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Social Protection Roles in Reducing Risk and Building Resilience to Communities in Indonesia

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Abstract

Many rural areas in Indonesia are prone to disaster risks that pose threats to human lives and livelihoods. Social protection has been introduced at some disaster prone area to reduce the vulnerability of the people. Social protection and disaster risk reduction have overlapping targets, among others, to reduce the risks faced by vulnerable group, to tackle the impact of disaster, and seek to build resilience against shocks and stresses on livelihoods. While both social protection and disaster risk reduction are commonly designed for short term program, they have potentials to sustain long term community resilience. This paper seeks to answer the following questions: (1). What roles do social protection initiatives support disaster risk reduction? (2). What prerequisite conditions are needed to extent the role of social protection in achieving sustainable community resilience? This research is based on qualitative analysis in two rural districts in Indonesia prone to floods and droughts and volcano eruptions. The social protection measure selected in this study is the national program on community empowerment (PNPM). This study identifies that at some disaster prone areas, the community proposes the use the community empowerment funds as physical infrastructures to increase community preparedness and to mitigate risks. While the program is initially a short term basis, the impacts of the physical infrastructure development is also able to protect livelihoods and thus increases community resilience. This paper suggests that sustainable community resilience from social protection programs relies on high involvement of community in the design program. Furthermore, this paper explains some strategies in the implementation of social protection to support community resilience.

Keywords: *disaster risk; Indonesia; resilience; social protection;*

1. Introduction

Social protection (SP) has various means and functions. One of the important functions that still needs to be explored is on its disaster risk reduction (DRR) purposes. Davies et al (2009) admit that there is a high relevance of social protection for reducing the vulnerability in the society. The similar characteristics among the goals, target groups and tools of SP and DRR make it promising for sharing opportunity (Davies et al, 2009; Heltberg et al, 2008). A remain valid question is on its role on achieving long-term community resilience.

Social protection is common measures in developing countries to alleviate the burden faced by the poor in the society. In some Asian and African countries social protection has been used to provide helps for the poor by providing food and nutrition programmes, housing programmes, self-employment programmes and wage employment programmes (Raihan, 2013; Sharma and Arora, 2002; Shrivasta, 2013). For instance, the Kenya government disbursed cash transfers to the chronic poor of the society who exposed to stresses from climate change (Davies et al, 2009). Similarly, the Reducing Vulnerability to Climate Change (RVCC) project in Bangladesh distributed assets such as duck-rearing to provide alternative livelihoods to the local community that had been impacted by climate change (Mallik, 2006 in Davies et al., 2009). Another form of social protection was employment guarantee scheme that was applied in India. The National Rural Employment Guarantee Act (NREGA) of India guaranteed 100 days of employment a year to the rural poor in 200 of the poorest rural districts. The projects offered were public works programmes, such as de-silting irrigation and strengthening embankments (Davies et al., 2009).

This paper focuses on Indonesian social protection schemes in reducing community risks to disasters. In 2015, Indonesian population is expected to reach at least 250 million (BPS, 2014) and about less than half of the population are living in rural areas. A large number of rural areas in Indonesia are prone to disaster risks due to its location or increasing vulnerability of the population. Within the last one decade (2004-2014), a large number of rural areas in Indonesia were hit by catastrophic natural hazards, such as tsunamis, earthquakes, volcanoes claiming lives of nearly 200,000 people and affecting about 10 million injured and lost their belongings. In other parts of Indonesia, such as Nusa Tenggara Timur, equally damaging is some slow onset disasters, such as sea level rise, and drought that deteriorate the sources of livelihood in the long run, such as agriculture and fishery production. This has forced some people to be temporarily or permanently displaced.

Indonesian government uses social protection instruments to reduce the burden faced by the community. In general, Indonesian social protection services cover several aspects, such as health, economy, etc. These services are based on two national laws that administer social protection in Indonesia: National Law 40/2004 on national social protection system and National Law 24/2011 on national protection administered body. Under law no 40/2004, Indonesia has several social protections, such as health protection, accidents at work protection, old age, pension and death protection. Apart from nationally administered social protection, there are some other measures by Indonesian government that can be considered as social protection, for example, direct cash transfer program or *bantuan langsung tunai* (BLT), or cash for work program prior to any disaster, which includes national program for community empowerment or *program nasional pemberdayaan masyarakat* (PNPM). PNPM is considered a massive approach that helps rural and urban poor communities to improve their living condition through community infrastructure development while also provides cash to the workforces involved in the program. At some disaster prone areas, some of the works includes the strengthening of water channels, evacuation routes, etc. Therefore, this chapter specifically discusses the role of PNPM in disaster risk reduction in Indonesia and its role to build sustainable community resilience.

This paper seeks to answer the following questions: (1) What roles do social protection initiatives support disaster risk reduction in Indonesia? (2) What prerequisite conditions are needed to extent the role of social protection in achieving sustainable community resilience? Having explained the research background and problems, this chapter continues to further discuss the theories related to social protection roles in reducing disaster risk and long term community resilience, in particular the progress of social protection in Indonesia. Next, the paper discusses the methodology used and case study characteristics. It then provides the roles of social protection in the case studies highlighted in this paper. The paper finally concludes the roles of social protection towards community resilience in Indonesia.

2. Literature

This section lays out a conceptual inter relation between social protection, disaster risk management and community resilience. Discussion starts on these three basic elements. Further, inter relation among these elements are discussed and what theoretical arguments that promote these inter relation.

2.1 Basic Definition

Social protection is defined by the ILO (2003) as “a set of public measures that a society provides for its members to protect them against economic and social distress that would be caused by the absence or a substantial reduction of income from work as a result of various contingencies (sickness, maternity, employment injury, unemployment, invalidity, old age, and death of the breadwinner); the provision of health care; and, the provision of benefits for families with children” (ILO, 2003). The concept of social protection is not static and evolves as societies change. Initially, public assistance focused on keeping people out of poverty by guaranteeing a minimum income to meet basic needs. The basic objective was to provide a safety net to cover the risk of being too poor. Different actors such as governments, local authorities and charities provided the earliest forms of assistance. These were targeted at civil service employees and the very poor who had to meet strict requirements (such as living in workhouses) in order to receive public assistance.

Disaster risk management comprises of initiatives in reducing disaster risks (DRR) and also in post-disaster recovery. Disaster risk reduction is the concept and practice of reducing disaster risks through systematic efforts to analyse and reduce the causal factors of disasters (UNISDR, 2014). Reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness and early warning for adverse events are all examples of disaster risk reduction. Post-disaster recovery refers to all initiatives in rebuilding the physical, social and economic of the society after the disaster events (Shaw et al, 2014). This also includes the uses of opportunity to reduce the future risks.

Resilience is defined as the ability of social or ecological system to block the disorder, while retaining the basic structure and function of life on the same way, the capacity to organize themselves and adapt to stress and change (IPCC, 2007; Lewis & Kelman, 2010). Resilience is an important component so that people can adapt to environmental changes (Adger 2000). With the resilience, then the society can increase the capacity to cope with pressure so that the vulnerability can be reduced in all its dimensions from various sources (Lewis & Kelman, 2010; Twigg, 2001).

A resilient community needs to have low risk of geophysical pressure. Low risk of a disaster is needed because it can reduce the pressure of geophysical events. This can be obtained through the implementation of structural and non-structural measures, as the result of this effort is the community that is less prone to disasters (Tobin 1999). The structural measure was famous in 1930s-1950s era, these schemes were assessed on civil engineering criteria and financial cost-benefits grounds but little thought was given to community involvement and environmental issues. 1950s-1980s era is the period of mix mitigation measures and caused the increase of behavioural approaches such as urban planning, insurance, and disaster warnings. After this period, question began to be risen about the financial and ecological sustainability of larger project, therefore non-structural measure such as community participation is more considered in order to create low risk of geophysical pressure (Smith and Petley 2009).

