor households, and smallholder farmer households, as explained in chapter 4.

Therefore, from the information that has been obtained previously, the purpose of this chapter is to explore the possibility of the development/expansion of the PKH program. PKH expansion will consider disaster issues as an answer to the Medium National Planning directives as well as follow-up to previous empirical studies. Therefore, the output obtained is expected to provide an overview of the scenario taken if PKH as a national program becomes a pilot program to integrate poverty reduction with disaster management.

This chapter will comprehensively present the identification of problems that occur in Indonesia regarding the idea of integration by comparing the current situation with the potential expected program. From this, it is continued to find gaps and needs, which will be combined with the previous empirical findings. The following analysis is to determine the choice of scenarios that can be recommended to stakeholders.

## 5.2 **Research Framework and Methodologies**

This chapter will do the program improvement analysis using several methodologies in one framework. To complete the expected result so this chapter uses a qualitative approach. The qualitative method is an inquiry process to get an understanding based on the clarity of traditional methodology through explaining social problems and humanity (Creswell, 1997). Through this method, the author develops natural complexity settings, a holistic overview, and details reports from the informant or resource person (Creswell, 1997). Open-ended data need coding and clustering. The qualitative approach's importance is making systematic categorization steps (Creswell, 2003).

Since this research is categorized as qualitative research, it should explain the complex phenomenon related to gaps between existing programs and policy with the expected future program and propose an alternative scenario for modifying the program.

Policy evaluation has been conducted in a purpose for the improvement of improving the program or policy. It is a systematic assessment not only in the process but also of the outcomes of a program associated with a set of standards (Weiss, 1998). Evaluation is not limited to improving the program and policy with the original objective, but it is also modifying the program constructively to optimize its potential function (Andrei, Thollander, Pierre, Gindroz,

& Rohdin, 2021; Weiss, 1998). Therefore, since this research aims to discover the additional function of PKH, the evaluation method is still suitable for integrated policy improvement.

*Table 14. Recapitulation of Methods for Program Improvement*

| No | Part | Data Collection Technique | Analysis Tools | Output |
|---|---|---|---|---|
| 1 | Current Situation of Indonesia Policy due to the Integration | - Desk Literature through the report, regulation, and document review<br>- Stakeholder Interview result | Content and Explanatory Analysis | - Mapping and Description the Policy of Integration |
| 2 | Defining the research focus and objectives | | Bardach's framework of Policy Improvement | - Categorisation of existing condition, the bottlenecks and the expected output based on the focus<br>- Recommendation options |
| 3 | Identification the need and gap | | Explanatory Analysis (adopt from (Andrei et al., 2021) | |
| 4 | Expected Options to Integration Scheme | | | |

In general, four parts of the study use two analytical tools to result in three expected results, as seen in Table 14. This methodology is executed sequentially.

1) Data Collection

Data collection starts from the primary data and secondary data. The primary data is from the interview of the government officials, and the secondary data is derived from documents such as articles, research or project report, and legal documents like regulations or planning documents. The interview result is recorded and made into a transcript to further code and categorize. Below is the list of the data source for the interview:

*Table 15. List of Interview Source*

| Number | Gender | Role | Code | Interview Topic |
|---|---|---|---|---|
| 1 | Female | Practitioner/ ASP* Expert (UN/UNICEF) | P1 | Response of The Result, Similar Program, Policy of Integration, Improvement of PKH Program related with Disaster Impact |
| 2 | Male | Head of Disaster Response (Ministry of Social Affairs) | MOSA1 | |
| 3 | Female | Social Protection Planning (Ministry of National Planning Agency) | BAP1 | |
| 4 | Male | ASP Coordinator (ASP Expert) | BAP2 | |
| 5 | Female | Head of PKH Division | MOSA2 | |
| 6 | Female | Coordinator of PKH in Cilacap | CIL | The cross cutting of PKH Implementation and Disaster management in factual condition |
| 7 | Male | Coordinator of PKH in Pekalongan | PEK | |

2) Data Processing and Analysing

The data processing is an open-ended data need coding and clustering. The qualitative approach's critical is making systematic categorization steps (Creswell, 1997). The data is derived from the text, whether the source is a written document or an interview transcript. Then, the iterative process is conducted to the transcript document through coding and color grouping to gain the key messages.

Moreover, the analysis tool adopted by Andrei et al., 2021 regards stages to evaluating the policy improvement. In the previous, the five steps were proposed to be a guideline in conducting an ex-ante energy efficiency policy program evaluation, as seen in figure 28

(Andrei et al., 2021). However, to adjust to the desires of this research which is to see gap and need of the integration process, the steps have been a little modified.

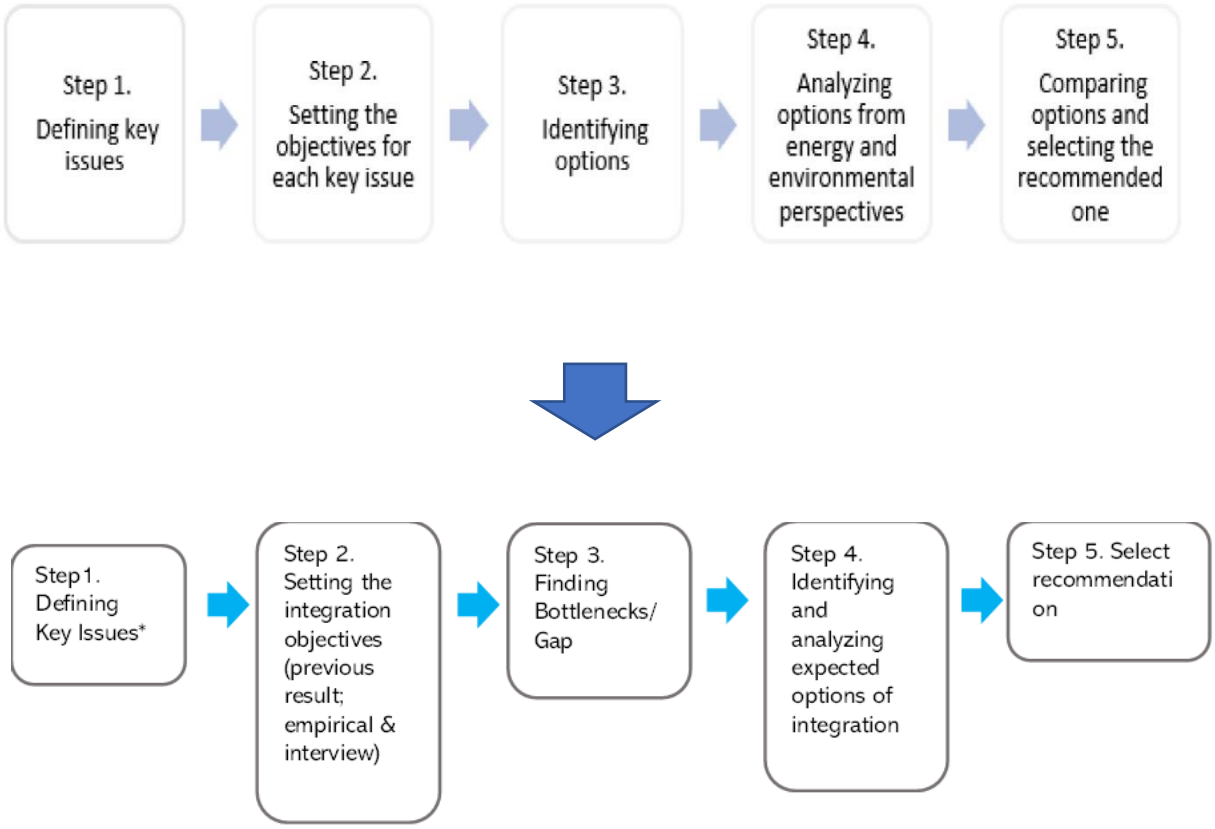



*Figure 29 The Modification Version of Policy Program Evaluation*

The analysis from steps 1 and 2 defines the key issues, including each objective which becomes the basis and focus for further research. Step 1 explains key issues following Bardach's framework that consists of four elements such as 1) technical feasibility, 2) economic and financial possibility, 3) political viability, and 4) technical operability (Patton, Sawicki, & Clark, 2016). Step 2 is to make clear the four critical issues with the integration context. Therefore in step 2, the previous key issues should explain with objectives in the context of the integration approach. Step 3 is to find the gap and bottlenecks to achieve the objectives. Finally, steps 4 and 5 identify and select the solution options to tackle the gap and become the study's recommendation.

After the categorization has been developed with Bardach's framework, step 3 is to find the gap in each key issue, such as the bottlenecks that hinder the objectives. In addition, this step can explore the existing and potential difficulties if social protection like PKH has to consider

disaster impact issues. Finally, steps 4 and step 5 are to formulate the recommendation as an interview result from the stakeholders.

## 5.3 Existing Policy in Mainstreaming of Integration Framework

In general, the Government of Indonesia (GoI) has made several activities to endorse countermeasures for poverty and disasters, including the climate change effect. The GoI has not only aligned the internal agenda with the approach but also has participated in international forums such as the Sustainable Development Goals (SDGs), the Paris Agreement, and the Sendai Framework. Therefore, GoI is applying each framework: social protection (SP), disaster risk reduction (DRR), and climate change adaptation (CCA) to support the development that is equipped with the legal basis for each of them.

The countermeasures to poverty and disaster impact include the climate change effect held by the government and the non-government sector. Multi-stakeholders and multi-disciplinary people are participating in a resilient and sustainable society. Several significant activities have been made to distinguish between the government's policies, planning, or strategies and programs that non-government agencies lead.

Although the implementation role can be divided between non-government and government agencies, the decision-maker is the government sector. Different technical agencies in the government sector play such roles in these three frameworks, as shown in Figure 29 Each ministry has tasks noted in the National Medium-term Development Plan 2020-2024, which serve as a guide for the national development agenda. Due to the three frameworks, the national plan document has divided the roles of related ministries as implementers. The Ministry of Social Affairs (MoSA) supervises social protection enhancement to reduce the level of poverty. The Ministry of Environment and Forestry (MoEF) oversees climate change mitigation and environmental enhancement. The National Disaster Agency (BNPB) manages disaster resilience enhancement and loss impact reduction. Later, detailed planning of each ministry should be re-coordinated with Bappenas again.

