

Profiles of Smallholder Dairy Farmers Groups after Volcanic Eruption Damage in Indonesia: A Case Study of Sleman Regency, Daerah Istimewa Yogyakarta

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Abstract

Merapi Mountain eruption has damaged farming activities including livestock farming, mostly caused by hot cloud of smoky ashes. This paper tries to describe the profiles of smallholder dairy farmer groups in Sleman Regency, Daerah Istimewa Yogyakarta Province (here after DIY Province) after the eruption. Field survey and focus group discussion were conducted to find the fact and the real situation of the farmers groups. Dairy farmers in group has colony housing for their cows together in a large dairy shed with individual responsibility on feeding and maintaining their cattle. Groups can purchase feed (concentrates) from cooperatives and sell to its members. Milk production from cows was sold to cooperative depend on its criteria and price. In order to recover after disaster, the three dairy farmers groups join GAPOKTAN to get assistance and funding from government for recovery after the disaster. GAPOKTAN help the groups in the population of their cattle, empowerment of the group, and develop their group's organization. The assessment of dairy farmers group performance is needed to improve further the linkages of other institutions to support and drive group's farming activity in terms of improving value chain of their milk production.

1. Introduction

Dairy farming in Indonesia is dominated by small-scale farmers with cattle ownership of less than four (80%). Only 17% of them have four to seven cows and more than seven cows ownership contributed only 3%. It is shown that about 64% of national milk production is contributed by the smallholder dairy farming, and about 28% and 8% is produced by the medium dairy farming enterprise and large scale dairy company respectively (Erwidodo, 1998 and Swastika *et al.*, 2005).

Government policy aims to increase self-sufficiency in milk production from the current 30% to 50% by 2015. The government policy is primarily directed to farmers by increasing production levels per cow and quality of raw milk, and minimum farm gate milk price at least 80% of the world market price (Nugroho, 2011).

In 2010, there were almost 500,000 dairy cows in Indonesia producing about 930,000 tons of milk. About 95% of all dairy cows are located in the island of Java in the provinces of East Java, Central Java and West Java. These three provinces produce 97% of national milk production with East Java being the largest milk producer accounting for 57% (DGLS, 2011).

Productivity of dairy cow in Indonesia is quite low at an average of 3,069 liters per cow per annum (less than 10 liters of milk per cow per day). Java Island has high population density and it is not potential area to increase livestock numbers. The problems of feeding livestock population have been acute. In this case, the increasing productivity becomes more important rather than increasing the population. Following West Java Province, DIY Province is second most productive at 3.336 liters per annum. About 85 - 90% of 6,000 - 7,000 cows in DIY Province were in Merapi valley area and 4,100 heads perished during Merapi eruption in 2010. Immediate actions would have a greater impact on the revitalization and survival of affected farms. Farming has been the main livelihood and income source for households around Merapi Valley. Proper mechanisms and strategies for farm rehabilitation and reconstruction require urgent action by government.

Government recovery program required farmers to join GAPOKTAN, the union of smallholder dairy farmers groups (GAPOKTAN; Gabungan Kelompok Tani). Considering that the coordination and relationship with cooperative is quite huge due to many farmers/groups involvement, forming one group union is the right way for farmers to achieve goals and coordinate with each other in solving problems in their farming activities. Because many farmers group belong to one union, they are able to share information, coordinate and help each other more effectively.

In this context, this study tries to explore the situation of smallholder dairy farmers group after the volcanic eruption. The specific objectives of this study are (i) to describe the characteristics of the group in dairying activity and (ii) to discuss the role of GAPOKTAN (the union of smallholder dairy farmers group) in assisting smallholder dairy farmers group in the study area.

The paper is organized as follows. The first section of the paper reviews general background of the study. Section 2 explains the dairy farming in Sleman Regency. The third and fourth section discusses the characteristics of smallholder dairy farmers groups of GAPOKTAN and role of GAPOKTAN to dairy farmers group, respectively. The conclusion part is in the last section.