2.2 Social Protection in Disaster Risk Management

Social protection has been introduced at some disaster prone area to reduce the vulnerability of the people (Davies et al., 2009). Social protection and disaster risk reduction have overlapping targets, among others, to reduce the risks faced by vulnerable group, to tackle the impact of disaster, and seek to build resilience against, shocks and stresses on livelihoods. While both social protection and disaster risk reduction are commonly designed for short term program, they have potentials to sustain long term community resilience. Stern Review (2007) mentioned out that social protection is an important element of adaptation and he urged for integration of “climate risk, and the additional resources required to tackle it, into planning and budgeting for and delivering these development goals”.

Kuriakose (2012) explores that social protection policies and programs aim to support risk management and promote opportunities for individuals, while providing a foundation for more resilient households and societies. This objective embodies the need to build resilience against climate shocks and the challenge of creating new opportunities for people whose livelihoods are becoming unavailable due to climate change.

The main elements of the social risk management framework consist of risk management strategies, risk management arrangements by level of formality and actors in risk management (Davies et al 2009; Holzmann and Jørgensen 2000). Risk matters for human and economic development (Holzmann and Kozel 2007). There has been some initiatives among DRR practitioners and scientists towards including the underlying social dimensions of vulnerability that people face through social protection measures. In line with these, some attempts have been tried to shift from reactive, post disaster coping strategies (providing food aid), towards more sustainable disaster preparedness and management (Heltberg, 2007; Hellmuth et al., 2011).

Davies et al (2009) analyse 124 programs in South Asia that shows that full integration of SP, CCA and DRR approaches into ASP. They found that practice is relatively limited, although combining SP with DRR has become more common in the last ten years. In the case of SP-DRR projects, a number

of new and innovative approaches to vulnerability reduction can be observed. Of particular interest is the use of vulnerability mapping in food-security and DRR projects where multiple social and natural science disciplines focusing on risks and poverty assessment are combined together. This finding suggests that there has been some movement within the DRR community towards acknowledging and integrating the underlying social dimensions of vulnerability that people face. This is in line with recent attempts to shift DRR away from reactive, post disaster coping strategies, such as providing food aid, towards more proactive and long-term disaster preparedness and management (Heltberg, 2007; Hellmuth et al., 2011).

Davies et al (2009) categorized social protection for four purposes: provision (coping strategies), prevention (coping strategies), promotive (building adaptive capacity) and transformative (building adaptive capacity). With climate change, the magnitude and frequency of stresses and shocks are changing and approaches such as social protection, disaster risk reduction (DRR) and climate change adaptation (CCA) will be needed to bolster local resilience and supplement people's experience. Social protection describes: all initiatives that transfer income or assets to the low income, protect the vulnerable against livelihood risks, and enhance the social status and rights of the marginalized (Davies et al, 2009).

Prevention measures such as social insurance, weather-based insurance, social transfers, asset diversification, and other instruments may help reduce vulnerability and decrease the impact of a probable risk by increasing the availability of coping strategies in the face of disasters. Typical SP preventive mechanisms can be enhanced by leveraging knowledge and practices from the disaster risk management, climate change adaptation, and agricultural sectors for risk reduction (e.g., environmental management and improved land use). This is where public micro-insurance scheme is categorized as SP scheme (MunichRe Foundation, 2013).

Protection measures aimed at providing relief and coping mechanisms is becoming instrumental as medium term responses in the face of natural disasters and climate shocks. Social protection's core function of protection will continue to be relevant to address the growing risk of climate impacts using cash transfers, social pensions, public works programs, and other instruments. Promotion measures have the potential to contribute to climate change adaptation by encouraging risk diversification, enhancing incomes and assets, and building skills, and thus helping address underlying vulnerabilities and building capacity for response. Cash and asset transfers, microfinance, public works, training and skills programs, asset diversification, and starter packs (drought/flood resistant) not only can help build resilience to climate change but also promote access to new opportunities arising from a changing environment.

Social protection and public actions can assist individuals, households, and communities to cope with diverse risks after a disaster event. For example, emergency food aid, social grants, and public works projects are used in the absence of effective risk reduction and mitigation measures, or after these have failed or have been exhausted (Devereux et al. 2012). Such examples include cash transfer program developed in response to a natural disaster offers direct assistance in the form of cash to the target group (Vishwanath and Yu, 2008). The cash transfer program is often designed for a temporary period until economic activities pick up and generate employment opportunities. In Indonesia some 18,000 participants were involved in public works programs in around 60 villages after the tsunami. It made quick and safe disbursement of assistance possible. Assistance was delivered on a widespread basis in emergencies and had positive impacts at the individual and community level. Some of the purpose can serve to create or restore much needed infrastructure in the disaster affected areas, though, for example debris removal, repair of community water supply and sanitation schemes, repair or construction of public buildings such as community centres, and minor road repairs. The programs can be easily targeted to specific geographic areas. The affected communities and low income households can benefit directly from the transfer of income and indirectly from the physical assets that the program creates and/or maintains. The labour intensive nature of public works program and the low level of income imply that the program can target on the "most needy" through self-selection and incur limited administrative cost. Overall, the program is flexible, can be easily scaled up, and can mobilize resources quickly. It provides income transfers to affected populations and can help households meet consumption shortfalls and other immediate needs.

In post disaster recovery, social protection can take form, such as cash for work program. Doocy et al. (2005) describes that cash-for-work (CFW) was originally developed in famine and food-insecure regions and was employed as an alternative to food for work (FFW) programs; CFW was later expanded to post-disaster and conflict environments. CFW programs have been implemented after floods in Bangladesh, in conflict-affected regions like Afghanistan and the Democratic Republic of the Congo, and, most recently, in the tsunami-affected parts of Indonesia and Sri Lanka.

CFW programs are considered easier to administer than FFW programs and can be less disruptive to local markets; they infuse cash into economies depleted of monetary resources, and in some cases can stimulate local economies (Cuny and Hill, 1999). The benefits of harnessing idle labour in the immediate post-disaster period are of critical importance

Previous studies have shown that communities tend to prefer cash to food relief, making CFW an attractive option for relief providers and target beneficiaries alike (Lothike, 2005; Galuma, 2004; Overseas Development Institute, 2005; Harvey, 2005). The success of a CFW program largely depends on the objectives and management capability of program administrators as well as on the implementation environment. When implemented incorrectly, CFW programmes can disrupt local economies, artificially inflate wages and generate unsustainable shifts in the labour force (Cuny and Hill, 2005). The cost of implementing CFW is lower than that of FFW programmes because the transaction costs associated with food delivery are avoided; in addition, cash provides versatility and empowers people to make choices and act on their own decisions.

By mobilising labour via CFW, decision-making power remained with individuals, and households were empowered to make their own choices and spend money accordingly. A secondary intention of the programme was to disburse cash. By February, it became apparent that an evolution towards using CFW to facilitate reconstruction was required as the situation transitioned from an emergency response to recovery, resulting in increased emphasis on physical outputs and deliverables. The CFW programme was gradually scaled back from May, even though demand for the programme remained strong and beneficiaries expressed dissatisfaction with its curtailment. In addition, government pressure to continue CFW activities at the regular pace made it difficult to scale back activities any faster.

2.3 From Disaster Risk Management to Sustainable Community Resilience

As a result of considering community participation a long-term planning commitment is created. The long term planning commitment within the community can create the sustainability of the planning implementation as well. If the community reach the agreement to be committed to that planning then there is the opportunity that the planning will be continually developed. Sustainability can be achieved if the goals are foremost in any planning effort.