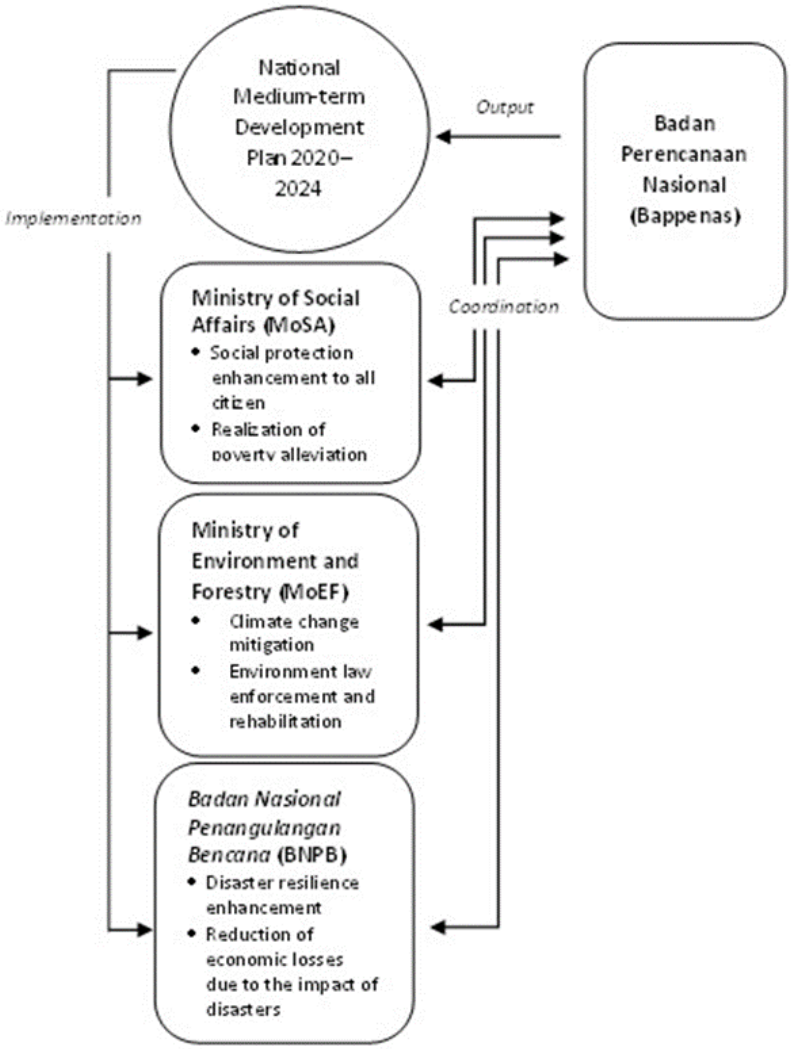



*Figure 30. The roles of related ministries*

One interview reveals that Bappenas has become an adhesive institution for developing the program; this leads to the integration approach and links the three frameworks (from the interview in September 2019 with the Director for Social Protection and Welfare, Bappenas). Among these three government institutions, the MoSA is the oldest ministry with an intersection mandate for managing social protection and dealing with disaster impact issues. The disaster issue prior to being tackled by the MoSA shifted to the BNPB in 2007. Therefore, there is still a division in this ministry's response to disaster reduction in terms of a humanitarian context (interview with unit head in Social Protection for Victims of Natural Disasters Directorate, MoSA, March 2020). It has recently cooperated with the MoEF in the climate change adaptation framework.

According to the document investigation also found that each of the ministries has its database on determined its field area. For example, MoSA, with the vulnerable protection, has a Unified

Database (DTKS) that utilize to regulate the beneficiaries of PKH. MoEF has an integrated environment database, and BNPB has Inarisk as a universal disaster risk database and information on Indonesia.

The existing policies in Indonesia also lead to the crosscutting topic of three frameworks: social protection, disaster risk reduction, and climate change adaptation. Table 16 shows the existence of intersection-related social protection, disaster risk reduction, and climate change adaptation frameworks in the Indonesian government sector.

*Table 16. Intersection of Social Protection, Disaster Risk Reduction and Climate Change Adaptation*

| | **Social Protection and Disaster Management including Climate Change Adaptation** | **Climate Change Adaptation and Disaster Risk Reduction** | **Social Protection, Disaster Risk Reduction and Climate Change Adaptation** |
|---|---|---|---|
| **Policy** | • **Law Number 13/2011 (Handling the Poor)** :<br>Social protection for the poor due to natural disasters, economic crises and social conflicts<br>• **Disaster assistance funding and management :**<br>Manage social assistance funds to local governments | • **Law Number 32/2009 (Environment Management and Protection)** :<br>Controlling the degradation of environment due to preventing disaster risk<br>• **Law Number 24/2007 (Disaster Management)** :<br>Arrange the management of disaster impact, including climate hazard related issues | |
| **Planning** | • **National Medium-term Development Plan 2020–2024** :<br>Initiative to expand the basic function of the social protection become more disaster sensitive | • **National Medium-term Development Plan 2020–2024 :**<br>Cross cutting disaster risk reduction plans with the CCA action plans | • **National Medium-term Development Plan 2020–2024 :**<br>Directing adaptive social protection; direct to have integrated data, type of social aid |

| | | | |
|---|---|---|---|
| **Program** | • **Disaster Response Volunteer Group (TAGANA) :** Community based voluntary group related to disaster management<br>• **Agricultural insurance facilities :** Insurance for farmers for crop failure | • **Housing Stimulant Funds :** Housing improvement funds for residents (*Program*)<br>• **Kampung Siaga Bencana and KOTAKU :** Community-based disaster management and strengthening social interaction of community members | • **PKH Adaptif (Initial project):** Initial stage of social assistance programs to poor households that add natural disaster victims, social disaster victims and remote community as beneficiaries |

*a) Social Protection and Disaster Management including Climate Change Adaptation*

A policy that governs these two frameworks was developed ten years ago. In fact, the individual approach has been a stand-alone policy, such as poverty reduction and disaster management, for a long time. According to Law Number 13/2011, social protection for the poor includes protection for victims against natural disasters, economic crises, and social conflicts. The same policy also regulates disaster assistance and funding management through local governments. It means that joint funding has already been considered in the case of cooperation. Therefore, it can be an entry point and a fundamental law to develop planning and programs that integrate approaches.

In addition to policies, the intersection of the two frameworks is also seen in the planning. For example, the National Medium-term Development Plan 2020–2024 mentions response aid and the possibility of scaling up the social protection program for a better disaster sense.

The program level that shows the intersection is the Disaster Response Volunteer Group (TAGANA) initiated by the MoSA. They have become the frontline at the community level in distributing support to reduce adverse impacts. It is a community-based voluntary group related to disaster management. In addition, the Ministry of Agriculture has implemented other programs, such as the insurance provided to farmers in case of crop failure. It has been implemented in several areas in Indonesia.

*b) Climate Change Adaptation and Disaster Risk Reduction*

The oldest integration approach exists between climate change adaptation and disaster risk reduction. Law No. 32/2009 controls the degradation of the environment to prevent disaster

risk. It includes regulating how to adapt to climate change effects. Another law that can be adopted is Law Number 24/2007, which is about disaster management, where hydrometeorological disasters are included in measuring disaster risk reduction.

The following actions have been included in the National Medium-term Development Plan 2020–2024, which focuses on cross-cutting disaster risk reduction plans with CCA action plans. However, many debates arise between the two entities that challenge cooperation.

Although there is still less coordination, some programs occur because of this intersection. Housing stimulant funds have become an example initiated by the BNPB. It aims to renovate and reconstruct housing damage caused by disasters, including hydrometeorological hazards related to climate change.

Kampung Siaga Bencana and KOTAKU are some of the programs that focus on leveraging community capacity. Kampung Siaga Bencana is a community-based disaster management system that aims to strengthen social interactions among community members. KOTAKU is a program for settlement improvement to reduce the potential risk of disasters, such as floods.

*c) Social Protection, Disaster Risk Reduction and Climate Change Adaptation*

After discussing the two integration approaches, the third considers the comprehensive approach because it considers three frameworks: social protection, disaster risk reduction, and climate change adaptation. Although the policy does not yet consider the three frameworks being integrated, it has already been mentioned in planning tools or has even been implemented in the program.

The latest National Medium-term Development Plan 2020-2024 states comprehensive integration among SP, CCA, and DRR. The purpose is to increase the accuracy and effectiveness of social assistance by considering disaster threads, including climate hazards. It also covers the poor and vulnerable at once. Consequently, the initial integration leads to a comprehensive mechanism to strengthen the adaptive capacity of vulnerable households. It is observable in the pilot implementation of PKH Adaptif. Discussing with GoI representative, stated that programs that arise from reactive responses to volcanic disasters need to be followed up immediately (interview with unit head in Social Protection for Victims of Natural Disasters Directorate, MoSA, April 2022). Under this program, households affected by natural disasters can be beneficiaries of existing PKHs. These households can then receive cash transfers, family consultation/social assistance, and easier access to other support. Another point of view of integration can be seen from the regulation that mainstreaming Adaptive Social Protection

(ASP). It is an approach of social protection that measures to reinforce poor people's resilience to disaster risks that acknowledge the changing and unpredictable nature of disaster impacts (Davies, 2009). The way of ASP helps to build the strength of poor and vulnerable households is through enhancing their capacity to prepare for, cope with, and adapt to shocks: protecting their wellbeing and confirming that they do not fall into poverty (Bowen et al., 2020).

ASP has been adopted by GoI just recently. It has been introduced through international institutions and donors to National Planning Agency (Bappenas) and several technical ministries. One technical ministry that becomes an entry point is the Ministry of Social Affairs (MoSA). Figure 30 summarizes the regulation process that contains ASP approach in Bappenas and MoSA. As seen in the figure, the process to adopt ASP is happening in parallel between Bappenas and MoSA. Firstly, Bappenas, a government institution that guides national development planning, initiated the ASP concept to answer the growing need to collaborate on poverty and disaster impact reduction. Therefore, it needs some basic changing and adjustments to existing regulations. One of them is the president's regulation of social protection. Now, Bappenas is developing the changing law to reform the social protection form. One of the types is to adapt to shocks like a natural disaster or social disaster until health shock in response to the Covid 19 pandemic. The derivative regulation from the President Regulation is the roadmap plan of ASP. The roadmap is an agenda that accommodates cross-cutting sectors and stakeholders until ministries.

However, the challenges of the President Regulation and the roadmap are not yet established. It needs to collaborate and coordinate with many sectors.

