

THE LIVELIHOODS OF SAWANGAN VILLAGE, A DISASTER PRONE AREA OF MT. SLAMET*

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Abstract: Indonesia has geographically spread active volcanoes, one of them is Mt. Slamet. It is the second highest mountain in Java island and located in the Central Java province where has the highest density of population in Indonesia. Sawangan village is the nearest area in the Mt. Slamet and has difficulties access on road to other villages. Sawangan village has lot of challenges to develop and made sustainable livelihoods even though natural resources as land and forest be redundant. It is located 11 km from the nearest city which made this area half-isolated by government support. The aim of this paper is to describe the livelihoods in the Sawangan's households to cope and manage the fluctuate volcanic disaster management from Mt. Slamet. The researcher uses qualitative research methodology with in-depth interview. It divide into two groups, or groups of local stakeholder (head of the village and head of sub-village) group and households. Total respondents for two groups are 6 head of village and sub-villages and 19 households. Sawangan' villagers rely on their living through agriculture and also as a carpenter to support their live. The area was surround by pine forest, belong's to Indonesia government. However, Sawangan villagers cut the tree to support their life and expand their agriculture plantation land. The villagers meet their problem when they have already expanded their agriculture, but they did not earn money more. They meet lots of debt even though they already expand their plantation area. During summer season, villagers could not plant anything because of dry-land and survive using storage of the result of their previous plantation. However, Sawangan villagers could survive through Mt. Slamet volcanic disaster time by time. They have their own strengthen belief to cope the disaster impact.

Keywords: livelihoods, Sawangan village, disaster prone, agriculture practices, Mt. Slamet

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INTRODUCTION

Indonesia is located in 'The Ring of Fire' between three active fault lines (Pacific, Indo-Australia and Eurasian). These impacts upon Indonesia by creating more than 130 active volcanoes spread over all of the islands (Center for Research on Epidemiology of Disaster, 2006). Recently, Mt. Slamet has developed fluctuations in its seismic activity causing some villages surrounding it to have to cope with unpredictable levels of danger from a potential volcanic disaster. One of the nearest villages, Sawangan, is located on the west side of Mt.Slamet. It has relied on volcanic ash to provide nutrients for the soil on land which supports the agriculture that sustains their livelihoods. Sawangan village is one of the villages that produces and provides agriculture products, such as potatoes, throughout the provinces of Java island.

Since the 1900s, Mt.Slamet has erupted more than 38 times with unpredictable time intervals. Householders who live in Sawangan village rely on agriculture and tourism activities for their earnings. The households harness the lush soil in the belief that natural fertilizer comes from the Mt.Slamet ash. The agriculture sector creates the livelihoods of Sawangan village and tends to be the resource that supports individuals and their dependent households in their "capabilities, assets and activities required for a means of living" (Chambers & Conway, 1992, p.6).

Most of the livelihood studies have been concerned with material outcome and various strategies. This paper will describe the rural sustainable livelihood of this disaster prone area. Although mostly in the agriculture sector, it appears there are multiple livelihood activities with self-employment providing steady employment and income (Cherni & Hill, 2009). A few studies highlighted a sustainable livelihoods approach (SLA) to assess the impact of agriculture practices on rural communities (Tang et al, 2013). Poverty alleviation is the objective, scope and priority in SLA (Ashley & Carney, 1999). That is, providing the means for satisfying the basic needs of rural residents who will continue to live in a disaster prone area, through agriculture practices. Livelihoods have been influenced by the concept of individual autonomy and independence to prioritize self-interest.

This study employs rural sustainable livelihoods for the vulnerable community who live in the disaster prone area of Mt. Slamet. Sawangan village, as the nearest location to Mt. Slamet, is semi-isolated from the government support programs. It takes a self-sufficiency and self-employed approach towards its agriculture practices. In the penultimate section, I draw the attention of this paper to focus on Sawangan village case studies with the aim and objective to describe the rural sustainable livelihoods of each household in support of their steady employment or income. Furthermore, as an area vulnerable to disaster, the sustainable livelihoods approach could cope with the negative impact of disaster upon the rural community.