Sustainable livelihoods is the condition when the livelihoods of community can cope with and recover from stresses and shocks, maintain or enhance the capabilities and assets that can contribute to a net gain for the other life on the local and global level, in both the short and long term (Chambers and Conway 1992). Disasters can have an impact in removing the people's livelihood and local economic downturn. Natural, financial, physical, human, and social capitals are eroded so that the market is chaotic and the effects of this all makes the disruption of social and economic conditions of affected areas (FAO & ILO, 2009). During the time of crisis, people become dependent on assistance to meet basic needs that cannot be met by the people themselves, this certainly cannot last long because sooner or later the assistance would stop. Thus, the realization of sustainable livelihoods is needed to be done and if the community in the disaster prone area are able to create sustainable livelihood, then they are able to implement living with risk concept.

In the link between disaster risk management and community resilience, SP can play a role to mediate and catalyst the process towards community resilience. When SP is introduced and added with the sustainable livelihood people have, it can be resources not only for developing preparedness but also sustaining capacity towards resilience. Initially and early concept of disaster preparedness relies on strengthening the community, while attention to mitigation is little. On the other hand, it also does not include long term adaptation to slow onset disasters, such as droughts and sea level rise problems. SP

from the government can be used to support this matter, either at the mitigation and the long term perspective of adaptation to climate change. In mitigation, for example, coupled with community own resources, SP can help to build stronger bridge, earthquake resistant evacuation routes. In adaptation, for example, it can provide the alternative sources of water or to promote conservation.

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2.4 Social Protection Measures in Rural Indonesia

This section describes the introduction of social protection measures in Indonesia, social protection in rural Indonesia and PNPM Mandiri which is the topic of this paper.

Social Protection in Indonesia

In Indonesia apart from nationally administered social protection, a national program for community empowerment or *program nasional pemberdayaan masyarakat* (PNPM) is integrated as a social protection measure. This chapter specifically discusses the role of PNPM in disaster risk reduction in Indonesia and its role to build sustainable community resilience.

Several national ministries are involved in social protection. That includes social ministry, coordinating ministry for citizen welfare, ministry of education, ministry of health, coordinating ministry for economy. Social ministry provides BLT of IDR 300,000 (30 USD) for each low income community. In the first stage in 2014, there were 169.434 people who received the BLT. On the other hand, PNPM was provided in term of block grant to community to rebuild community infrastructure at village in urban and rural areas.

PNPM Mandiri launched by President Susilo Bambang Yudhoyono in 2007. This program was a scaling up of poverty reduction programs from the previous eras. PNPM Mandiri was conceived to coordinate tens of poverty reduction programs of the various departments that existed at that time, especially the use of the concept of community development as an operational approach.

Social Protection in Rural Indonesia

Before PNPM Mandiri was launched in 2007, there had been several poverty alleviation programs in Indonesia, which used the concept of community development (community development) as the operational approach. The earliest programs were programs *Inpres Desa Tertinggal* (IDT) or literally translated into Presidential Villages, which began in 1993. IDT program was implemented by providing funds of USD 2.000 for every village each year. There were over 20.000 villages and the fund was given for 3-year budget. In addition, the government also provided technical support for rural communities in order to utilize the fund.

Learning from the strengths and weaknesses of IDT, the second generation of poverty alleviation programs was initiated, which included: Sub-district Development Program (KDP) which carried out by the Department of the Interior in 1998, P2KP (Urban Poverty Programme) which is implemented the Department of Public Works in 1999, PEMP (Coastal Community Economic Empowerment) implemented the Department of Marine and Fisheries, KUBE (Joint Group of Enterprise) carried

Ministry of Social Affairs, and others. Those programs were run according to the policy of each Department and were partial and sector.

Thus, to have an integrated poverty alleviation programs, Indonesian government launched the National Program for Community Empowerment (PNPM) in 2007. PNPM Mandiri program aimed to alleviate the poverty by included the community planning, implementation, monitoring and evaluation of the programs. Through a participatory development scheme, the critical awareness and self-reliance of the community hopefully could be nurtured. This could be done by regarding the community as the main actors to alleviate their poverty instead of the object of poverty alleviation programs.

PNPM-Mandiri as Social Protection

The PNPM Mandiri was implemented on three areas: rural areas (Kecamatan Development Program), urban areas (Program in Urban Poverty Alleviation) and underdeveloped regions, post-disaster or conflict areas (Accelerating Development of Disadvantaged and Special District).

In 2008, PNPM Mandiri program was integrated with the Regional Socio-Economic Development Infrastructure (RISE) to attach the economic growth in rural area with the economic growth in the main area. PNPM Mandiri was reinforced with community development programs from various departments / sectors and local governments, whereas the priority was focused in poor villages.

The integration of pre-existing projects into the policy framework of PNPM Mandiri was done in order to have a more extended coverage of the poverty alleviation programs, particularly remote and isolated areas. In addition, the effectiveness and efficiency of programs were expected to increase by eliminating overlapping programs. Given the empowerment programs would take effect in 5 to 6 years, the PNPM Mandiri was projected to last until 2015, which is in line with a target of Indonesian Millennium Development Goals (MDGs).

3. Methodology and Study Areas

This research is based on qualitative analysis in two rural districts in Indonesia which are prone to landslide, floods and droughts. The social protection measure selected in this study is the national program on community empowerment (PNPM).

This data for this article based on a long field work surveys by the authors. In Indramayu, the authors have carried out field research works, such as observation and interviews, from 2011-2014 in disaster risk management studies and migration. In Sleman, the authors have carried out field research works from 2008-2013.



Figure 1 Case Study Location in Indramayu and Sleman Districts

3.1 Rural Indramayu

Indramayu District is located in West Java Province, on the north coast of Java. The topography of district is relatively flat with the average slope of 0 – 2% and the altitude from 0 to 100 above mean sea level. Its low lying location makes it vulnerable to tidal floods and river floods. The district is mostly dominated with agriculture activities and it is considered as the national barn of rice production. Nevertheless, the climate change impacts, such as extreme weather, drought and floods have significantly hampered the rice production. While, the population growth shows an increase trend for the last 40 years (BPS, 2010), the district also shows a high outflow temporary migration. Outflow migration is also considered as their alternative ways of getting other source of livelihoods. It was reported that about a total of USD 39.8 million remittances were sent back in 2009 to this district in comparison to the district annual revenue which is about USD 1.2 billion (Pratama, 2011). On a recent research, Sagala et al. (2012) found that about USD 112 is sent back per households per month. This number might be smaller than the real amount since the characteristic of respondents who were tend to be modest when were asked about the amount of money they received.

Between 2005 and 2009, the livelihood sources show some livelihood changes, mostly from agriculture based sectors to business or commercial based sectors. Poverty is an important issue in Indramayu. The district is the poorest district in West Java. Many farmers do not own their land, but they rent or borrow from the owners. About 11 of 31 sub-districts in Indramayu have high level of poverty, which in total the poverty level is 35.21% of the total population of 1.8 million in 2009 (Bappeda Indramayu, 2014).

Recent study by Sani (2011), Siregar et al. (2011), Dasanto (2011) showed a number of environmental changes that affect Indramayu, such as coastal erosion, sea level rise, droughts and floods. Between 1963 and 2003 Indramayu has experienced of coastal changes. Some areas experienced accretion of 934 while some other experienced 604.8 Ha. These changes have disrupted some fish ponds and agriculture production in some areas of the district. The sea level rise (SLR) rate in Indramayu is about 7.8-8 mm per year between 1985 and 2008 (ICCSR-Indonesia Climate Change Sector Roadmap, 2010). The SLR has caused tidal floods in some areas of Indramayu, such as at Kandang Haur Sub-District.