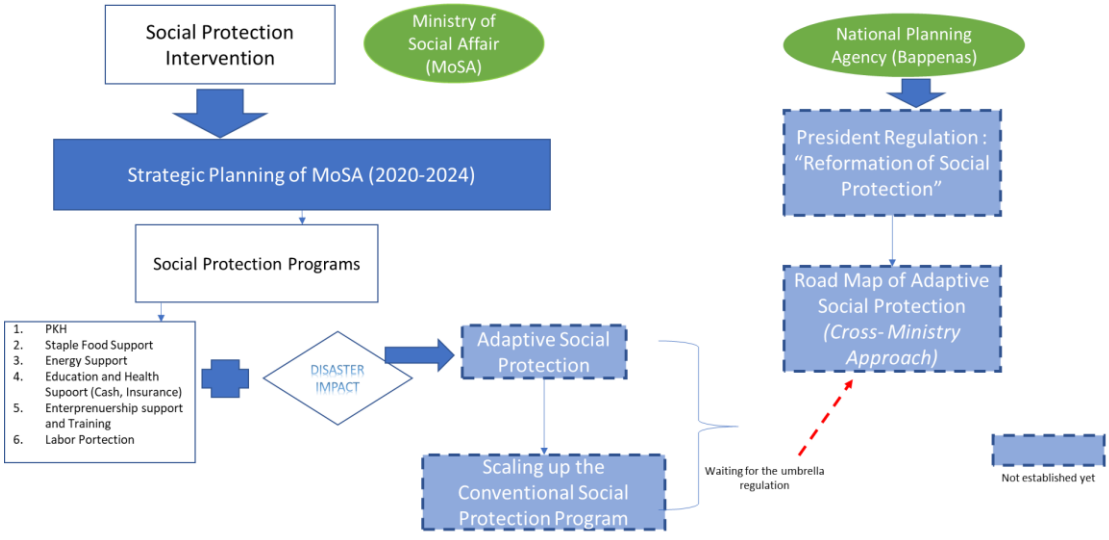



*Figure 31. Regulation for Adaptive Social Protection Approach*

Secondly, Figure 30 also shows that MoSA has expanded its core business as a technical ministry in social welfare issues. Since 1998 MoSA has been attached to the social protection intervention. All national-scale social protection schemes originated from the MoSA, such as the safety net, as one tool for poverty reduction. In 2020, MoSA established strategic planning, which updated many social protection schemes. One of the innovations in the new strategic planning is when social protection measures disaster impact—this approach is part of the Adaptive Social Protection (ASP) concept. The Strategic planning document was also written to scale up the conventional social protection to adapt to shocks, including natural disasters. One of the examples is to utilize PKH as one of the tools to integrate with disaster mitigation. Though it is a more detailed explanation and guideline since MoSA is also still waiting for the umbrella regulation from the Bappenas regarding social protection reform.

## 5.4 PKH Program and Policy Evaluation and Improvement

Focussing on the integration process, PKH is one of the programs that potentially can respond to the natural disaster impact due to preparedness until the emergency stage. Since PKH is the broadest coverage of the national safety net, which focuses on not only the distribution of cash transfer but also knowledge transfer assistance, it still has much space to improve with disaster issues. This subchapter will assess the readiness of PKH as a program and regulation that will support disaster mitigation for low-income families. Therefore, there are modified and expanded goals from the original PKH, which also consider the impact of natural disasters. An assessment on the evaluation of the improvement concept is to confirm the modified goals can be achieved. Hence evaluation criteria must be developed to anticipate possible constraints on the implementation (Ng, 2002).

By combining the main finding of the empirical study previously and the interview result, the explanation will conduct according to Bardach's typology, which has four constraints: 1) technical feasibility, 2) economic and financial possibility, 3) political viability, and 4) administrative operability (Patton et al., 2016). This framework, the evaluation of PKH, identifies the gap and need/expected if the integration will be applied.

1. **Technical Feasibility** measures whether program or policy activities and outcomes achieve their purpose. It means the design program meets the modified goal. Technical feasibility means the modified program design that has been deliberate the impact of natural disaster.

2. **Economic and financial possibility** measures the program's monetary and fiscal impact. However, this research describes the budget allocation in general if the program has been modified.
3. **Political viability** measure program outcomes in terms of impact on relevant power groups. This research refers to the institution, including government and non-government, in the various multi sectors. The development of regulation is also a form of political viability since the program's implementation relies on the existence of law.
4. **Administrative operability** measures the possibility of the application according to the organizational context. The essential factors in determining the success of the program application are the database and program coverage which eventually can not be the same in all parts of the countries.

The evaluation of the influence of Program Keluarga Harapan (PKH) on coping strategies to reduce the adverse impact gave many lessons learned from field facts. PKH was originally not designated for disaster impact countermeasures, but it apparently has the potential to reduce the natural disaster impact, as seen in a previous empirical study. However, the argumentation is insufficient until the empirical research is followed up with the program's readiness and policy improvement. By having Bardach's typology mentioned above, the interview results regarding integration are classified following the four constraints.

Each constraint will be divided into five steps systematically adopted by Andrei et al, 2021 with an evaluation of energy and environment policy. The discussion will consist of the **critical issues, objectives, bottlenecks, and options recommendation until recommended**. Key issues and objectives are derived mainly from the previous empirical study; meanwhile, the bottlenecks and recommendation options are purely from the interview result.

### A. Technical Feasibility

The program design of PKH is arranged for welfare improvement that focuses on long-term welfare leverage that focuses on health and education. The recapitulation of the information of the technical feasibility assessment is in Table 17. **The key issue** from PKH is that the existing program consists of routine cash transfers, joint workshops, or meetings like Family Development Session and an additional joint program. The current design allows incorporating PKH with disaster content, especially after having results from the empirical al problem.

The key issue in the program design is breaking down into **several objectives** based on the empirical result. The objective of the first key issue, which is routine cash transfer, can support their strategies to cope and adapt to environmental shocks like floods. It can fulfill the basic expenditure for health and education, so the household can re-allocate their budget to other strategies in dealing with natural disasters' impact. The second key issue is collective workshops such as Family Development Session, which aims to strengthen the beneficiary's social network that can be used to develop a strategy in coping with the natural disaster's impact. It gives an opportunity to expand networking during the workshop or mentoring, which can be activated to find alternative sources of income when coping with the disruptive effect of natural disasters. Moreover, the objective of the third key issue about the additional joint program consists of two things. The first thing is enhancing human resources to cope with disaster knowledge, and the second is having an advantage from mitigation's infrastructure program. The empirical study previously proves that there is an effective intersection between social protection mechanisms and household-scale disaster management efforts, especially in the program design of PKH.

Due to completing the key issues and objectives that resulted from empirical research, the interview lead described the gap and bottleneck, including some expected options. The discussion will elaborate more on the interview result by adding the code source in some sentences. For routine cash transfer in PKH has an advanced distribution mechanism rather than another program in Indonesia (MOSA2). PKH system has been settled for aid distribution to the grassroots. It has been developed for a long time rather than either national poverty or disaster reduction program. However, this system has many lacks that should be improved. One of the problems is the inaccuracy of the target since PKH is not universal, with only 40 % population under the poverty line. Therefore, the possibility of the inaccuracy of the target is higher (BAP 1, BAP2). It also affects the prioritization of the distribution mechanism of aid/support (BAP1). One example of how challenges emerge in integration is reducing the impact of natural disasters after implementing Program Keluarga Harapan (PKH) Adaptif. The program is part of the social protection approach that supports households affected by natural disasters, social disaster victims, and remote indigenous communities. This program occurred as a spontaneous program in response to the emergency assessment to support the eruption victim. However, the initial implementation of this program had some obstacles, especially when deciding who are eligible beneficiaries. The database of vulnerable households was not supported systematically to determine the recipients. Moreover, the resource person in the interview raised the expected solution to this problem. Since the system of PKH, including the

database and distribution mechanism, is the problem, the solution options are to make a more flexible, adaptive system for any shocks, including natural disasters (BAP1, BAP2). Some options regarding the coverage of beneficiaries that occur are vertical beneficiary expansion (the same beneficiary but add a budget component or horizontal beneficiary expansion (add a new beneficiary target that risks disaster). In addition, it should consider affordability, benefit size, and cash transfer frequency (BAP1).

Then the routing of joint meetings like a collective workshop or Family Development Session (FDS) has some problems which the implementation has less standard for the whole location in Indonesia, so the results are significant differences from one place to others (BAP 1, MOSA 2). The FDS should be a medium to deliver the key messages and transfer knowledge to the low-income family through several modules with different topics. However, the design of FDS has many lacks in not developing it in an optimizing way (BAP 2). One of the examples is because of the geographical constraint, the FDS rarely held by the PKH coordinator in some areas (MOSA2, BAP1). Some argument also said it is just the complementary program from PKH, which make some commitment from the implementer too weak to continue the program (BAP1, BAP2). The expected solution regards the problems is to prioritize the module delivery by adjusting to local area characteristic conditions (BAP 1). Increasing the joint meeting with a different method (not restricted to FDS form) can be a solution the gather the beneficiaries.

For adding new activities in PKH to be more connected with disaster issues, the previous empirical assessment stated that the human capital and physical capital could bridge the influence of PKH to the coping strategy. Some experts also said it is possible since PKH's purpose with disaster mitigation is to protect the vulnerable against the livelihood risk caused by the shocks. One is because the existing PKH is already backed with a settled system and used nationwide (P1, MOSA1). In the factual condition in the local area, the PKH coordinator has been involved with the disaster mitigation activities as a logistic supporter coordinated with the local emergency team (CIL, PEK). However, there are several bottlenecks if PKH wants to acknowledge the disaster impacts on beneficiaries, such as the overwhelming task from the PKH coordinator to deliver additional messages regards disaster prevention and response through the FDS module (MOSA2). Some facts also deal with the possible approach: focusing on emergency response but still less on preventive one (MOSA1, CIL, PEK). It rarely has cross-cutting activities with other sectors like infrastructure development for the PKH beneficiaries or the PKH coordinators. The expected solution from the interview is to add a module about disaster response (about preparedness, emergency, and economic development

after natural disaster impact) through FDS in some risk-prone areas (BAP 1, MOSA 1). Another way is by resource sharing with other sectors, government ministries, and local government as an option to tackle the overwhelming task (BAP2, MOSA2).