2. Dairy farming in Sleman Regency

Sleman Regency is one of five regencies in DIY Province (Figure 1). It is located between 7° 32' - 7° 50' Latitude and 110° 18' - 110° 35' Longitude. The capital of Sleman Regency is Beran, which is located on the southwest side of the Merapi Mountain. Sleman Regency is the most important area for dairy farming in the province. Fourteen of 17 districts in Sleman Regency are dairy-farming (small-scale) area and one of them is Cangkringan District. Cangkringan District has 1,246 dairy cows while there are 3,753 dairy cattle in Sleman Regency and 4,069 dairy cattle in whole DIY Province. Thus Cangkringan contributed 33.2% of the dairy cattle population of Sleman Regency and 30.42% for the DIY. Population of Cangkringan district are 264,570 people with 9,299 livestock farmers (403 people of them are dairy farmers) (DIY Provincial Livestock Office, 2009).

The population of dairy cows in 2000 was 4,069 with a total production of milk produced of 6,888,049 kg. Of these, 3,744 cows (92.01%) were located in the district of Merapi valley area and produces 92.02% of total milk production of cows in DIY Province (DIY Provincial Livestock Office, 2009).

Most of farmers' household economy in rural area relies on dairying in small-scale farming. Beside employment opportunities, smallholder dairying has become good income-earning occupations which were able to make enough income and savings to give their children a college education. In certain circumstances, the amount of money needed is large, such as for school children fee, and farmers sell dairy cows as a calf, rejected heifer or bull. Normally, farmers sell their cattle as calf, or culled female cow or young male.

There are three dairy cooperatives in Sleman Regency. They are Warga Mulya, UPP Kaliurang, and Saroni Makmur. Average ownership of dairy cattle of cooperative's member ranges from three to five with milk production of 9-15 liters/cow/ day. Saroni Makmur Cooperative is located near Merapi Mountain. Merapi eruption rendered cooperative facilities severely damaged and most cattle died. Mount Merapi disaster did not only happen in 5-10 km radius, but also occurred as far as 20 km along glide hot lava flow and through area of bursts of heat clouds.



Figure 1. Map of DIY Province.

Table 1. Dairying performance and impact of Merapi disaster on the dairy cooperative in Sleman Regency

Cooperative	Number of cattle before eruption (head)		Eruption impact (number of cow death) (head)			Number of cow after eruption (head)	Losses (IDR 000)			
	Mother cow (Lactation / dry)	Other (calf, heifer, bull)	Death	Burning	Sold		Cow death	Milk	Sold	Total
Warga Mulya	800	400	22	-	100	1,078	209,000	505,692	700,000	1,414,692
Sarono Makmur	750	750	1,300	-	100	100	9,945,000	242,550	700,000	10,887,550
UPP Kaliurang	1,543	1,741	1,059	24	50	2,175	7,960,000	363,384	350,000	8,673,384
Total	3,093	2,891	2,381	24	250	3,353	18,114,000	1,111,626	1,750,000	20,975,626

Note: Lactating cow, a cow which is producing milk.

Dry cow, a cow usually in the latest part of pregnancy, whose lactation has been terminated and who is being prepared for the next lactation. To dry a cow is to stop her milking.

Heifer, a young female bovine from the first heat to the time she gives a first calf.

Calf, a young male or female cow before get the first heat

Bull, a male cow after got the first heat.

Source: Ilham and Priyanti, 2011.

The performances and impacts of disasters on the dairy cooperative are presented in Table 1. The population of cattle decline 96.74% due to either death or the lack of incentive for farmers to maintain livestock. This is a critical issue that needs to be addressed since the area is a center of milk production in DIY Province. Dairy farming in this area is important subsector in rural labor absorption. The same indicator was also visible from the losses incurred from the disaster, not only of the loss of population,

but also the loss of profit from selling milk.