According to the estimated of sea level rise in Indonesia for the next 100 years, the tidal flood will reach about 6.6-12.8 km to the mainland or about 55,707 Ha (Bappenas, 2010). This will cause huge impacts to the households that depend their lives on agriculture and fishpond activities.

In addition to flooding caused by sea level rise, the floods that occurred in Indramayu were also caused by the inadequate drainage system that caused functional failures. The flood occurrences increased significantly in the 2000s, compared to those in the 1980s and 1990s. The latest data refer to the Department of Public Works of natural disasters showed that out of 31 districts in Indramayu, 20 of those districts were prone to flooding. Potential inundation reached up to 40,000-50,000 Ha, affecting residential areas and paddy fields.

Besides rainfall, climate change is also affecting wind patterns. Erratic rainfall patterns affect the occurrence of the wind which altered the water column pressure in Indonesian waters resulting in high waves. In addition, the sea water level has already increased due to global warming, which made the shoreline went further into the land. Furthermore, the weather pattern became erratic and unpredictable in the last 4 to 5 years. All these aspects made the fishermen could not go to sea for a few days. Moreover, fishing locations was driven further to the high seas due to lack of fishes in the coastal area.

Drought

Indramayu district is drought prone areas. Indramayu lies in the estuarine downstream area of the service line of Rentang weir, which is part of Cimanuk watershed. Rentang weir was built in 1982 in Majalengka and serves as a water distributor to 3 districts which are located in Cimanuk watershed area. Those districts are Majalengka, Cirebon and Indramayu. Water only pass through the Range weir and is not being stored in the weir. However, during its service it suffered operational failures for several times which caused drought at the 3 districts of its service area.

The failures of Rentang weir was mainly caused by water level of the weir that dropped especially during dry season when it reached critical level. Moreover, a high pace of agriculture expansion exacerbated the condition. In 2008, the agriculture plantation area was expanded into 74.502 Ha, in contrast to only 53.490 Ha as the original setting of plantation area. Consequently, the agricultural expansion against original plan had triggered drought (PSDA Jawa Barat dalam Kompas, 2008). In addition, nearly 45% of the total 6.954 farm irrigation network in West Java was damaged (Kompas, 2009). The networks were reported to be leaking in a few spots which aggravated the drought in agriculture area which was particularly felt in 2008.

Increased incidence of droughts in Indramayu is also as a result of global climate change. An increase in temperature makes the dry season hotter than usual. Climate change also affects the rainfall patterns that cause the rain season to end earlier, resulting in drought. This rainfall pattern became a problem because after the first harvest, the farmer would proceed with the second batch of planting. However, after sowing the rainy season would abruptly end and there was not enough water to irrigate the plants and thus the plants were exposed to drought. Rainfall patterns are also increasingly unpredictable every year. For instance, in the year 2010, the rain fell throughout the year, whereas in 2011 rainfall was scarce. The problem was exacerbated by the intrusion of sea water into the river water which caused it could not be used as irrigation water. These factors above have been causing increasingly severe drought in Indramayu year after year.

Based on studies conducted by the Studio Wilayah (2011), a drought risk map was set in Indramayu. The map divides the Indramayu region into two classifications as follows:

- Areas with low levels of risk, which is less likely to be inflicted by drought and could be used for rice plantation area, either by rain fed or by irrigation.
- Areas with a high level of risk, which has a high potential of drought

The division of this classification is based on the drought impact toward agricultural activities alone. Meanwhile, the daily need of fresh water of the communities was generally not affected by the drought because there was still water taps to meet the fresh water demand of the Indramayu Regency.

However, in term of water demand from the rice plantation, almost all area of Indramayu regency was prone to drought. During the last 20 years, the drought increased by 1.491 Ha/year. Crop failure due to drought in Indramayu occurred in big scale in 2008 and 2011, when the parched land area reaches 22.870 ha (Reuters, 2011). These widespread of crop failures were equal to the loss of 65,000 tons of rice. If occurred in longer period, crop failure in Indramayu could impact the national food security, as Indramayu had been acted as one of the main contributor of national rice supply.

Flood

Indramayu district is prone to flooding. The flat topography and its location in the shoreline of the Java North Sea making it even more vulnerable to flooding. This condition was aggravated by river sedimentation (Republika, 2009). Increased activity of flooding in Indramayu in the 2000s, compared to the 1980s and 1990s, was caused by climate change. The climate change has caused extreme intensity of rainfall in the wet season, which was far above normal intensity. The extreme rainfall caused increased river discharge and subsequently flooding in the downstream and tributaries area.

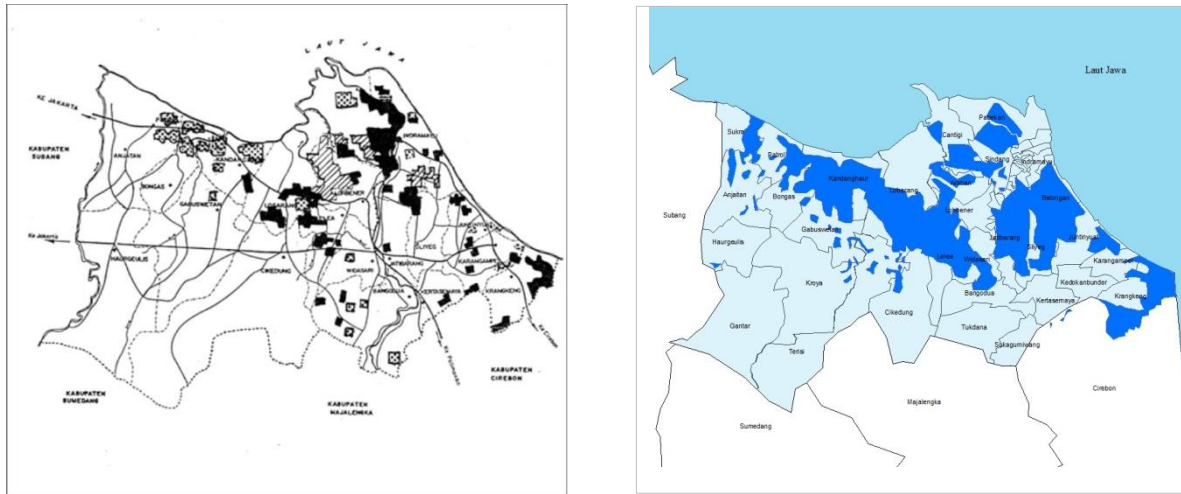


Figure 2 Inundation Area in Indramayu 1992 (left) and in 2008 (right)

Source: Local Government (1992) and Office of Public Works Water Resources Indramayu District (2008)

In early 1990, the flood started to plagued Indramayu district in the eastern part (Figure 2). Over the year, the flood area extended to the west part. Indramayu latest flood prone map of 2008 showed this trend, where the inundation plagued the west area of Indramayu sub-districts such as: Cikedung, Anjaitan, Haurgelis, Patrol, Shukra, Bongas, Cork wetan, Cikedung, and Kroja. Thus, in total 20 districts, out of 31 districts in Indramayu were prone to flooding in addition to urban areas (i.e. Indramayu district, Sindang, and Lohbener). Potential flooding area reached 40,000-50,000 ha covering residential areas and paddy fields.

During the course of 2003 to 2005, the flooding area decreased. However, since 2005, the flooding area increase until it reached it peak in 2008 (nearly 39.000 acres). In 2009, the flooding area reduced until 19.338 hectares and even further decreased in 2010 (5.010 acres).