*Table 17 Recap of Interview result for Technical Feasibility (Program Design) of PKH*

| Key Issues | Integration objectives | Bottlenecks and Gaps | Expected options of integration |
|---|---|---|---|
| **Key issues 1 : Technical Feasibility/ Program Design** | | | |
| Cash transfer program of PKH | Considering disaster effect through the cash delivery | Less priority mechanism and beneficiary scooping (BAP1, BAP2) | **For the cash transfer:**<br>1. Vertical Beneficiary Expand: the same beneficiary but add a budget component (BAP1,BAP2,MOSA2)<br>2. Horizontal Beneficiary Expand: add a new beneficiary that risks to disaster (BAP1,BAP2,MOSA2)<br><br>**For the Routine Meeting:**<br>1. Prioritise the module delivery adjust with local area characteristic conditions (BAP1,MOSA2)<br>Add frequency of external collective meeting workshop (BAP1)<br>2. Add 1 module about disaster management (disaster preparedness, economic empowerment after disaster) (BAP1)<br>3. Resources sharing with other programs of MoSA and other ministries (MOSA2)<br>4. Involving the beneficiary with local infrastructure development (BAP1,MOSA1) |
| Routine meeting/workshop | Addressing the existing workshop (Family Development Session) to strengthen the social network of beneficiary | - Some areas has not been implemented the collective meeting /FDS yet (MOSA2,BAP1,CIL,PEK)<br>- Less Resource (MOSA2, CIL, PEK) | |
| Additional Program's activity | Enhancing the human resource to cope with disaster acknowledge | Overwhelming of the field coordinator to deliver many messages in the FDS module (MOSA2) | |
| | Having advantage from mitigation's infrastructure program | The core program has not developed the infrastructure (MOSA1,BAP1) | |

## B. Political Viability

Planning until the implementation of a program relies on political viability. The acceptability from the decision makers/groups can support the development of law or regulation as a basic guideline to act or implement the program (Patton et al., 2016). Therefore, the political background plays an essential role in developing or evaluating a program. The recapitulation of the information on political viability assessment is in Table 18. **The key issues** of the political viability in this research are stressed first in the institution interaction and collaboration, second supporting regulation/law due to the integration approach like Adaptive.

First, regarding the institution's composition of decision-makers, multi-background stakeholders have started collaborating. The **objective** is to make a cross-cutting policy and initiative from many sectors such as poverty reduction entity, disaster risk reduction entity, and climate change entity. An approach of Adaptive Social Protection has been initiated by National Planning Agencies (Bappenas) that collaborated with international institutions like UN, GIZ etc (P1, BAP2, MOSA1, MOSA2) since late 2019. One of the agendas is to reform the social protection system in Indonesia to be more adaptable and respond to shocks, including natural disasters. However, it faces difficulties when synchronizing the regulations and laws from several sectors/entities (P1, BAP2,MOSA2). Bappenas is an adhesive board for the other three technical ministries (Ministry of Social Affairs - MoSA for protection enhancement low-income group, Ministry of Environment and Forestry-MoEF oversees climate change and environmental enhancement, National Disaster Agency-BNPB for disaster resilience enhancement). The initiative was relatively new; therefore, the stage is still in the preliminary progress of integration policy (P1, BAP2). Since each sector already has its point of view, vision and agenda, it is difficult to let the key target fuse and combine with other sectors that initially have different goals. It isn't easy to have the same perception due to integration among stakeholders and institutions. Therefore, the achievement of this approach is still at the initial level. It needs support to clarify how to deliver the grand design into the detailed program (MOSA1, MOSA2). Another obstacle regarding the institution interaction is the less connection between central and local government as implementers (BAP2). During the interview, the resource person also stated the options on how to tackle the problems. One example is how the central government collaborated with local government regards disaster prevention or countermeasures like mapping the risk area or the victim of the natural disaster (MOSA2,PEK). The cross-cutting cluster is needed to continue an enhancement since many sectors and ministries are developing solutions to prevent emergencies due to natural disasters. It affects to trigger collaboration among ministries (MOSA1, BAP1).

The second is mainstreaming the integration through Adaptive Social Protection (ASP) approach. The objective is to include ASP in one of the national development agendas. The ASP is the expanded or modified version of social protection (SP), which adapt to shocks, especially from natural disaster (P1). Even though the ASP has not been clear yet on what tools will be used further to implement the concept, PKH has immense potential to be one of the exciting tools of ASP in Indonesia (P1). However, it requires some modification in the design program (BAP1, BAP2). The obstacle to mainstreaming the ASP as an integration concept is

the lack of umbrella regulation (MOSA1, MOSA2). The President Regulation to reform social protection is being developed now. Many interests and different points of view from various entities, including fewer guidelines, are challenging (P1, BAP2). The local government is also facing difficulties initiating the basic regulation of integration (BAP2). Several action options that have been carried out to solve the problems are while waiting for the umbrella regulation, and the technical ministries prepare for the local guideline that explicitly refers to collaboration among divisions and ministries (MOSA1, MOSA2). We need to realize that ASP is no silver bullet; it needs to complement CCA and DRR programs, for example, in developing physical development with public ministries, BNPB, or other technical ministries (BAP1).

*Table 18 Recap of Interview Result for Political Viability of Integration Issue*

| Key Issues | Integration objectives | Bottlenecks and Gaps | Expected options of integration |
|---|---|---|---|
| **Key Issues 2 : Political Viability** | | | |
| Regulation | Developing integrated issues about "Adaptive Social Protection" | - Umbrella regulation for integration has not been establish yet (MOSA1, BAP2,MOSA2)<br>- Lack of basic regulation in local/province level (BAP1,BAP2)<br>- Unclear detail guidelines (MOSA1) | 1. MoSA + Province gov: Mapping the local condition the PKH coordinator capability include the risk area (BAP2, MOSA1, MOSA2)<br><br>2. Prioritising several locations to be pilot project (BAP1) |
| Institution/Stakeholder | Collaborating with several entities and government sectors | - Dyssynchronization between central and local governments (BAP2)<br>- Difficulties coordination among different sectors, esp. 3 entities (DRR, CCA, SP) (P1,BAP2,MOSA2) | 3. Develop and enhance the cluster in internal ministry (ex: disaster and poverty cluster) (MOSA1, MOSA2, BAP2)<br>4. Need to collaborate in pilot projects with different ministries (BAP1, BAP2, MOSA1, MOSA2) |

### C. Administrative operability

The strength of the administrative aspect could support the implementation of the program. It is assumed as the key issue to developing a good performance. Hence, the program application determined whether the administration is feasible. The recapitulation of the information on administrative operability assessment is in Table 19. In this research, key criteria to consider in evaluating administrative operability include database existence, beneficiary scooping, and enabling factor for implementation. Each objective of these key issues is to have a more

inclusive and universal database, including that related to natural disaster impact, to develop universal beneficiaries based on the database, and to determine the enabling factor of program activities in some areas. Each objective in administrative operability has a close relationship with the design program; in this case, it is PKH. According to some interview with the resource person, database and coverage of PKH is significant contributors to PKH not getting optimal results (BAP1, BAP2).

First regards the database; basically, the PKH database is represented as the database of all social protection programs in Indonesia. The existing Unified database is not a universal database yet and will later be changed into the Social registry of Indonesia, which includes all databases of Indonesia's citizens (BAP2). Some bottlenecks are faced with implementing a unified database, such as data target inaccuracy, incomplete information regarding disaster victims or risk-prone information, and an un-flexible database system to adapt to shocks (MOSA1,BAP1,BAP2). Information uniformity as a baseline to determine an integrated project implementation is a challenging situation. The existing social welfare integrated data (called "DTKS" in Indonesia) is still insufficient for future collaboration programs because it cannot identify vulnerable households. An integrated database helps determine poor and vulnerable households and disaster victims. Some expected solutions that the government has offered are by improving the database, which collects needed information and can provide many programs among ministries (BAP1). A linked database such as Social Registry is required to develop as an effort of resource sharing and collaboration among the stakeholders.

Second, the coverage of beneficiaries should be improved by adding criteria like risk-prone households. However, it triggers some problems, such as the readiness of the database and other detailed criteria to determine the beneficiaries (BAP2, MOSA2). Hence, some expected options, such as an integrated database to be more universal and responsive to tackle these problems. Also, add precautionary benefits for several beneficiaries that fulfill the criteria like living in risk-prone areas or experiencing disaster impact on their livelihood (BAP2).

Third, enabling factors have occurred since the characteristic of the location area are different. Some areas are still remote, so PKH activities are not implemented in a comprehensive for example, the Family Development Session (FDS) is not implemented only several times a year because of geographical constraints (MOSA2, CIL). Another factor is the eagerness of the PKH coordinator and supported local champions like local leaders, ethnic leaders, or religious leaders that can be a booster for the community to have behavior change (BAP1). Some of the areas do not have good capability and support from local stakeholders. To face these

bottlenecks, resource persons give some alternative solutions. One of them is to choose the lesson learned and find the enabling factor in each characteristic of location and type of community (BAP1). The treatment for PKH activities like FDS, for example, will differentiate by similar characteristics. Having a pilot project to optimize the FDS in a specific aspect of society also becomes an improvement option.

*Table 19 Recap of Interview Result for Administrative Operability of PKH*

| Key Issues | Integration objectives | Bottlenecks and Gaps | Expected options of integration |
|---|---|---|---|
| **Key Issue 3 : Administrative Operability** | | | |
| Database | Building an integrated and comprehensive database including disaster risk content | - Lack of flexibility of the database system (BAP1, BAP2) | 1. Improving the further design of database that adapt and flexible in any situation (natural disaster, covid 19 etc) by inviting cross cutting stakeholder (BAP1, BAP2, MOSA2)<br>2. Unify the poverty and disaster risk database (BAP1, BAP2, MOSA2)<br><br>3. Determine the pilot project (location and tools) (BAP1)<br><br>4. Mapping the enabling factor when PKH accommodate disaster impact based on the characteristic (BAP1, BAP2) |
| Beneficiary Scooping | Identifying the precondition of beneficiary and location | - Unsupported with disaster victim and risk-prone household (BAP1, MOSA2) | |
| Enabling Factor | Finding out the enabling factor to integrate disaster to PKH | - Different characteristic of people and location (cannot be standardize) (BAP1, BAP2, MOSA2) | |

### D. Economic and financial possibility

Financial capability is an essential issue in developing a successful program. It is also an excellent way to evaluate a program since financial support is a measurable component (Patton, et al, 2016). Therefore, a quantitative assessment to measure the impact of the program is one of the evaluation assessments. However, this research has a limitation in describing an economic possibility. Since budget quantity is not measured, therefore, an explanative description from the resource person is a way to clarify the financial allocation. The recapitulation of the information on economic and financial assessment is in the Table 20.