THEORITICAL ANALYSIS

Livelihoods supporting the households living in the disaster prone area are integrated within the environmental threats. Chambers and Conway (1992) describe livelihoods as the capabilities, assets (stores, resources, claims and access) and activities required for the means of living. The problem becomes more complex as the meaning of livelihoods is developed. DFID is the abbreviation for 'Department For International Development' (2005), part of the United Nations Development Program (UNDP) that explained that livelihoods could be sustainable when people cope and recover from stresses and shocks; maintain their capabilities and assets, without undermining the natural base. Within the livelihoods definition, households are commonly described as human groups who share the same hearth for cooking and living. Based on this, the household is the unit of analysis for this study.

Swift (1989) describes assets as being both tangible and intangible. Tangible assets consist of stores and resources. Stores consist of food stocks, stored value, cash savings in a bank and credit schemes. Resources are land, water, trees; livestock and farm equipment. Intangible assets consist of claims and access, measured at household level, which consist of material, practical support (claims), opportunity to use resources, stores, services or information, technology, employment, food or income (access). Services comprise transport, education, health, shops and markets. Information includes radio, television, newspaper and any media which delivers information to the surrounding people. Technology is a technique to support the sectors implemented in the area. It is developed to improve livelihoods.

Concerning continuous periods, the sustainable livelihoods concept could frame problems in the perspective of focusing on livelihoods and livelihood indicators. This paper believes in the use of the Sustainable Livelihood Approach (SLA) to improve self-sustainability in the long term through reducing environment hazard. The idea of SLA was introduced by the Brundtland Commission on Environment and Development by linking socioeconomic and ecological considerations in a cohesive, policy-relevant structure. Recently, the SLA has been adopted by many organizations since the early 2000s and become relevant to their implementation. It explores how people meet basic needs and build up assets; and how those assets are used to be the engine for their livelihood strategies.

EXPERIMENTAL / RESEARCH METHODOLOGY

This paper has the aim to describe the livelihoods of the Sawangan households as they cope with and manage the fluctuating volcanic disaster threat of Mt. Slamet, Indonesia. I identify the current agricultural practices responsible for promoting sustainable rural livelihoods and explore how the rural household's practices

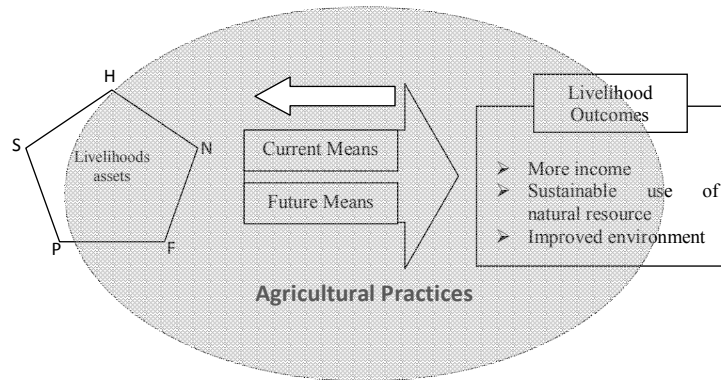
impact upon specific household's livelihood assets and outcomes. Five key elements of sustainable livelihoods were defined by Scoones (1998); they are (1) creation of working days; (2) poverty reduction; (3) wellbeing and capabilities; (4) vulnerability; and (5) resilience and natural resource base sustainability. However, the SLA does not have a formal research methodology.

In this study, a specific conceptual framework for agricultural practices and sustainable rural livelihoods was designed for Sawangan village, since agriculture is the only practice available to the community to support their livelihoods. The focus is on livelihood assets, livelihoods strategies, livelihood outcomes. Livelihood assets and outcomes are affected by agricultural practices; livelihood strategies is the process variable as the community pursues outcomes that might have the influence of agricultural practices. Livelihood strategies is a formula based on the choices of the rural residents which affects their own concepts, information structures and capital. This study will instead use vulnerability as one of the considerations for the transformation process based on the location of the research in a disaster prone, Mt. Slamet - Sawangan village location- and the seasonal impact upon their agricultural practices in order to fulfil their daily needs.

Through this study, I describe the livelihood assets with their diverse livelihood strategies to achieve improvement to livelihoods as the objective (Figure 1). The conceptual framework emphasizes: (1) through livelihood outcomes as their achievement outcomes, the analysis of vulnerability of residents in a rural location that has natural shocks from a disaster prone permanent settlement that plays a role as the key element. Moreover, the seasonal impact on the agricultural practices also plays a role as the key element in the vulnerability; (2) indicators for measuring livelihood assets in the rural community; (3) livelihood strategies to achieve outcomes with adjustment for the structures of agricultural land use, employment, production, policies, techniques and cultures. Specifically, the natural resources are employed mainly in the disaster prone area near Mt. Slamet.