3.2 Rural Sleman District

Sleman District is located in northern part of Yogyakarta province. Livelihoods in Sleman is predominantly in the trade, hotels and restaurants by 25%. Then 24% in the service sector, 22% in agriculture, 15% in the industrial sector, and 14% in other sectors. The population of Sleman district in 2010 is 1.17.176 inhabitants with the number of men as much as 555 070 people (49.68%) and women as much as 562 106 people (50.31%). Average population density is 2033 Sleman district inhabitants per km. Broad area of Sleman Regency is 57 482 hectares or about 18% of the area of Yogyakarta Special Province. Sleman Regency has 17 subdistrict, 86 village, and hamlet 1,212. Overall, the geological conditions in Sleman district is dominated by the presence of Mount Merapi. Geological formations in Sleman is changed into volcanic deposits, sediment, and rock breakthrough, with volcanic deposits representing more than 90% area of Sleman district. Thus, the district of Sleman Regency is vulnerable to hazards. Nevertheless the existence of Mount Merapi in Sleman also provides positive consequences, which gives fertility to the soil as well as beauty to be used for tourism.

Number of poor households in the district of Sleman is still relatively high, namely 65 157 households (Government Activity Report Sleman District, 2010) .In list of poor families published by Dishubkominfo Sleman, people's livelihood ranging from farmers, ranchers, handyman, small merchants, servants household, masons, construction workers, and there are idle. (Bappeda Sleman District, 2011). When Mount Merapi impaired, then the source of their livelihood is also impaired. Such defects such as when the eruption, lava cool. Although Mount Merapi lately often eruption, so the livelihoods that rely heavily on natural products will be disturbed.

4. Social Protection in Rural Indonesia

This section discusses social protection implementation and its role for sustainable community resilience in two rural districts of Indonesia: Indramayu District and Sleman District. Three aspects to achieve sustainable community resilience which are disaster risk reduction, social protection measures and social protection.

4.1 Risk Reduction and Social Protection Indramayu

There are several risk reduction measures in Indramayu conducted by community and the local government.

Social Protection Current Program

Indramayu Regency is one of the districts that have a high number of low income people in the province of West Java. Various programs of the central government and Indramayu district government have focused on reducing poverty. Some of the government programs are as follows; Social Security Providing Agency (BPJS), Low income Students Aid (BSM), PNPM Rural, Productive Economic Business (UEP) and the Women's Savings and Loans (SPP). The following table (Table 1.) is the various forms of social security in Indramayu district:

Table 1. Social Protection Programs in Indramayu District

| Program | Abbreviation | Activity | Fund | Beneficiaries |
|---|---------------------|--|----------------------------|-------------------------------|
| <i>Social Security Agency</i> | BPJS | Health care insurance for Indonesian people, especially for the low income. | USD 3.6 million (National) | 922.978 people |
| <i>Low income Student Aid</i> | BSM | Financial aid for education related fee | USD 582.600 | 57.800 students |
| <i>National Program for Rural Community Empowerment</i> | PNPM Mandiri rural | Direct funds for the development of physical and economic infrastructure in the sub-district and village level | USD 14.83 million | All sub-district in Indramayu |
| <i>Enterprise for Productive Economy</i> | UEP | Empowerment of small and micro enterprises through micro-credit programs | USD 544.600 | 2.253 group |
| <i>Women Saving and Loans</i> | SPP | Funds for women | USD 997.700 | 31.793 women. |

BPJS Program is a national program that integrates the security and health insurance. In Indramayu district, BPJS was integrated with the program for the health sector known as Jamkesda (regional health insurance). In 2014 the local government allocated USD 3.6 million to support the national BPJS. Currently, BPJS was integrated with Jamkesda and was distributed to 75% people of Indramayu district.

One of the anti-poverty programs from the government was to give aid to students in Indramayu for their education related fees. This program is combined with the School Operational Assistance (BOS). In 2014, the government of Indramayu allocated USD 582.600 to fund 57,800 students. With education, the human resources of an area could be enhance and thus the social economic issues of the region could be solved gradually as more qualified people would be available in society. In turn, the utilization of natural resources could be maximized and the poverty rate could be reduced. Particularly in Indramayu, the natural resources that should be optimized are agriculture and fisheries. Thus, the society that should be empowered first was those who work in the agricultural sector and fisheries.

Poverty alleviation programs and the protection of the public in Indramayu district is focused how to empower people who mostly work in the agricultural sector and fisheries. Health and education are generally developed by the local government of various national programs in the district of Indramayu. While the infrastructure and social sector development through empowerment programs nationwide through PNPM rural scheme. PNPM Mandiri is one of the rural community development schemes to be directly involved in the development funded by the government.

PNPM Rural

In practice, the PNPM program prioritized the following sectors: development of rural infrastructure, distributing funds for women's groups, improvement of health and education of society in rural areas. The program consists of four main activities including mentoring and community development, distributing fund for infrastructure development, community grants and agribusiness. The funds in Indramayu were distributed in form of following programs: savings and loan for women, cash transfers, micro credit programs and prospective family programs.

Savings and loan program for women was a type of society empowerment program in economic sector. The program focused on providing assistance to women's groups covering various aspects such as social, economic and cultural aspect. Whereas the aim of the program was to develop a normative paradigm of entrepreneurship in the society especially the female fragment in order to inspire the emerging activity of home business or house production. Thus in 2014, the Ministry of Home Affairs and the local government had allocated a budget of USD 997.700 which was given to 31.793 women in Indramayu district.

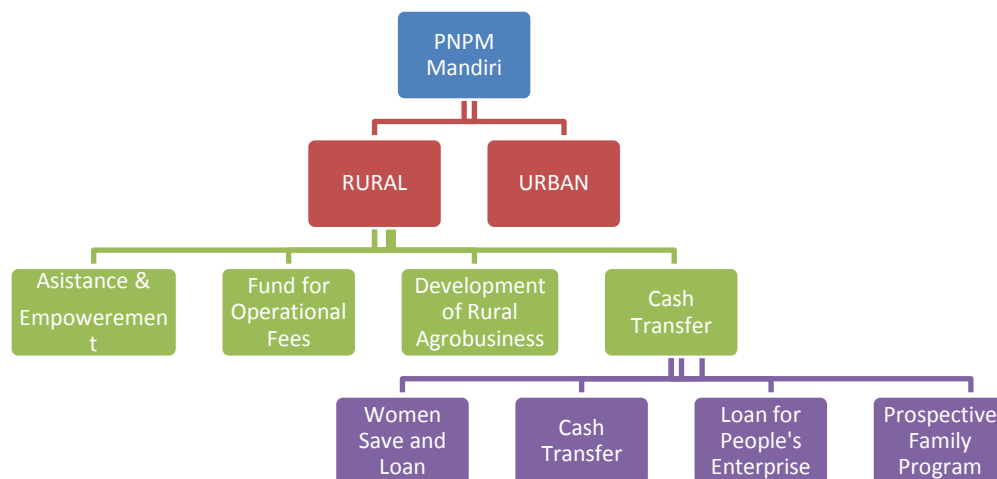


Figure 3 Schematic Diagram of PNPM Mandiri Scheme

Another economic empowerment program in rural of Indramayu was a scheme called Productive and Economic Enterprise or abbreviated as UEP in Indonesian. This scheme was one of the PNPM for Self-supported Rural programs which aimed to enhance the creative economy by increasing the resiliency of local economy. In 2014, the local government has allocated a fund of USD 544.600 which was given to 2.253 groups of people in Indramayu district. These small groups of enterprise were the targets of empowerment so that the budding enterprises would be more resilience to economic hazards.