The key issue regarding the economic capability raised is the budget allocation. The objective is to have an integrated and collaborative budget among government sectors. Also, if possible, to gather other financial sources like from the private sector, grants from international donors etc. The existing problem that hinders development and integration is that the budget allocation still relies on one ministry (MOSA2). Since the Ministry of Social Affairs has a division of social protection and disaster emergency response, so this ministry has a load integration task, but the financial source is only from one allocation budget slot. Therefore, some solution has occurred, such as re-allocate the budget from other ministries to have collaborated task in mainstreaming the poverty and disaster impact reduction (MOSA2). Access to other government budget source also become one option like "Dana Desa." It is a village development budget provided by the central government to the local government. The central government also endorsed local government to spend their budget to initiate the local integrated program (P1, BAP2). In practice, the international donor supports local government and community through an international grant to develop local government's capability, producing a small pilot project at the community level (P1).

*Table 20 Recap of Interview result for Economic/Financial Possibility of Integration Issue*

| Key Issues | Integration objectives | Bottlenecks and Gaps | Expected options of integration |
|---|---|---|---|
| **Key Issue 4 : Economic Possibility** | | | |
| Budget Allocation | Assessing the budget allocation from each source or integrated sources | Budget constraint to determine the schemes (if only rely in one ministry budget) (MOSA2, BAP2) | 1. Reallocate the budget from several ministries to have integrated program (not only 1 ministry) (MOSA2)<br>2. Activate the local/province budget (following the decentralisation scheme (BAP2, P1) |

Since the Government of Indonesia realized that each poverty reduction and disaster management affairs run in a silo, so recently optimized by integration of the two affairs. However, the initiative is relatively new; therefore, the stage is still in the preliminary progress of integration policy from the technical feasibility, political viability, administrative operability, and financial possibility. Thus, the achievement of this approach is still at the initial level. It needs support to clarify how to deliver the grand design into the detailed program.

# CHAPTER 6 CONCLUSION AND RECCOMENDATION

To conclude from the findings that have been produced, author returns and adjusts the results to the objectives of this study. The ultimate objective of this study was to assess the integration of poverty reduction through SP programs with disaster management, including climate change.

*Table 21. Recapitulation of findings*

| Objectives | Findings |
|---|---|
| From the academic discourse mapping | • the necessity of integration **between SP and disaster management** including climate change is **urged**<br>• Mostly scholars and practitioners suggest to **scale up existing SP programs** to consider the disaster impact |
| From the empirical cases | • PKH as a cash transfer program **gives evidence that influence** coping strategies in different types of communities: poor labor and smallholder household<br>• Livelihood capital **as mediator to deliver effect** of PKH as a coping strategy in facing flood disaster<br>• **Financial capital and social capital** have been strengthened by PKH influence which gives **additional effect to the coping strategy**. Routine cash transfer is expected to strengthen financial capacity by reallocating savings used for coping strategies. Moreover, mentoring, workshop and collective meeting mostly found in Family Development Session enhance social network that can be used to support and help while dealing with natural disaster impact.<br>• Meanwhile, **human capital and physical capital** are the **essential and potential factors** to expand the PKH effect in disaster mitigation it gives indirect effect from PKH to coping strategy in the model. For example, by incorporating disaster mitigation related to stimulate awareness and knowledge in PKH and linkage to the infrastructure program or to have collaboration with other infrastructure programs that exist in the local area |
| From the program and policy improvement | • In the technical **feasibility especially, the program design** has tremendous possibility to expand with disaster mitigation though a flexible and adaptive system where resource share needs to be solved out.<br>• **Political viability** like regulation and institution-collaboration is the key point for the policy improvement. **Absence of umbrella regulations** |

| | |
|---|---|
| | becomes a weakness to stimulate collaboration among sectors and ministries.<br>• The target **beneficiary's scooping through integrated database** still needs to improve to make sure **the administrative operability**.<br>• Not only **budget sharing among ministries**, but also cooperating with **local government using local funding** has been studied to evaluate the **financial source possibility**. |

Moreover, according to the results and findings of this research, recommendations have been divided into two options based on the time taken for execution if SP through PKH integrates with disaster mitigation issues short time and long time

**Short time:**

1. Increase the meeting/FDS frequencies in specific areas by adding disaster mitigation issues **(TF)**
2. Local Resource sharing by inviting another sector for FDS. The resources might contribute to the discussion or development of disaster mitigation action**s (TF;PV)**
3. Map the enabling factors in each location area **(AO)**
4. Connect with other disaster-related programs than those existing in the local/province, especially mitigation infrastructure and construction program **(TF;PV)**

This short-time recommendation could be initiated by the local PKH coordinators or Social Services Agency in municipalities and provincial levels..

**Long time :**

5. Add 1 module of disaster awareness to the existing modules for the Family Development Session **(TF)**
6. Vertical beneficiaries expand (add the amount or frequency of cash transfer **(TF)**
7. Starting to develop the derivative guideline of ASP while waiting an umbrella regulation **(PV)**
8. Resource sharing (budget, material, human resource) across ministries and institutions (central and local)**( PV;AO;EP)**
9. Improve database mechanism to be more flexible and adaptive for shock's condition **(AO)**
10. Hybrid mechanism of cash transfer (add amount and add beneficiary target) **(TF;AO;EP)**

The Ministry of Social Affairs should initiate this long-time time recommendation. It can also collaborate with other technical ministries related to disaster management and poverty alleviation programs.

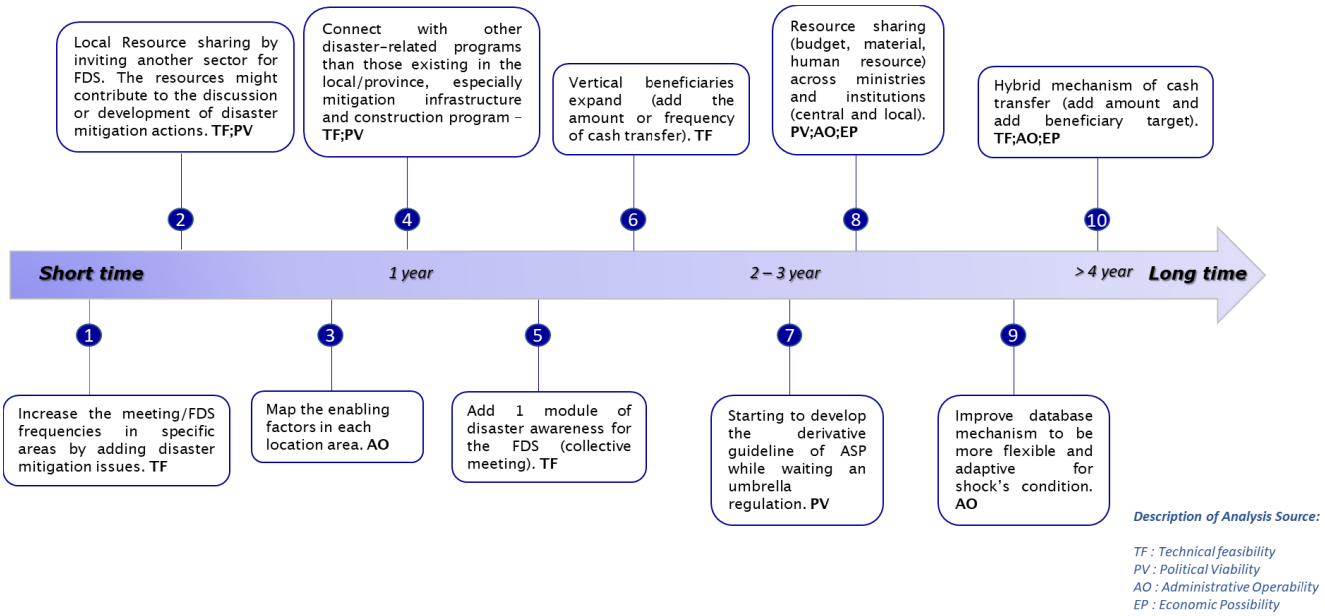



*Figure 32. Recommendation based on time*

This study also has limitations in describing the relationship between SP and natural disaster countermeasures. First, discourse mapping could be more detailed by combining another quantitative methodology to calculate trends by comparing it with the existing literature. Second, the empirical research applied is limited to a narrow population, which is the risk-prone labor force and farmer in the context of a developing country. In future research, other evidence and empirical analyses of the relationship between SP and natural disasters should be applied beyond this study to include other community settings. A more dataset and explorative method to describe the influential factors of SP on coping strategies is also needed for more comprehensive results. Third, still with the empirical study, the target of the model is only receiving or non-receiving PKH beneficiaries without considering the received amount of money from the cash transfer program. Fourth, policy development needs to be emphasized with quantitative measurement to determine the feasibility of the improvement application. Fifth, there are insufficient recommendations on hardware aspects as the limitation of this study and could be the entry point for future research on how the impact of social protection to infrastructure planning regards disaster management.