The researcher uses qualitative research methodology to explain the living conditions, environment and socio-economic status. The scope of study is of livelihoods concept in an economic perspective. The unit of analysis for this study is household based for the purpose of association to the research questions (Tashakkori & Teddlie, 2003a, p. 713). To determine the key informants, as the unit of analysis for this study, they were chosen by particular settings and were persons who could be considered valuable informants based on the research questions (Maxwell, 1997). The key informants were divided into two groups; being local stakeholders (head of village and sub-village) and household groups. This study used indepth interviews concerning the topic of the study in the Sawangan village (Neuman, 2003).

Figure 1: Conceptual framework of livelihoods through agricultural practices



Source: Tang, Q., Bennett, S. J., Xu, Y., Li, Y. (2013), developed by author based on research application

This study does not specify an exact number of key informants, however, to decide the number of the sample size with qualitative method involves saturation of information (Glasser & Strauss, 1967; Strauss & Corbin, 1998). Krueger & Casey (2000) explain that when a researcher has already achieved levels of information, data or ideas and does not get further new information, then this is described as saturation. In this paper, the researcher involved saturation for the collection of the data and had interviewed the No.1 head of Sawangan village; 5 heads of sub-villages; 1 local expert concerning volcanic disasters, who lived in the Sawangan village; and 19 households. The collection of data was carried out from April 17 to May 18, 2015.

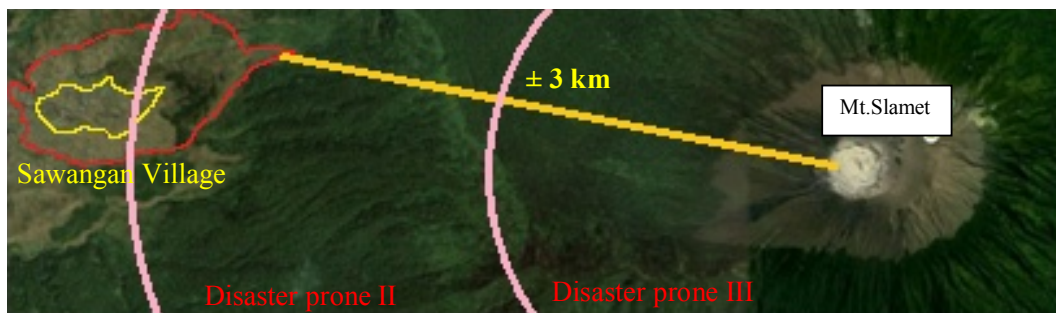
The selection of key informants has criterias and methods for selection in each group. The first group is the local stakeholders which consists of head of village and sub-village heads. The head of village was known as *Kepala Desa* and the head of the sub-village was known as *Ketua RT* or *Ketua Rukun Tangga*. The *Kepala desa* is the leader of Sawangan village and is the person who had the power to communicate with the higher structures in local government. Moreover, he had the power to make decisions and manage the village in order to meet with the development for the villagers. *Ketua RT* was the head of a smaller area in Sawangan village. The criteria of this group is the one appointed as the leader of the village by the government, appointed as *Ketua RT* and the community who settled based on geographical parceling. The second 'group' is a local expert on volcanic disaster management who lived in Sawangan village. In this group there is only one person as the key informant who delivers information based on experience. The researcher did not carry out an indepth interview with this key informant, but pursued him in his role as a volunteer for one of the NGOs. The third group is the households

group, which consists of farmers, workers in agriculture, agriculture middleman and service group for transporting the agriculture products. The criteria of this group is the households who had permanent shelter located in Sawangan village.

Study of Area

Sawangan village consists of approximately 650 households located 3km away from other villages in Tegal Regency. However, this study covers specifically the cluster area of RW 4 (*Rukun Warga*) of Sawangan village, it is the nearest cluster area to Mt. Slamet (Figure 2). Sawangan village is on the border between Tegal and Brebes Regency, being the highest and nearest village to the top of Mt. Slamet. Since Sawangan village is famous for its fertile soil, the population are 100% involved in agriculture and its support occupations to make their living.