While the schemes of direct cash assistance (BLT) is one of empowerment given to the public as a form of compensation for the increase in fuel prices. Cash transfers carried out in order to improve community resilience in the face of basic needs as a result of rising fuel prices. Meanwhile, PUAP or the Rural Agribusiness Development is strengthening the local economy in Indramayu, especially people who work as farmers. PUAP facilitation is a form of venture capital assistance to farmer members, both owner farmers, tenant farmers, farm workers and farm households. Farmers Group Association (farmer group union) is a farmer implementing institutional PUAP for channelling capital assistance for members. To achieve maximum results in the implementation of PUAP, farmer group

union accompanied by a companion extension workers and Supervisor Mitra Tani. PUAP farmer group union is expected to be the economic institution that is owned and managed by farmers. In the new district PUAP Alone on the stage of socialization and the formation and strengthening of farmer group union so ready to accept the help of existing funds.

In addition to the economic empowerment in Indramayu district, PNPM Self-supported Rural also initiated community empowerment by involving them in the development of rural infrastructure such as the construction of roads, drainage, sanitation facilities and schools. The budget for the development of infrastructure was the biggest allocation noted so far which amounted as USD 14.83 million for building the facilities in villages and sub-district of Indramayu.

Impact PNPM Rural

The implementation of PNPM Self-supported rural have shown economic improvement in society in a form of small medium enterprises (SME) development, which increased the overall community productivity and income. The program was particularly helpful due to notably low interest rate of 1.5% and no collateral required. As the result, the community could buy raw materials and production equipment for their business. The experience was stated by Mujiono a member of a community based organization (CBO) in Losarang:

“... after I received a loan from PNPM, I could buy raw squid and tools to make squid chips... ” (Interview by Mujiono dated May 25, 2010 at 16.00WIB).

In addition to help the community starting enterprises, PNPM program also helped community to expand their previous enterprises, as stated by Sri Mulyani a leader of a CBO called *Damai*:

“I obtained a loan of IDR 1.5 million (USD 150) from PNPMMMP. I used the loan to buy plastic and cutting tools to processed mangoes. Before, I just sold the fruits, but now I sell processed mangoes.” (Interview with Mrs. Sri Mulyani on December 26 May 2010 at 17:00 pm).

Another interesting finding was that after receiving loans, dying SMEs that lacking of capital could be revived again. Community in general were excited to have another chance of starting SMEs. Women who make tempeh chips could buy the raw materials needed such as soybean, cooking oil, tempeh cutter, frying pans, cooking stove and fuel. Mrs. Jumiyati as tempeh makers of Ngupoyo Maju CBO stated that:

“... I stopped making tempeh chips, because the whole batch of the tempeh that I made became rotten. I did not have any capital for another batch and so I stopped. But then Mr. Sularman invited me to be a CBO member in Jendi village. I got a USD 100 loan; I used it to buy soybeans, cooking oil, soybean maker. I could finally continue making tempeh chips that I sell in Losarang market”(interview May 27th Mother Jumiyati 2010 at 17.00WIB).

People who obtained loans from PNPM-MP could start up new business or expand their former business by buying raw materials and equipment for production. As the result they could earn more profits which add to their overall income. This is stated by Mrs. Siti Mudmainah as members of CBO Manunggal:

“...my business was improved, I could increase the production so that earning more profit. Before, I earned IDR 30.000 per day (USD 3), but now I can earn IDR 50.000 (USD 5)”. (Interview with Mrs. Siti Mudmainah dated June 4, 2010 at 16.00WIB).

The same was presented by Ibu.Suwasih of *Damai* CBO:

“..... I used only as a housewife and helped neighbours selling vegetables every morning. For it I earned only USD 1, but now after I got a loan I could make Karak, and earn a net profit of USD 2, which I used to buy books for my children schooling”

(interview with Mrs. Suwasih dated June 5, 2010 at 16.00WIB).

Challenges of Rural PNPM Self Supported

However, in the implementation the rural PNPM facing several challenges and constraints in terms such as: capital or loans granted by PNPM Mandiri program did not sufficient to meet the needs of the community. The loans were given in small amount and caused the community business to be underdeveloped as raised by Sri Mulyani, one of the CBO activist:

"The loan from PNPM is so small; our CBO was only granted IDR 1.5 million (USD 1.500) twice. With that amount not much could be done because the increasing price of raw materials in addition to the expense for production equipment, thus the profit generated could not recompensate the effort exerted." (interview Bp.Suwardi June 27 at 17:00 pm).

There is also problem in deciding who could receive the loans. Based on the original concept, those who can receive the loans should belong to the low income category and having any type of business and forming a CBO. However, in reality the original concept could not be applied. The group of society that received most of the loans were those who were considered to be able to repay the loans regardless of whether they were low income or not. In consequence, the poorest society was denied from getting the loans as stated by Mr. Sugeng:

"CBO that we give our priority is low income people who have any form of enterprise and have the ability to repay the loan, and those who is considered not to have the ability to restore the loans are exempted. This is done to prevent the risk of bad loans" (interview Mr. Sugeng May 29 at 13.00WIB).

Other problems that were reported by the facilitator team in Indramayu are as follows: (i) the lack of skill and education of the target community, (ii) lack of tools and facilities and (iii) poor marketing management, all of which made the implementation of PNPM Mandiri was not effective.

Remittance and Enterprise Empowerment in Indramayu

The most potential factor that might be able to reduce poverty and enhance social protection to the community in Indramayu is remittances. Indramayu district is the biggest sending migrant workers in West Java (Kompas, 2010). Every year about more than IDR 600 billion (USD 6 million) are sent by migrant workers to their families in Indramayu district (Bappeda Indramayu, 2010). This number indicates the magnitude of the potential impact that could be delivered by remittances on the economy and development in Indramayu district.

In Indramayu sub-district, from the previous research, effort to reduce climate change impact was mostly found in individual level (Sagala et al., 2011). One of action is enhancing the house porch. This action is the easier way, the communities usually combine it by putting a piece of sand bag in front of their doors to provide temporary barrier in case of flooding. The different action develops is to rise up their yard higher than the road in order to avoid the seawater from flooding their yards and house. Another method is to make higher house foundation than before so that the flood could not reach into the house. The method was mostly popular in the communities.

Through the analysis from the questionnaires, we found that the amount of accumulated money obtained from the remittances in study area is about IDR 14 billion (USD 1.4 million). This means the remittances for each household is about IDR 59,000,000 (USD 5.900). That amount of money was obtained during 2-4 years working overseas. The remittances found out that the types of remittance use fall into four categories: physical development, business capital, saving and consumption. Based on studies conducted by Pratama (2011) the remittance was used mainly for daily consumption by the migrant family (USD 330.000). The similar amount went to build houses (USD 333.000) or repair houses (USD 215.000). The figure below depicts the utilization pattern of remittances by the migrants' household.