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# APPENDIX 1

## PUBLICATION

1. An Integration of Social Protection, Disaster Risk Reduction, and Climate Change Adaptation in Disaster Policy, Plan and Program: A Review on Global Discourse and Case Study of Indonesia – **Published** from *Journal of Japan Society of Civil Engineers, Ser. D3 (Infrastructure Planning and Management)*
2. Role of Social Protection on Coping Strategies for Floods in Poor Households: A case study on the impact of Program Keluarga Harapan in labor households in Indonesia – **First Revision and Waiting for The Annoucement** from International Journal of Disaster Risk Reduction, Elsevier
3. Social Protection for Climate-Disasters: A Case Study of the Program Keluarga Harapan Cash Transfer Program for Smallholder Farm Household in Indonesia - **Submitted to** International Journal of Disaster Risk Science, Springer
4. Explore the Integration of Social Protection, Disaster Risk Resilience, and Climate Change Adaptation: A Review with Indonesia Policies and Program – **Presented and Proceeded** in *62nd Japan Society of Civil Engineers Conference*
5. Social protection Program Effect to Poor Household in Dealing with Natural Disaster; A study on Farmer and Labor Livelihood in mitigating the Flood Hazard – **Presented and Proceeded** in *63rd Japan Society of Civil Engineers Conference*
6. Role of Social Protection on Coping Strategy for Floods in Poor Households A case study of impact of PKH in peasant-labors households in Indonesia **– Presented and Proceeded** in The *17th Conference of International Development and Urban Planning – Asian African City Planning (December 2021)*

# APPENDIX 2

Labor Household Questionnaire

Conducted by Yokohama National University, Japan
Graduate School of Institution of Urban Innovation

*Doctor Student : Irene Sondang Fitrinitia*
*Supervisor : Professor Matsuyuki Mihoko*

***Guidance for the questionnaire:***

1. *Respondent is poor household that exposed the great flood (January 2020)*
2. *Respondent is Head of household or spouse who has occupation as Batik Labor*
3. *Respondent Live in a location of the survey for a minimum of 5 years*
4. *This survey is about your situation during the past year (2019-2020)*
5. *It will take you about 10-15 minutes to complete.*
6. *The answers that you will give will be treated as confidential*

***Thank you very much for your cooperation***

| **I. SURVEY INFORMATION** | | |
|---|---|---|
| 1.1 Code of Questionnaire | | |
| 1.2 Date/Day of survey | ..... / NOVEMBER / 2020 | Day : |
| 1.3 Name and Code of Enumerator | | |
| **II. INTRODUCTION** | | |
| 2.1. Name of Respondent | | |
| 2.2 Address of Respondent | Sub-District :<br>Village :<br>Street :<br>Phone Number : | |
| 2.3. Sex | 1) Male | 2) Female |
| 2.4. Age | | |
| 2.5. Respondent Status | 1) Head of household | 2) Spouse |
| 2.6. PKH Beneficiaries | 1) Yes | 2) No |
| 2.7. PKH Beneficiaries since*<br>*If 2.6 answered 1)Yes* | 1) 2017 2) 2018 | 3) 2019 |
| 2.8. Profession | 1) Head of Household: _____<br>2) Spouse: _____ | |
| 2.9. Number of Household Members | | |
| 2.10. Number of Household Members who are toddlers (0-5 years old) | | |
| 2.11. Number of Household Members who are School Age (6- 17 years old) | | |
| 2.12. Number of Household Members who are Pregnant | | |
| 2.13. Number of Household Members who are Elderly (≥ 70 years old) | | |

| III. SOCIAL CAPITAL | |
|---|---|
| 3.1. Do you (*head of household and spouse*) participate with community in the neighborhood? If Yes, answer the types of community and frequency of participation.<br><br>**can choose more than 1 options* | 1) None<br>2) *Arisan* …. Times / month<br>3) Work Together *(Kerja Bakti)* …. Times / month<br>4) Ronda/*Siskamling* …. Times / month<br>5) Religion Activity …. Times / month<br>6) Hobbies …. Times / month<br>7) Neighborhood Meeting …. Times / month<br>8) Others …. Times / month<br>Specify _____ |
| 3.2. Do you (*head of household and spouse*) follow the membership of the association in the neighborhood? If Yes, answer the type of association and frequency of participation<br><br>**can choose more than 1 options* | 1) None<br>2) Farmers group (Kelompok Tani) …. Times / month<br>3) Labor group (Kelompok Buruh) …. Times / month<br>4) Village Consultative Body (BPD) …. Times / month<br>5) Village cooperative …. Times / month<br>6) Housewife Community (PKK) …. Times / month<br>7) Volunteers …. Times / month<br>8) Religion Organization …. Times / month<br>9) Others …. Times / month<br>Specify _____ |
| 3.3. How many households have you known (*talk each other*) in this neighborhood | 1) ≤ 20 2) 21 – 40 3) 41 – 60 4) 61 – 100 5) > 100 |
| 3.4. How many times do you (*head of household and spouse*) interact with government / NGO or private representatives in a month (*average in 1 month*) | 1) Never 2) 1-3 3) 4-6 4) 7-9 5) ≥10 |
| 3.5. How many people help your household when you have difficulties? | 1) Never 2) 1-3 3) 4-6 4) 7-9 5) ≥10 |
| 3.6. How often do you (*head of household and spouse*) follow activities related with environment /natural disaster in 1 month? | 1) Never 2) 1-3 3) 4-6 4) 7-9 5) >10 |
| **IV. HUMAN CAPITAL** | |
| 4.1. Education of Head of Household | 1. None<br>2. Elementary School<br>3. Junior High School<br>4. Senior High School<br>5. University |
| 4.2. How many working household members? | _____ |
| 4.3. How long worked as labor? | _____ years |
| 4.4. What kind of ownership of your primary production tools as laborers? (ex: *canting*) | 1) Own's 2) Loan 3) Rent 4) None |
| 4.5. Is there any household member who has a disability, chronic illness for the past 1 year? | 1) Yes, _____ people 2) No |
| 4.6. How many capacities building training followed by the head of household and spouse for the past 1 year? | 1) None 2) 1-2 types 3) 3-4 types 4) 5-6 types 5) > 6 types |

| | |
|---|---|
| 4.7. How do your household know about the flood prediction? | 1) None<br>2) Information from television/radio<br>3) Information from friends/neighbors<br>4) Broadcast message from government agencies (apps, whatsapp group, social media)<br>5) Local knowledge (experience)<br>6) Early warning system from local government<br>7) Others,<br>specify _____ |
| 4.8. Have you ever discussed natural hazard thread and preparedness among your household members? | 1)Yes 2) No |
| 4.9. What is your preparation to deal with natural hazards, include flood?<br>* *can choose more than 1 options* | 1) None<br>2) Prepare/Saving for food and clean water<br>3) Prepare for medicines<br>4) Saving for important document<br>5) Prepare moving assets to a safer place<br>6) Search or collect information about flood prediction<br>7) Others, specify_____ |
| 4.10. Household activities that do not fit with environment and disaster regulations ? | 1) Litter<br>2) Build building at the embarkment<br>3) Cut trees without permition<br>4) Spoil public facilities<br>5) Others, specify_____ |
| **5. FINANCIAL CAPITAL** | |
| 5.1. Who has the profession as labor in the household? | 1) Head of household 2) Spouse |
| 5.2. Do you receive regular income* from your job ?<br>**Regular income always has a stable monthly income* | 1) Yes 2) No |
| 5.3. Do you (head of household or spouse) have *other jobs** in the past year?<br>** other jobs refer jobs besides farmer/labor* | 1) Yes 2) No<br><br>*if Yes fill table below: |
| | Head of household other jobs:<br>1. _____: fix/odd/seasonal<br>2. _____: fix/odd/seasonal<br>3. _____: fix/odd/seasonal<br><br>Spouse of households' other jobs:<br>1. _____: fix/odd/seasonal<br>2. _____: fix/odd/seasonal<br>3. _____: fix/odd/seasonal |
| 5.3. What is total household income* per month?<br>**income from jobs* | 1) Under 1 million 2) 1 – 1,5 million 3) 1,6 - 2 Million<br>4) 2,1 – 2,5 Million 5) Above 2,5 million |
| 5.5. Is the household received additional money support from external people/institutions besides the occupations? | 1) Yes 2) No |
| 5.6 If Yes, how much is it*, per month?<br>**additional money* | 1) Under 1 million 2) 1 – 1,5 million 3) 1,6 - 2 Million<br>4) 2,1 – 2,5 Million 5) Above 2,5 million |

| | |
|---|---|
| 5.7. How much the amounts of household 's saving*?<br>**current situation* | 1) None 2) Under 500 thousand 3) 500 thousand - 1 Million<br>4) 1,1 – 2 Million 5) Above 2 Million |
| 5.8. How much the amounts of household's debt*?<br>**current situation* | 1) None 2) Under 500 thousand 3) 500 thousand - 1 Million<br>4) 1,1 – 2 Million 5) Above 2 Million |
| 5.9. Do you have access to loans/debts? | 1) None 2) Informal 3) Formal |
| 5.10. Do you have a bank account? | 1) Yes 2) No |
| 5.11. Type of asset/property belongs to household | Bicycle :_____unit<br>Motorcycle :_____unit<br>Electronics :_____unit (e.g : television, radio, etc)<br>Handphone :_____unit<br>Production Tools:_____unit<br>Livestock's :_____unit, specify _____<br>Others, specify :_____unit |
| 5.12. Have you repaired assets damaged because of flood in the past 1 year ? | 1) Yes 2) No<br>If Yes, how much Rp_____ |
| 5.13 Have you selling asset dealing with flood in the past 1 year? | 1) Yes 2) No<br>If Yes, how much Rp_____ |
| **VI. PHYSICAL CAPITAL** | |
| 6.1. What kind of road conditions in your neighborhood? | 1) Dirt Road 2) Gravel/Stone Road 3) Asphalt Road 4) Hot Mix Road |
| 6.2. What kind your house construction material? | 1) Wood<br>2) Wood and Brick<br>3) Brick<br>4) Hut (Bamboo woven)<br>5) Others<br>Specify _____ |
| 6.3. What is the status of your house? | 1) Own's 2) Rent 3) Free Rent |
| 6.4. If you answer *1) Owns's*, do you have land certificate? | 1) Yes 2) No |
| 6.5. How many floors is your house? | 1) 1 floor 2) More than 1 floor |
| 6.6. Is there a flood control infrastructure in your neighborhood (*ex: flood control pumps, drainage, sea walls*) | 1) Yes 2) No |
| 6.7. What is the distance between your house and potential source of flood?<br><br>*Ex: shoreline, landslide hills, river (that ever overflow)* | 1) within 1 km 2) 1 – 2 km 3) 3-4 km 4) 4-5 km 5) Above 5 km<br><br>Specify the source: _____ |
| 6.8. What kind of infrastructure preparedness in your house for mitigating the flood?<br>** choose the best 2 options* | 1) None<br>2) Made temporal dike in terrace / in front of the house<br>3) Made sandbag in terrace / in front of the house<br>4) Leverage the floor<br>5) Widen or deepen sewage (check if there is a clogged drain)<br>6) Others,<br>specify _____ |