Figure 2: Map location of Sawangan village to Mt. Slamet



Source: Google maps (2015), developed by author

In early 2014, Sawangan village, become the focal point for local government in Tegal district, because of the fluctuating condition of the seismic activities on Mt. Slamet. To know the status and exact condition of Mt. Slamet, it was necessary to monitor the activities from Sawangan village. Since Sawangan is located on the border of two districts, Tegal and Brebes, it has raised challenges for the communities of Sawangan village. The only evacuation road from Sawangan village to the nearest meeting point has to pass through a road belonging to Brebes district. Moreover, this road is in bad condition for use by cars or trucks in the event of a mass evacuation or even to deliver their harvested products to the wholesaler at the nearest market in town. The geographical condition has become a challenge to the Sawangan society in supporting their means of living.

The structure of the land has made them support their lives through agriculture. Since the 1900s, Sawangan villagers have improved their agriculture and started

to plant crops from corn to potato, to cabbage and leek. Through this experience, agriculture has become the major livelihood support for the rural communities. Others work in a chain of support for agriculture in Sawangan village that has developed from employment as a laborer to distribution service and wholesaler.

RESULTS

This paper uses an indepth interview methodology for 26 households which are divided into two groups which are, local stakeholder (Table 1) and households (Table 2). The organizational structure in Sawangan village is lead by the head of village, known as *Pak RW (Rukun Warga)* village 4 (Figure 3), and also acts as the head of *Dukuh*. *Dukuh* is a group of several villages that are clustered around one place. However, in regard to this paper, he was speaking as head of village or *Pak RW* of Sawangan village. Decision making was made by *Pak RW* but based on the mutual and collective agreement of *Pak RT 1* to *Pak RT 10*. However, there were specific, routine meetings between *Pak RW* and *Pak RT* as the policy maker. The process of delegation was explained by *Pak RW* as “I usually receive information from the local government, in this case, *Bumijawa* sub-district, and then I transfer this to the villagers and *Pak RT* through *jamiahan* which is held weekly”. Sawangan village, focusing on *RW 4*, does not carry out specific meetings but they deliver information to the villagers through *Jamiahan*, a moslem event of praying and reading the Qur’an together. All of the sub-village heads, *Pak RT*, were leaders for some years, however, they were not exactly sure of the responsibility of the leadership of their cluster of villages, only the village head or *Pak RW* could answer regarding the responsibility of this work, which was transferring information from the local government to the villagers and helping to manage the development of infrastructure. Recently, Sawangan village in *RW 4* built a mosque to provide all the villagers with a place for prayer.

Figure 3: Organizational structure of RW (Rukun Warga) 4

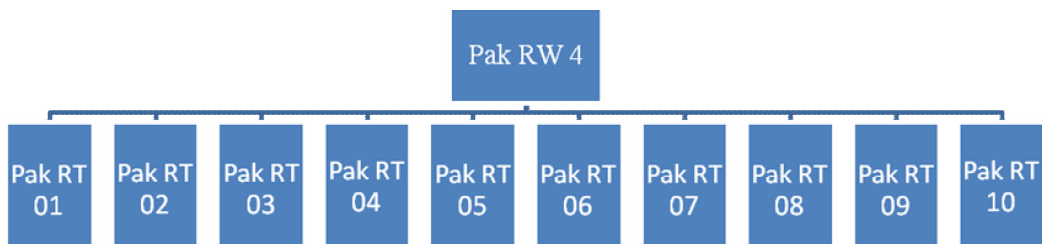


Table 1
Respondent's socio-demography for group head of the village and the sub-village

<i>Position</i>	<i>Length of lead village and sub-village</i>	<i>Number of HH in the village/sub-village</i>	<i>Human development through training</i>
Head of village	5 years	650	Never
Head of sub-village 5	2 years	50	Never
Head of sub-village 4	9 years	55	Never
Head of sub-village 10	17 years	70	Never
Head of sub-village 9	8 years	55	Never
Head of sub-village 6	1 year	59	Never

Table 2
Respondent's socio-demography for households group

<i>Respondent's number</i>	<i>Age</i>	<i>Gender</i>	<i>RT</i>	<i>Occupation</i>
1	41	Male	4	Farmer
2	39	Female	4	Farmer
3	51	Female	4	Worker
4	68	Male	10	Farmer and raising cattle
5	32	Female	3	Trader
6	40	Male	8	Farmer
7	43	Female	2	Worker
8	43	Female	1	Farmer
9	24	Male	5	Farmer
10	30	Male	9	Distribution service
11	47	female	10	Farmer
12	50	Male	9	Farmer
13	38	Male	2	Trader
14	40	Male	3	Trader
15	24	Male	3	Trader
16	37	Female	3	Trader
17	44	Male	5	Trader
18	43	Male	4	Farmer
19	40	Male	10	Farmer