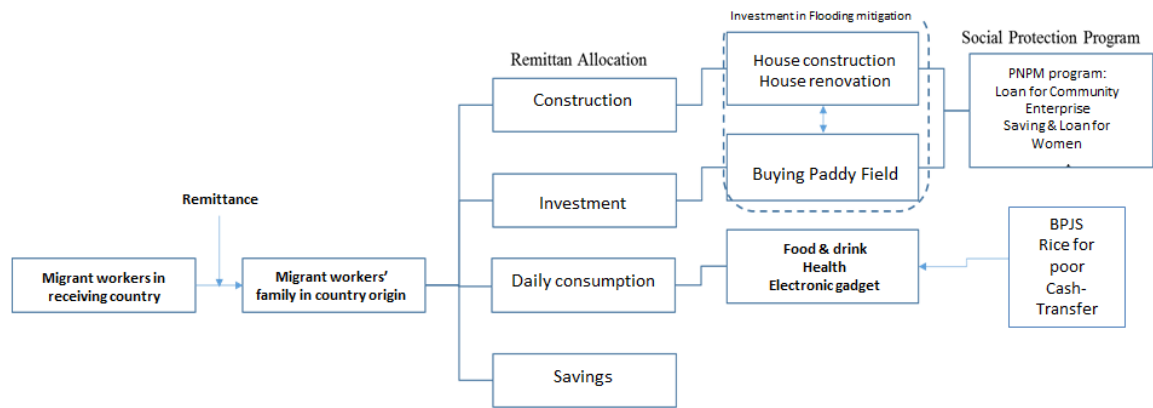


Figure 4 Utilization of Remittance in Indramayu and Its Integration with Social Protection Program

The portion of remittances that can be used is those allocated for physical development or those allocated for business investment. Whereas remittances allocated for consumption obtained would be used for eating and drinking purposes, as well as for purchasing goods (clothing, RT, electronic, and valuables). The number of remittance used for physical development was obtained from their use to build new homes and to repair houses. Whereas, the number of savings from remittance was obtained from the amount the community saved either in bank or at home. The number of remittance used as business investment was calculated from the purchase of land, paddy field, livestock, or business venture.

The use of remittances for climate change adaptation can be coupled with funds from the government through PNPM programs, such as KUR or savings/loans for women so that these programs could have a significant impact on people's economic condition. The fund could be used to solve droughts and floods problems by setting good water resources. Figure 3 shows the patterns of how remittances were used and how they could be integrated with various social protection programs. In addition, there have been small loans from the government for former migrant workers to enhance their skills.

Those amounts of remittances are very potential to be used by the community to reduce the climate change impact, which in this case is flooding, if organized well and sustainable. Remittances are supposed to be a solution on the economics factor to reduce climate change impact aside from human factors and other factors. It's like study from Mohapatra(2009) and Adger et al (2002) which mention that one of strategy to prepare and to cope with disaster is rely on money transfer (remittances) from other family members who are not affected with disaster.

Social protection program has limitation in Indramayu due to its high poverty level. However, a combination with other sources, such as remittance, was considered promising. Studies by Sagala et al (2014) suggest that collective actions are importance to achieve sustainable community resilience.

4.2 Risk Reduction and Social Protection in Sleman

Disaster risk reduction in Sleman

Hazards imposed by volcanos could affect human life directly and indirectly (Minsarwati, 2002). Hazards that have a direct impact include lava, pyroclastic flows, ashfall (tephra), landslide, cold lava, etc. The Government has issued a map of disaster-prone area of Mount Merapi. The map acted as a medium to convey the volcanic hazard towards the society (Haynes et al., 2007) and as a tool to record volcanic hazard prone area in Indonesia (Triyoga, 2010). To achieve its purpose, each map was updated whenever there is an incidence of volcanic eruption. Thus the map could record the history and eruption behaviour, their hazard level, morphology, and human population around Mount Merapi during the eruption (Triyoga, 2010).

As the impact of the eruption, 367 people were lost their lives, 258 injured and 410,338 people had to

evacuate. A lot of livestock were killed and plants were ruined due to disaster. As the physical impact, there were 3,245 houses in Cangkringan District were swept by the pyroclastic flow. Since most of houses in the Sleman Regency were permanent, the value of total damage in housing sector was high, which reached USD 58 million (National Development Planning Agency, 2009). The eruption also ruined many of the infrastructures, such as road, power grids, communication network, schools, health facilities, etc. This condition certainly made people could not run their activities as before. At the end, the damage of all resources caused the loss of livelihoods and vulnerable to poverty.

Information about current social protection in Mt. Merapi

To revive the post-disaster condition, the government should support the community by distributing the required resources (Tobin and Whiteford, 2002). The Government of Indonesia had instructed emergency assistance to be distributed by utilizing PNPM as the disaster recovery management support. In the end of November 2010, during Coordination Meeting for Merapi Disaster Management, the Vice President instructed immediate assistant for livelihood project to be commenced, between the emergency response phase and the rehabilitation and reconstruction phase. The most prominent example of livelihood project was a volcano based tourism which generated temporary income for the community (Wijayanti and Sagala, 2012, Sagala et al., 2012) and used for the recovery and revitalization of the affected communities (Kemenko Kesra, 2011). In addition, the cash for work program was launched so that the community could have an alternative source of livelihood and would slowly recover and be restored to their previous jobs as cattle owners, since many cattle as well as the feeding grass were devoured by Mt. Merapi eruption.

Cash for work was a form of social protection program in Mount Merapi, which was incorporated into public works programmes and was categorized as protective and promotive social protection. This category was a form of coping strategies and building adaptive capacity, whereas its benefit from the perspective of disaster risk reduction was to protect the most vulnerable by the most simple form of resilience and livelihood diversification (Davies et al., 2008). Cash for work activity in Sleman covered from both temporary and permanent settlement, infrastructures and public facilities, such as cleaning up a tourist attraction spot (i.e Mbah Maridjan Tomb).

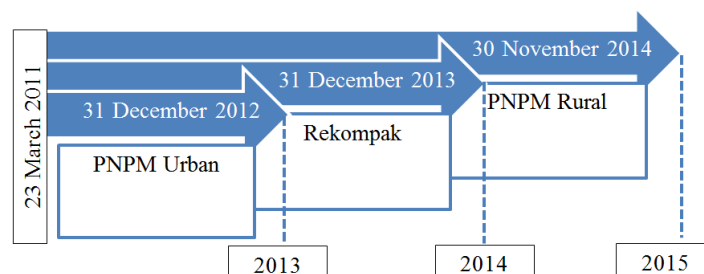


Figure 5 Social Protection Timeline in Sleman

Source: (Choi and Tomlinson, 2013)

PNPM Support Facility committee responded in a positive way by establishing the Disaster Management Support project in 2011 (Choi and Tomlinson, 2013). The project supports the community through three main operations, i.e. PNPM Urban, Community-based Settlement Rehabilitation and Reconstruction (Rekompak) program, and PNPM Rural. Cash-for-work program ended in December 2011, but other cash-for-work programs were still in progress. (Joewono, 2011). The grant of the second stage comes from governments of Australia, Denmark, Netherlands, United Kingdom, United States (USA), the European Union which was managed by World Bank through the "PNPM Support Facility" program which provided 4.3 million dollars (Choi and Tomlinson, 2013). PSF aims to reduce poverty by supporting Indonesian government in the PNPM program (National Program for Community Empowerment) which is the largest states community-based poverty reduction program in the world.

The target groups were selected via information dissemination process, workers database, collection

based on Family Register and National Identity Card by local neighbourhood leader. The cash for work program was divided into two phases. The funding source of the first phase of cash for work program was allocated from Emergency Response Fund managed by BNPB. The second phase continued well by December 2011. The first phase cash for work activity involved around 14.000 workers from local neighbourhood and 195.936 for the second phase. The standard wage ranged from USD 3 to USD 7 per day per worker depending on the workers' skill level. (Kemenko Kesra, 2011). *"There are three categories of daily wages, which is USD 3, USD 3.5, and USD 5. We try to stick to it, but yes it is dilemmatic and is not easily conveyed to the citizens"* said head of Kepuharjo Cangkringan village Heri Suprpto (Prasetya, 2011). In some locations, cash for work activities were in synergy with activities of other agencies that were using heavy equipment. Thus, cash for work made an even wider impact on the welfare of the surrounding communities.

Residents who became victims evacuated to some fixed residential locations. The fixed residential places located outside the hazardous area based on map set by the Government. The development of fixed residences was funded by the JRF and carried out with the help of Rekompak. To build this permanent housing, each of family get a fund of 30 million rupiah (USD 2.5) for the house construction (Wijayanti, 2012). However, 30 million rupiah of the fund was not sufficient to build a house. Therefore, the community collectively built their homes and was coordinated by local committee.