| | |
|---|---|
| | |
| **VII. PKH INTERVENTION**<br>***only for PKH beneficiaries** | |
| 7.1. Is cash transfer always on time? | 1) Yes 2) No |
| 7.2. How you utilize the cash transfer money?<br>**can choose more than 1 options* | 1) Educational needs<br>2) Health needs<br>3) Staple Food consumption<br>4) Non-staple food consumption (e.g : snack, cigarette, etc)<br>5) Entertainment |
| 7.3. How many times interaction with PKH Facilitators within 1 month? | 1) None 2) 1-2 times 3) 3-4 times 4) 5-6 times 5) Above 6 times |
| 7.4. Do you know/ notice the family development session program? | 1) Yes 2) No |
| 7.5. If you know, how many times have you participated in a family development session meeting in past 1 year | 1) Never 2) 1-5 times 3) 6-10 times<br>4) 11-15 times 5) above 15 times |
| 7.6. How many times did you have others aid in the context of PKH from the government besides cash transfer? | 1) None 2) 1-5 3) 6-10 4) 11-15 5) > 15 |
| 7.7. If there are other aids, what is it?<br>**can choose more than 1 options* | 1) Entrepreneur assistance (e.g : KUBE)<br>2) Staple Food (e.g : BPNT) voucher<br>*3)* Health Assistance : *Kartu Indonesia Sehat*<br>*4)* Education Assistance : *Kartu Indonesia Pintar*<br>5) Other, specify :_____ |
| 7.7. What kind of family development modules that implemented in your daily life?<br>**can choose more than 1 options* | 1) Healthy and Hygienic life<br>2) Managing Financial Household<br>3) Nurturing Baby<br>4) Raising up Children (Education, Health etc) |
| 7.8. What are the most benefits following PKH?<br>** choose the best 2 options* | 1) support for child education completion<br>2) support for family healthcare<br>3) knowledge development<br>4) social networking<br>5) opportunity to access other aids<br>6) others,<br>Specify _____ |
| **VIII. Impact and Strategy Dealing with Great Flood** | |
| **CONDITION OF THE GREAT FLOOD (PEKALONGAN :2020)** | |
| 8.1. Were you evacuated | 1) Yes 2) No |
| 8.2 How is the maximum height of flood into your house and place of work | 1) House :<br>Inside : _____ cm<br>Outside : _____ cm<br>2) Place of work (farm field/workshop) = _____cm |
| 8.3. What kind of impact did you have when the great flood occurs?<br>**can choose more than 1 option* | 1) None<br>2) Family member lost<br>3) Health problems<br>4) Clean water problems |

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| | 5) Income loss<br>6) Asset loss (e.g: livestock, crop, etc)<br>7) Asset damage (e.g : house, vehicle, etc)<br>8) Others, specify_____ |
| 8.4. Did you get external assistance? | 1) Yes 2) No |
| 8.5. What kind of institutions or communities that helped you when the great flood occurred?<br><br>**can choose more than 1 option* | 1) Friends/ Family/Neighbors,<br>2) Local communities<br>3) Governmen<br>4) Charity Organization<br>5) NGOs<br>6) Others, specify_____ |
| 8.6. Type of assistance against great flood occur<br><br>**can choose more than 1 option* | 1) Comestible : _____Unit<br>2) Fast Food (Dapur Umum) : _____Unit<br>3) Medicine : _____Unit<br>4) Clean water :_____Litre<br>5) Money : Rp. _____<br>6) Others, specify_____ |
| 8.7. How many people help your household when the flood comes? | 1) Never 2) 1-3 3) 4-6<br>4) 7-9 5) ≥10 |
| 8.8. If you have income lost because of the great flood , how much is it in total?*<br><br>** if your answers in 7.3 is 5) income lost* | 1) Under Rp 200.000 2) Rp 200.000 – 300.000<br>3) Rp 301.000-400.000 4) Rp 401.000 – 500.000<br>5) Above Rp 500.000 |
| 8.9. If you have asset loss and damage (e.g: house, livestock, vehicle, etc), how much in total?<br><br>**if one of the answers in 7.3 is 6) Asset lost or 7) Asset damage* | 1) Under Rp 200.000 2) Rp 200.000 – 300.000<br>3) Rp 301.000-400.000 4) Rp 401.000 – 500.000<br>5) Above Rp 500.000 |
| 8.10. When the great flood occurs, how long did you get your normal income again? | 1) None 2) 1 day 3) 2 – 7 days<br>4) 8-14 days 5) Above 14 days |
| **COPING AND ADAPTATION STRATEGY** | |
| 8.11. What was your strategy to mitigate the flood impact?*<br>**can choose more than 1 options* | |
| BEFORE | 1) Build additional house infrastructure to prevent the flood impact<br>2) Moving asset to safer place<br>3) Preparing funds to deal with flood<br>4) Preparing food stocks<br>5) Cleaning sewage<br>6) Following training and workshop related disaster |
| DURING | 1) Evacuation<br>2) Seek or get disaster aids<br>3) Borrowing money<br>4) Monitoring flood level<br>5) Praying |

| | |
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| AFTER | 1) Cleaning the house<br>2) Repairing household assets<br>3) Utilize of saving (e.g. selling assets, withdraw saving, etc.)<br>4) Working Diversification / find other jobs (e.g : *njalok*, *kerja serabutan*)<br>5) Work training<br>6) Involved in planning the development of flood prevention infrastructure and scenario carried out by the government or NGOs |
| 8.12. How long did you prepare to mitigate the flood?<br>**refers to 8.12 (strategy before the flood)* | _____ (hour/day/month) |
| 8.13. How much money did you use to mitigate the flood? | Rp. _____ |
| **NOTES** | |
| | |

# APPENDIX 3

Smallholder Farmer Household Questionnaire


Conducted by Yokohama National University, Japan
Graduate School of Institution of Urban Innovation

*Doctor Student : Irene Sondang Fitrinitia*
*Supervisor : Professor Matsuyuki Mihoko*

***Guidance for the questionnaire:***

1. *Respondent is poor household that exposed the great flood (Sept-Oct 2019)*
2. *Respondent is Head of household or spouse who has occupation as Farmer*
3. *Respondent Live in Sub-district Nusawungu, Cilacap for a minimum of 5 years*
4. *This survey is about your situation during the past year (2019-2020)*
5. *It will take you about 10-15 minutes to complete.*
6. *The answers that you will give will be treated as confidential*

***Thank you very much for your cooperation***

| **I. SURVEY INFORMATION** | | | |
|---|---|---|---|
| 1.1 Code of Questionnaire | Respondent: | Enumerator: | Area: |
| 1.2 Date/Day of survey | ..... / NOVEMBER / 2020 | Day : | |
| 1.3 Name and Code of Enumerator | | | |
| **II. INTRODUCTION** | | | |
| 2.1. Name of Respondent | | | |
| 2.2 Address of Respondent | Sub-District :<br>Village :<br>Street :<br>Phone Number : | | |
| 2.3. Sex | 1) Male | 2) Female | |
| 2.4. Age | | | |
| 2.5. Respondent Status | 1) Head of household | 2) Spouse | |
| 2.6. PKH Beneficiaries | 1) Yes | 2) No | |
| 2.7. PKH Beneficiaries since*<br>*If 2.6 answered 1)Yes* | 1) 2017 | 2) 2018 | 3) 2019 |
| 2.8. Profession | 1) Head of Household: _____<br>2) Spouse: _____ | | |
| 2.9. Number of Household Members | | | |
| 2.10. Number of Household Members who are toddlers (0-5 years old) | | | |
| 2.11. Number of Household Members who are School Age (6- 17 years old) | | | |
| 2.12. Number of Household Members who are Pregnant | | | |
| 2.13. Number of Household Members who are Elderly (≥ 70 years old) | | | |

| III. SOCIAL CAPITAL | |
|---|---|
| 3.1. Do you (*head of household and spouse*) participate with community in the neighborhood? If Yes, answer the types of community and frequency of participation.<br><br>**can choose more than 1 options* | 1) None<br>2) *Arisan* …. Times / month<br>3) Work Together *(Kerja Bakti)* …. Times / month<br>4) Ronda/*Siskamling* …. Times / month<br>5) Religion Activity …. Times / month<br>6) Hobbies …. Times / month<br>7) Neighborhood Meeting …. Times / month<br>8) Others …. Times / month<br>Specify _____ |
| 3.2. Do you (*head of household and spouse*) follow the membership of the association in the neighborhood? If Yes, answer the type of association and frequency of participation<br><br>**can choose more than 1 options* | 1) None<br>2) Farmers group (Kelompok Tani) …. Times / month<br>3) Labor group (Kelompok Buruh) …. Times / month<br>4) Village Consultative Body (BPD) …. Times / month<br>5) Village cooperative …. Times / month<br>6) Housewife Community (PKK) …. Times / month<br>7) Volunteers …. Times / month<br>8) Religion Organization …. Times / month<br>9) Others …. Times / month<br>Specify _____ |
| 3.3. How many households have you known (*talk each other*) in this neighborhood | 1) ≤ 20 2) 21 – 40 3) 41 – 60 4) 61 – 100 5) > 100 |
| 3.4. How many times do you (*head of household and spouse*) interact with government / NGO or private representatives in a month (*average in 1 month*) | 1) Never 2) 1-3 3) 4-6 4) 7-9 5) ≥10 |
| 3.5. How many people help your household when you have difficulties? | 1) Never 2) 1-3 3) 4-6 4) 7-9 5) ≥10 |
| 3.6. How often do you (*head of household and spouse*) follow activities related with environment /natural disaster in 1 month? | 1) Never 2) 1-3 3) 4-6 4) 7-9 5) >10 |
| **IV. HUMAN CAPITAL** | |
| 4.1. Education of Head of Household | 1. None<br>2. Elementary School<br>3. Junior High School<br>4. Senior High School<br>5. University |
| 4.2. How many working household members? | _____ |
| 4.3. How long worked as farmer? | _____ years |
| 4.4. What kind of ownership of your primary production tools as farmer? (ex: hoe etc) | 1) Own's 2) Loan 3) Rent 4) None |
| 4.5. Is there any household member who has a disability, chronic illness for the past 1 year? | 1) Yes, _____ people 2) No |
| 4.6. How many capacities building training followed by the head of household and spouse for the past 1 year? | 1) None 2) 1-2 types 3) 3-4 types 4) 5-6 types 5) > 6 types |