Sawangan village, specifically in RW 4, has one primary school; one junior high school; one *madrasah* or Islamic school for children and teenagers; one midwife's office; eleven *mushola* or prayer rooms; and one big mosque which is still in the process of completion. The area does not have a health center, but the nearest health center is located in RW 1 or only around 500 meters from RW 4. Due to the condition of the road inside Sawangan village, being unsuitable for motorcycles, cars and trucks, then distance travel becomes a problem for the villagers. It is one of the reasons why Sawangan is a semi-isolated village in Tegal regency. This study has the aim to describe the livelihoods of the Sawangan households as they cope with and manage the fluctuating volcanic disaster management of Mt. Slamet. The theme of the results are divided into three parts, which are Livelihoods outcome; Livelihoods assets; Current and future means of livelihoods.

Livelihoods Outcome

Improving the rural community's income and wellbeing is one of the important outcomes covering the basic needs of the Sawangan villagers in the semi-isolated area of Tegal district. To live and to fulfil their needs, Sawangan villagers practice agriculture as the quality of the land is a good natural resource. Their agricultural practices started long ago, the important element that needs to be maintained is the sustainable use of the land and the environment. Sustainable use of natural resources and an improved environment are the important elements of livelihoods outcome. However, the agricultural practices in Sawangan village have become contrary to the expected outcome concerning sustainable practical use of natural resources and the environment.

The selection of the potato as the agriculture product of Sawangan resulted from the experiences and changes, over time, of local agriculture practice. In the early 1980s, the villagers of Sawangan planted corn as the crop to support their living. However, corn community took 4 months from planting to harvesting and had a low selling price, the wife of the village head: "...*In the early 1980s, villagers planted corn but it's took too long to the harvest. Nowadays, when villagers plant corn, it means that they are poor villagers...*". The wife of the village head informed us of the above information based on her parents' history of planting corn as the agricultural practice in Sawangan village. When the head of village introduced potato farming, all of the villagers changed from corn plantation to potato farming. The main reason for the change to potatoes was the shortest time from planting to harvesting when compared to corn. Moreover, the sale price for potatoes was more stable and higher than for corn. Based on these reasons, most of the villagers changed to and continue to plant potatoes, up to the present. However, some of the villagers still grow corn, but only for their own daily consumption.

Growing potatoes is a challenge for the villagers because they have to develop tuber growth with all the essential nutrients being supplied at optimal rates. Less nutrients, because of less use of fertilizer, could bring about a limitation of canopy growth rates, however the excessive use of fertilizer could cause an imbalance of nutrient and bring about a the delay or slow down tuber growth rates. The use of fertilizer and other chemicals for pest management are based on the information that they receive from the seller. Moreover, the only training or information provided to the villagers concerning agriculture was given by the companies who sell chemical fertilizer and pest management products. Almost all of the villagers and local stakeholders provided this same information. One of the leaders, of sub-village or RT, explained the weaknesses regarding agriculture development in Sawangan village. There was no agricultural training and skill improvement available to solve the problems of pest management, only chemical methods were used to protect the potato plantation. The excessive use of chemicals caused several problems regarding soil quality and impacted on the sustainable livelihoods of agricultural practices.

Livelihood outcomes to achieve sustainable livelihoods, based on this study, propose more income, sustainable use of the natural resources, and improved environment quality of the soil in agricultural practices. The main focus of Sawangan village is to improve their livelihoods at a sustainable level. Based on this focus, the vulnerability context, livelihoods assets, current and future means of livelihoods are important to this study.

Livelihoods Assets

There is a great deal of literature that describes livelihood assets, concerning sustainability in the context of environment, on a national and global scale (Hilson & Murck, 2000). In regard to mining, several studies suggested that the impacts of mining were not positively beneficial to macroeconomic trends (Fessehaie, 2012).