To improve the condition of local community after the disaster, the government needs to support by distributing resources (Tobin and Whiteford, 2002). The resources that Indonesian government distributed in Sleman were cows to indemnify cows that die from heat clouds. Cash Transfer Programmes are gaining momentum both in humanitarian relief efforts and as a poverty reduction strategy (Harvey, 2005, Barrientos and Nino-Zarazua, 2010). This policy aims to improve the economic conditions of households who are victims of natural disaster. Compensation is divided based on the age of cattle that died: USD 850 for one adult cattle, USD 550 for one young cattle, and USD 350 for a calf.

In some locations, cash for work activities were in synergy with activities of other agencies that were using heavy equipments. Thus, cash for work made an even wider impact on the welfare of the surrounding communities. For instance, a project of cash for work program was building a bridge between villages of Umbulharjo and Kepuharjo, as well as building the main hall of Kepuharjo village. Another program which aimed poverty reduction was the National Team for the Acceleration of Poverty Reduction (TNP2K) which worked closely with Community-Based Settlements Rehabilitation and Reconstruction Project (PNPM/ Rekompak).

To date, the PSF has disbursed over US\$ 6 million mostly in cash for work activities in two provinces (DIY and Central Java). Over 750,000 employment days have been generated to first clean-up Merapi-affected villages (January –June 2011) and then to reconstruct their basic infrastructure (July-December 2011). The cash for work program has been closed, and remaining funds will finance sub-projects selected through the PNPM process.

Social protection in Sleman shows its benefit for community short term recovery. In the long run, however, it should be related with community's own livelihood sources. For this, it is important to integrate the program with the economic recovery process after the volcano eruption (Sagala et al 2014).

¹Parjinah (35) a villager who participated in Tlogolele Selo cash-for-work program due to replacing her husband, stating that there was no reduction of the wages. *"I worked 8 days to get USD 24 or get USD 3 paid for a day which was in accordance with the announcement made by Pak RT"*.

"Because this area is an agricultural area, it can be understood that many labor-intensive activities revolve around agriculture activities such as land clearance, repairing irrigation system, or getting rid of large boulders from eruption that have rolled into the fields, irrigation, and roads."

Many problems had to be solved after the eruption, one of which was infrastructure improvements

¹ There is always courage and a way out, PNPM Merapi

and the never-ending cleaning of the eruption debris. PNPM program addressed this problem by introducing the labor-intensive activities, which was launched in February 2011 for eleven villages, which were directly affected by the eruption of Merapi. This initial program was followed by the consecutive programs in other villages which were indirectly affected by the eruption or by the impact of cold lava.

5. Disaster Risk Reduction, Social Protection and Community Resilience

This section describes the process of reducing disaster risk with social protection measures and its role in achieving community resilience. This study identifies that at some disaster prone areas, the community proposes the use the community empowerment funds as physical infrastructures to increase community preparedness and to mitigate risks. While the program is initially a short term basis, the impacts of the physical infrastructure development is also able to protect livelihoods that enable to increase community resilience. This paper suggests sustainable community resilience from social protection programs relies on high involvement of community in the design program. Furthermore, this paper explains some strategies in the implementation of social protection to support community resilience.

While some authors (Davies et al 2009; Jones et al., 2010) argue that social protection can help reduce disaster risk, it should be seen as a long term process to achieve community resilience. Therefore, social protection can serve as means to reduce disaster risk, to recover from disaster and ultimately to achieve community resilience. Social protection per se has limitation. It needs to tap into community's own resources, such as natural and social resources. In West Sumatra, Vanhoebroek and Sagala (2010) found that recovery process after earthquake was partly supported by social capital that people have. Norms and social networks determine the shape and speed of housing recovery (Pribadi et al 2014). Furthermore, the evidence showed that combination of natural resources and social capital of the community (i.e norm and social networks) will speed up the recovery process.

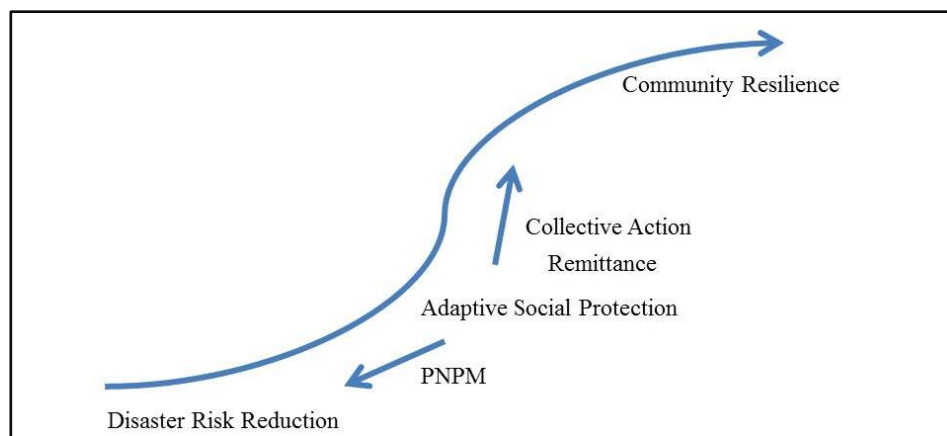


Figure 6 Achieving Community Resilience with Adaptive Social Protection

Some communities suffer livelihood sources and therefore social protection will be important as a start up to reduce the disaster risk and to open opportunities for livelihood sources. For example, in Indramayu, PNPM have been able to provide road infrastructures that help for increasing livelihood sources of the communities. While this is not directly helping out the community, but the infrastructure contribute as access for community for their work and for risk reduction measures, such as evacuation. While not enough, the PNPM enhanced with the community collective action support for achieving community resilience. In a community suffered from volcano impact, where many belonging is disrupted by the eruption, social protection such as cash for work helps as an immediate solution.

6. Conclusion

This chapter demonstrates the link between disaster risk reduction, social protection and sustainable community resilience. The similar characteristics among the goals, target groups and tools of SP and DRR make it promising for sharing opportunity. Social protection is common measures in developing countries to alleviate the burden faced by the low income in the society.

Two case studies in Indonesia are discussed to get the idea of how social protection scheme could be integrated with disaster risk reduction program. The case studies were taken in Indramayu and Sleman. Indramayu area has been heavily affected by climate change, whereas Sleman area has been affected by volcanic eruptions.

Indramayu has been the target of social protection program before climate change took effect. The society was mainly farmers and fishermen, and marked by high poverty rate. After the onset of climate change, additional social protection programs were launched to empower the society. The obvious result from the social protection programs was the emerging of small medium enterprises, which increased the overall community productivity and income, in addition to providing optional livelihood other than farming and fisheries. However, for some the amount of fund distributed was less than adequate. Therefore, some people opt to empower their family by the use of remittance earned from becoming migrant workers. Regardless of the dangers being migrant workers, Indramayu women chose to work abroad and deliver huge amount of remittance to Indramayu district. The utilization of remittance was mainly used for daily consumption. It was also used to build infrastructure against climate change impacts such as flooding and drought.

Similarly, in Sleman the cash for work program was launched so that the community could have an alternative source of livelihood and would slowly recover and be restored to their previous jobs as cattle owners after Mt. Merapi eruption. Social protection in Sleman could only give temporary benefit to the society. Thus, for the long run the community used funds to recover the infrastructures to increase community preparedness and to mitigate risks. Social protection can serve as means to reduce disaster risk, to recover from disaster and ultimately to achieve community resilience. However, it needs to tap into community's own resources, such as natural and social resources. Thus high involvement of community is required to integrate SP and DRR.

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