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| 4.7. How do your household know about the flood prediction? | 1) None<br>2) Information from television/radio<br>3) Information from friends/neighbors<br>4) Broadcast message from government agencies (apps, whatsapp group, social media)<br>5) Local knowledge (experience)<br>6) Early warning system from local government<br>7) Others,<br>specify _____ |
| 4.8. Have you ever discussed natural hazard thread and preparedness among your household members? | 1)Yes 2) No |
| 4.9. What is your preparation to deal with natural hazards, include flood?<br>* *can choose more than 1 options* | 1) None<br>2) Prepare/Saving for food and clean water<br>3) Prepare for medicines<br>4) Saving for important document<br>5) Prepare moving assets to a safer place<br>6) Search or collect information about flood prediction<br>7) Others, specify_____ |
| 4.10. Household activities that do not fit with environment and disaster regulations ? | 1) Litter<br>2) Build building at the embarkment<br>3) Cut trees without permition<br>4) Spoil public facilities<br>5) Others, specify_____ |
| **5. FINANCIAL CAPITAL** | |
| 5.1. Who has the profession as farmer in the household? | 1) Head of household 2) Spouse |
| 5.2. Farmer status | 1) Land owner 2) Farmer labor |
| 5.3. Do you receive regular income* from your job ?<br>**Regular income always has a stable monthly income* | 1) Yes 2) No |
| 5.4. Do you (head of household or spouse) have *other jobs** in the past year?<br>** other jobs refer jobs besides farmer/labor* | 1) Yes 2) No<br>*if Yes fill table below: |
| | Head of household other jobs:<br>1. _____: fix/odd/seasonal<br>2. _____: fix/odd/seasonal<br>3. _____: fix/odd/seasonal<br><br>Spouse of households' other jobs:<br>1. _____: fix/odd/seasonal<br>2. _____: fix/odd/seasonal<br>3. _____: fix/odd/seasonal |
| 5.5 What is total household income* per month?<br>**income from jobs* | 1) Under 1 million 2) 1 – 1,5 million 3) 1,6 - 2 Million<br>4) 2,1 – 2,5 Million 5) Above 2,5 million |
| 5.6. Is the household received additional money support from external people/institutions besides the occupations? | 1) Yes 2) No |

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| 5.7 If Yes, how much is it*, per month?<br>**additional money* | 1) Under 1 million 2) 1 – 1,5 million 3) 1,6 - 2 Million<br>4) 2,1 – 2,5 Million 5) Above 2,5 million |
| 5.8. How much the amounts of household 's saving*?<br>**current situation* | 1) None 2) Under 500 thousand 3) 500 thousand - 1 Million<br>4) 1,1 – 2 Million 5) Above 2 Million |
| 5.9. How much the amounts of household's debt*?<br>**current situation* | 1) None 2) Under 500 thousand 3) 500 thousand - 1 Million<br>4) 1,1 – 2 Million 5) Above 2 Million |
| 5.10. Do you have access to loans/debts? | 1) None 2) Informal 3) Formal |
| 5.11. Do you have a bank account? | 1) Yes 2) No |
| 5.12. Type of asset/property belongs to household | Bicycle :_____unit<br>Motorcycle :_____unit<br>Electronics :_____unit (e.g : television, radio, etc)<br>Handphone :_____unit<br>Production Tools:_____unit<br>Livestock's :_____unit, specify _____<br>Others, specify :_____unit |
| 5.13. Have you repaired assets damaged because of flood in the past 1 year ? | 1) Yes 2) No<br>If Yes, how much Rp_____ |
| 5.14 Have you selling asset dealing with flood in the past 1 year? | 1) Yes 2) No<br>If Yes, how much Rp_____ |
| **VI. PHYSICAL CAPITAL** | |
| 6.1. What kind of road conditions in your neighborhood? | 1) Dirt Road 2) Gravel/Stone Road 3) Asphalt Road 4) Hot Mix Road |
| 6.2. What kind your house construction material? | 1) Wood<br>2) Wood and Brick<br>3) Brick<br>4) Hut (Bamboo woven)<br>5) Others<br>Specify _____ |
| 6.3. What is the status of your house? | 1) Own's 2) Rent 3) Free Rent |
| 6.4. If you answer *1) Owns's*, do you have land certificate? | 1) Yes 2) No |
| 6.5. How many floors is your house? | 1) 1 floor 2) More than 1 floor |
| 6.6. Is there a flood control infrastructure in your neighborhood (*ex: flood control pumps, drainage, sea walls*) | 1) Yes 2) No |
| 6.7. What is the distance between your house and potential source of flood?<br><br>*Ex: shoreline, landslide hills, river (that ever overflow)* | 1) within 1 km 2) 1 – 2 km 3) 3-4 km 4) 4-5 km 5) Above 5 km<br><br>Specify the source: _____ |

| | |
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| 6.8. What kind of infrastructure preparedness in your house for mitigating the flood?<br>** choose the best 2 options* | 1) None<br>2) Made temporal dike in terrace / in front of the house<br>3) Made sandbag in terrace / in front of the house<br>4) Leverage the floor<br>5) Widen or deepen sewage (check if there is a clogged drain)<br>6) Others,<br>specify _____ |
| **VII. PKH INTERVENTION**<br>***only for PKH beneficiaries** | |
| 7.1. Is cash transfer always on time? | 1) Yes 2) No |
| 7.2. How you utilize the cash transfer money?<br>**can choose more than 1 options* | 1) Educational needs<br>2) Health needs<br>3) Staple Food consumption<br>4) Non-staple food consumption (e.g : snack, cigarette, etc)<br>5) Entertainment |
| 7.3. How many times interaction with PKH Facilitators within 1 month? | 1) None 2) 1-2 times 3) 3-4 times 4) 5-6 times 5) Above 6 times |
| 7.4. Do you know/ notice the family development session program? | 1) Yes 2) No |
| 7.5. If you know, how many times have you participated in a family development session meeting in past 1 year | 1) Never 2) 1-5 times 3) 6-10 times<br>4) 11-15 times 5) above 15 times |
| 7.6. How many times did you have others aid in the context of PKH from the government besides cash transfer? | 1) None 2) 1-5 3) 6-10 4) 11-15 5) > 15 |
| 7.7. If there are other aids, what is it?<br>**can choose more than 1 options* | 1) Entrepreneur assistance (e.g : KUBE)<br>2) Staple Food (e.g : BPNT) voucher<br>*3)* Health Assistance : *Kartu Indonesia Sehat*<br>*4)* Education Assistance : *Kartu Indonesia Pintar*<br>5) Other, specify :_____ |
| 7.7. What kind of family development modules that implemented in your daily life?<br>**can choose more than 1 options* | 1) Healthy and Hygienic life<br>2) Managing Financial Household<br>3) Nurturing Baby<br>4) Raising up Children (Education, Health etc) |
| 7.8. What are the most benefits following PKH?<br>** choose the best 2 options* | 1) support for child education completion<br>2) support for family healthcare<br>3) knowledge development<br>4) social networking<br>5) opportunity to access other aids<br>6) others,<br>Specify _____ |
| **VIII. IMPACT AND STRATEGY DEALING WITH SEPTEMBER 2019 GREAT FLOOD** | |
| **VIII.A. CONDITION OF THE SEPTEMBER 2019 GREAT FLOOD** | |
| 8.1. Were you evacuated | 1) Yes 2) No |
| 8.2 How is the maximum height of flood into your house and place of work | 1) House :<br>Inside : _____ cm<br>Outside : _____ cm<br>2) Place of work (farm field/workshop) = _____cm |

| | |
|---|---|
| 8.3. What kind of impact did you have when the great flood occurs?<br>**can choose more than 1 option* | 1) None<br>2) Family member lost<br>3) Health problems<br>4) Clean water problems<br>5) Income loss<br>6) Asset loss (e.g: livestock, crop, etc)<br>7) Asset damage (e.g : house, vehicle, etc)<br>8) Others, specify_____ |
| 8.4. Did you get external assistance? | 1) Yes 2) No |
| 8.5. What kind of institutions or communities that helped you when the great flood occurred?<br>**can choose more than 1 option* | 1) Friends/ Family/Neighbors,<br>2) Local communities<br>3) Government<br>4) Charity Organization<br>5) NGOs<br>6) Others, specify_____ |
| 8.6. Type of assistance against great flood occur<br>**can choose more than 1 option* | 1) Comestible : _____Unit<br>2) Fast Food (Dapur Umum) : _____Unit<br>3) Medicine : _____Unit<br>4) Clean water : _____Litre<br>5) Money : Rp. _____<br>6) Others, specify_____ |
| 8.7. How many people help your household when the flood comes? | 1) Never 2) 1-3 3) 4-6<br>4) 7-9 5) ≥10 |
| 8.8. If you have income lost because of the great flood , how much is it in total?*<br>** if your answers in 7.3 is 5) income lost* | 1) Under Rp 200.000 2) Rp 200.000 – 300.000<br>3) Rp 301.000-400.000 4) Rp 401.000 – 500.000<br>5) Above Rp 500.000 |
| 8.9. If you have asset loss and damage (e.g: house, livestock, vehicle, etc), how much in total?<br>**if one of the answers in 7.3 is 6) Asset lost or 7) Asset damage* | 1) Under Rp 200.000 2) Rp 200.000 – 300.000<br>3) Rp 301.000-400.000 4) Rp 401.000 – 500.000<br>5) Above Rp 500.000 |
| 8.10. When the great flood occurs, how long did you get your normal income again? | 1) None 2) 1 day 3) 2 – 7 days<br>4) 8-14 days 5) Above 14 days |
| **VIII.B. STRATEGY DEALING WITH SEPTEMBER 2019 GREAT FLOOD** | |
| 8.11. What was your strategy to mitigate the flood impact?*<br>**can choose more than 1 options* | |
| BEFORE | 1) Build additional house infrastructure to prevent the flood impact<br>2) Moving asset to safer place<br>3) Preparing funds to deal with flood<br>4) Preparing food stocks<br>5) Cleaning sewage<br>6) Following training and workshop related disaster |
| DURING | 1) Evacuation<br>2) Seek or get disaster aids<br>3) Borrowing money<br>4) Monitoring flood level<br>5) Praying |

| | |
|---|---|
| AFTER | 1) Cleaning the house<br>2) Repairing household assets<br>3) Utilize of saving (e.g. selling assets, withdraw saving, etc.)<br>4) Working Diversification / find other jobs (e.g : *njalok*, *kerja serabutan*)<br>5) Work training<br>6) Involved in planning the development of flood prevention infrastructure and scenario carried out by the government or NGOs |
| 8.12. How long did you prepare to mitigate the flood?<br>**refers to 8.12 (strategy before the flood)* | _____ (hour/day/month) |
| 8.13. How much money did you use to mitigate the flood? | Rp. _____ |
| **NOTES** | |
| | |