Livelihood assets, as the resource base in different types of capital, could be described as the ability to run sustainable applications (Sconnes, 1998). Human capital accounts for skills, knowledge, labor and physical capability in the pursuit of different livelihood strategies. It could be explained through the household members active labor, education, knowledge and skills being applied based on their livelihood strategies. Human capital, in this study, focuses on the dependency rate of a household relating to its number of active laborers compared to non-active labor. It also measured the education level, knowledge and skills which could increase the capacity of households in having opportunities to develop their livelihood conditions and aid their quest for livelihood strategies.

All of the households had members who were not working and were still of school age. However, two farm worker households had children aged 18 and 19

years old, who did not work or continue their education. The children preferred to stay at home and not help their parents on the farm. One of the respondent has one 18 year old son, he explained that he and his wife work on the farm while their son stays at home and does nothing. This was also the case of a female farmer, her 19 year old son, prefers to stay at home rather than help his mother in the fields.

Sawangan village only has one primary school and one junior high school. Most of the children only receive primary and junior high school education. If the children wish to continue their high school degree, they have to move to the down town area. The nearest highschool is in the Bumijawa sub-district, 17 km from Sawangan village and the connecting road is of poor quality. The access conditions are really poor with hills and dips along a rocky road. It is dangerous to use because of slippery conditions during the rainy season (Figure 4). However, there are only a few households that can afford to send their children to continue their schooling in the high school. The average income is IDR 3,200,000 (equal to USD 267) for three months. The calculation is based on three months due to the harvesting period of the potato being 100 days.

Figure 4: The main road as the access of Sawangan village to downtown



The development of knowledge and skills was non-existent, every household and head of sub-village explained that there was no training or socialization concerning agriculture from the local government nor other experts. Several socialization events were arranged by those marketing chemical fertilizer who would also offer their products for sale. Since there were always problems with potato plants, many chemical fertilizer companies would come to Sawangan village to offer their products. But, that does not work efficiently for their potato plants. One respondent, had just changed his crop from potato to leek plantation. His potato plantation failed and he changed into leeks because he do not have enough money to buy more seed potatoes. He did not receive any information on how to handle or take care to the potato plants when they got viruses that interfered with their growth. Based on these facts and information, there was low human capital in the Sawangan village. There needs to be an increase and improvement in their skills and knowledge concerning agricultural practices in potato plantation.

Social capital is the social resource upon which people draw for the pursuit of their livelihood outcomes. It is developed through networks and connections which agree to or accept the rules, norms and sanctions; it is a relationship of trust, reciprocity and exchanges. Social capital is important because it has a direct impact to other types of capital and reduces the 'free rider' problems in public goods by improving the management of common resources (natural capital). In this paper, social capital for the households refers to kin networks and group membership. To determine the interaction, participation and support of social capital in supporting livelihoods strategies, I examined the value of kin networking, society group, village group and working group.

In the Sawangan village, especially RW 04, each of the households has a relationship with relatives. During the time the researcher collected data in the field, the head of the village and the head of the sub-village; RT 9, clearly stated that every household was related. This was because they never go outside Sawangan village and always married with other relatives. It is described that kin networking is strong. However, there are no working group divisions in the Sawangan village. All the people gather together, based on clustering in the area or RT, to carry out *jamiah* or pray together. Through *jamiah*, the society is able to communicate with each other. Since the villagers in Sawangan are relatives, the level of kin networking is high which could bring the village mechanism to work in kinship. Moreover, the leaders of sub-village or *pak RT* also have kinship to the head of village or *pak RW*.

Natural capital is the natural resource stock and environmental services from which they derive all or part of their livelihoods within their resource-based activities. In this study, the researcher describes this as the access to land, water and fertilizer. Sawangan village is surrounded by a pine forest that belongs to *Perhutani*, the government's ministry of forestry. Some of the villagers rent land

from Perhutani for agriculture purposes. There are some illegal actions practiced by some villagers who cut down the pine and expand their agriculture land without any permit from *Perhutani*. As one of the experts for volcanic disaster management from Red Cross said:

“...Most of the villagers cut down the pine and expand their land from Perhutani. Since Perhutani never check here, it’s fine. But sometimes, we inform them about this when Perhutani do come here. However, it’s almost never that Perhutani come here, probably because the access by road is difficult and hard to pass.”

Concerning access to water, Sawangan village does not have any difficulties. During the rainy season, they are rainfed. But, during the summer or hot season, they do not take part in agriculture practice for their livings. This is because the soil texture has changed to become dry and sandy. However, when the rain season comes, all the villagers start to plant potatoes again. During a year, the villagers could plant potatoes 3 to 4 times using rainfed watering. Since Sawangan is in a semi-isolated area of Tegal district, fertilizer is also a barrier for the villagers. It is brought in from the nearest city by the traders who already transport and sell potatoes to the wholesaler. The traders, who own trucks, bring back fertilizer after taking the potatoes to the wholesaler and then sell the fertilizer to the villagers in Sawangan. The villagers could not bring in fertilizer by themselves because of the difficulties of road access and also their lack of ownership of a car or truck in order to carry the heavy fertilizer from down town. Their natural capital is limited based on access to land, water and fertilizer. However, it could be supported seasonally with regard to water access and by society networking for access to fertilizer.

Physical capital comprises the basic infrastructure and producer goods that support livelihoods. It consists of physical environment changes to help people meet their basic needs and improve their life productivity. The components of physical capital are affordable in their quest for livelihoods; they are access to transportation, road and vehicle availability to distribute their agriculture products to consumers. The only road access to Sawangan village has many barriers, having poor access and bad conditions that have to be passed (Figure 3). Since 2000, Tegal district has planned to build a bridge and road to access Sawangan village from Bumijawa sub-district, the nearest down town area. This was to help ease the evacuation process during a volcanic disaster emanating from Mt. Slamet. However, there were lots of administration problems met and this caused the postponement of road and bridge construction. One of the householders, described the history of the problem of the postponement of road and bridge construction from Tegal district:

“...All the villagers had already helped the government to build the road and

bridge by hacking and paving the way for the alternative road to us. We started to help the government in 2000 up until 2012, every Saturday and Sunday we bring our hoe and work to pave the road. We have already finished around 3 km, but the funding from government, never come.”

Physical capital has become a problem, challenging and providing a barrier for Sawangan villagers to improve their livelihoods. The road, as the main access, is in a bad condition and impacts on the difficulties of distribution for agriculture products. Two household members stated that their problem, as traders, is that the bad condition of the road is an important component in the sending of the potatoes to the wholesaler. It means, that physical capital in Sawangan village has a low measurement and has little support from the government to develop it.

Financial capital is used by people to strengthen their life by contributing to their consumption and production. In this paper, financial capital consists of two main sources, available stocks and regular inflow of money. Available stocks are capital which does not have liabilities attached and does not entail reliance on others. Examples of this are cash, bank deposits or liquid assets. Among 19 households, all of them stated they had no savings or liquid assets. Moreover, there were no bank or financial institutions available around Sawangan village. It is 12 km from Sawangan village to the nearest financial institution that belongs to the government. There was no cooperative to support Sawangan villagers in their financial problems.

Regular inflows of money consist of income, or transfers from the state and remittances. In this paper, the indicator of variables for regular inflows of money are income and government fund remittances that are provided as poverty reduction support for Sawangan villagers. The income of the farmers has an average of IDR 3,200,000 for each three month period or IDR 1,067,000 per month. The regional income rate for Tegal district is IDR 1,155,000 (Central Java Statistics Bureau, 2015). It means that the average income is lower than the regional income rate of Tegal district. Based on this measurement, it can be related to the government policies concerning poverty reduction. The government provides BLT (*Bantuan Langsung Tunai*) and other poverty reduction programs to support Tegal villagers. However, based on the information from the heads of sub-villages, these were regular and prevalent regarding the BLT and other poverty reduction programs. There was some support funding to repair or build houses in the villages and also BLT, but it only lasted for a few years and did not cover all villagers who had the same conditions as the recipients. Based on the components of financial capital, Sawangan village has low support and assets. It makes the villagers weak in developing their agricultural practice.

Based on the result, the livelihoods assets appear to be of low level (Table 3). The improvement of all livelihoods assets have to be spread all over, however it

should start with the strongest asset of Sawangan village that is its kin networking and society group. Since most of the villagers have kinship, the society group has become stronger and it could be developed in the other livelihoods assets, human capital, natural capital, physical capital and financial capital. Moreover, the future plan to establish a cooperative could start to develop their financial capital in order to support their livelihoods.

Table 3
The Livelihoods assets measurements for Sawangan village

No	Livelihoods assets	High	Low
1.	Human Capital		
1.1.	Dependency Rate	√	
1.2.	Education level, knowledge and skills		√
2	Social Capital		
2.1.	Valuation of the kin networking	√	
2.2.	Society group	√	
2.3.	Village group		√
2.4.	Working group		√
3.	Natural capital		
3.1.	Access of land, water and fertilizer		√
4.	Physical capital		
4.1.	Access of transportation, the road and vehicles availability		√
5.	Financial capital		
5.1.	Available stocks		√
5.2.	Regular inflows of money		√

Current and Future Means Of Livelihoods

The head of the village, *Pak RW*, could manage the rural villagers within a strong society group and make moves to certain programs by self-help. However, in developing their agricultural practices, most of the Sawangan villagers act individually. There were no discussions or other efforts to improve their agricultural practices. Each of the working groups, including farmers, farm workers, traders, services for distributing potatoes from the farm land to the owner's house, had no routine discussions regarding how to improve their agriculture practices. Moreover, there were also no routine discussions between heads of sub-villages

to support their villagers in improving agricultural practices in Sawangan village.

Government intervention and programs could be judged as zero because there was no support from government to the villagers. The structure of transforming the support of livelihood strategies was mostly through culture, in the form of religious support. Most of the gathering and disseminating of information took place through the religious routine events known as *Jamiah*. This is held twice each week. Through *jamiah* and some other big islamic events, the head of village, *pak RW*, could disseminate government information and planning to develop the Sawangan village. However, there were no communications from the villagers to *Pak RW*. It is not an efficient communication system and does not include a 'bottom-up' process, being mostly 'top-down' from the government.

The future means of livelihoods could appear to be based on the result of questions concerning all the respondents' planning and desires for Sawangan village. When the researcher asked questions concerning the planning, by heads of sub-villages, for the future of Sawangan village, they could not answer because they did not have any such plan. Therefore, the heads of sub-village could explain only the expected means of livelihoods in the future, mostly in the form of physical capital for infrastructure facilities. The establishment of a proper road is the main future means of livelihoods. This also appears in the answers of household respondents. Better infrastructure, by having their own roads belonging to Tegal district, is the future means of livelihoods for the households in Sawangan village.

The lack of government intervention or programs was displayed during the indepth interview process. It means that the development of Sawangan village was down to self-help and this impacted as slow development for the villagers and the village itself. The villagers were strengthened by the culture aspect, mostly in religion aspects. They also provide their time mostly for religious events and used these events as a time to disseminate information. Since there was no discussion during *jamiah*, it meant that the process of leadership was 'top-down' with villagers only carrying out tasks based on the orders of the head of village.

DISCUSSION AND CONCLUSION

The livelihood outcomes were set based on their livelihood achievements indicated during indepth interview. All of the informants stated that greater income is the important goal that they would like to achieve. Moreover, sustainability of the land and environment are the livelihood outcomes to maintain the quality of the agricultural land and soil. Maintaining the soil could propose sustainable development of agricultural practices.

Based on the assessment of the livelihoods assets, the measurements indicated a low scale. Human capital, social capital, natural capital, physical capital and

financial capital is described with less support for environment and tools. It indicates that current livelihood means are semi-traditional in terms of agricultural practices. Moreover, the use of chemical fertilizer impacts on the quality of the soil. A major cause of failure for the potato harvest is caused by viruses in the soil. The viruses assault the potato plants overnight and in a certain area. When the viruses attack the potato plant, the leaves appear burned and do not grow anymore. If the viruses attack the potato plants under 50 days, they cannot be sold to the trader meaning the owner has to throw them away or use the small potatoes as seed. However, if the plants were more than 50 days, they could be sold at a lower price, around IDR 2,000 to IDR 2,300 per kg.

The other problem affecting the means of livelihoods appears to be infrastructure development, which means the main access road. The government planned for a road and bridge in 2000, which was not carried out even though all the plans and instructions appeared during that year. However, there was no real program to support and help Sawangan village in making a main access road. Based on the current means of livelihoods, it appears that the future means of livelihoods are their hopes for the next plan, but the heads of sub-villages did not mention clearly what was their plan, during indepth interview.

Sawangan village, as a semi-isolated area in Bumijawa sub-district, Tegal district, Central Java province, does not have enough livelihoods assets to support the current means of livelihoods. However, it would appear that the future means of livelihoods are part of the plan for Sawangan's agenda. Government support is needed to provide structural transformation as part of the livelihoods strategy to achieve the livelihoods outcome.

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