Both hot clouds and lava of volcanic material led to the death and severe burn of livestock, burning farmer's cage and all equipment. Livestock mortality was caused not only by lava and hot clouds, but also by ash contamination on the feed and inhaling volcanic ash through the respiratory system. The death of mother cows caused loss of milk production and consequently decreases the average milk production of cooperatives in the region. Burns on cows including the udder caused sickness. The eruption also caused the contamination of animal feed resulting in decreased body weight of livestock. These result in reduced milk production.

After Merapi eruption, dairy farmers groups in Sleman Regency, particularly around Merapi Valley area tried to join in one organization, known as GAPOKTAN. Dairy farmers group in this area needed to recov their lives and their dairy farming. So far, dairy farmers group have relationship only with cooperative.

3. Characteristics of Smallholder Dairy Farmers Groups of GAPOKTAN

Most individual (smallholder) farmers are members of a local dairy center/group known as dairy farmers' groups. The smallholder dairy farmers' groups in DIY Province were established with multiple objectives: to make efficient delivery of dairy development extension: and to assist dairy farmer in enhancing their income and attaining dairy development goal. Smallholder dairy farmers place more emphasis on development of institutions such as dairy farmers' groups, cooperatives and associations as a mechanism for enhancing smallholders' market access and their income.

As mentioned above, farmer group is important institution for dairy farmers, particularly smallholder farmers. Joining dairy farmers groups open the market access to individual dairy farmer and share farming knowledge, and technology. Beside that, joining farmer groups is also done to keep harmony in the culture of mutual cooperation, especially for Merapi disaster victims, and social support for starting their business (farming) again.

Dairy farmers groups near Merapi valley were affected by volcanic matter of huge eruption. Government recovery program required farmers join GAPOKTAN. After Merapi eruption in 2010, the dairy farmers groups join GAPOKTAN, namely Merapi Mandiri (by word meaning that hope farmer around Merapi Valley can survive by their own resources), established to help dairy farmers and recover their farming through their livelihood. There are three groups which involve the GAPOKTAN. All dairy farmers groups in the GAPOKTAN are Merapi victims and these are Sedyo Mulyo group, Ngudi Makmur group, and Sidodadi group. The characteristic of these three groups are described in Table 2.

Table 2. Characteristics of dairy farmers group of the study.

Characteristic	Dairy farmers groups		
	Sedyo Mulyo	Ngudi Makmur	Sidodadi
Established (year)	1992	1996	1985
Dairy farmers (people)	77	32	54
Total dairy cattle (head)	312	90	226
Total milk production (liter)	1,000	1,100	500
Membership fee	5,000	1,000	2,000

Source: Field Survey, 2012.

The year group samples on this study were established varies from 1985 (Sidodadi) to 1996 (Ngudi Makmur). Likewise, the total members range from the largest one of Sedyo Mulyo which has 77 members to small one of Ngudi Makmur which have just 32 members. Moreover, it is noticed that Sedyo Mulyo is large scale group with lower milk production than that of smallest group (Ngudi Makmur). On the other hand, Sidodadi had smallest milk production, whereas Ngudi Makmur is the highest one (Table 2). Those farmer groups are like a common dairy farmers group in Indonesia. They have almost same function and group management. Sedyo Mulyo group can determine the selling price to consumers directly, but does not have a role in determining the prices to cooperatives. Dairy farmers groups can only propose price of selling milk but final decision is in cooperative's hand. Group has ability to extend their milk distribution but it is not entirely able to do yet due to cooperative agreement. This group joins Warga Mulya Cooperative while Ngudi Makmur group ini Saroni Makmur Cooperative in term of milk marketing and supply of input for farming. Farmers have to join the group because dairy cooperatives only accept milk to distribute from group's deposit. Groups collect milk from member's cattle and sell to cooperative. Cooperative will send the milk to milk processing plant in Yogyakarta area, such as SARI HUSADA Company, to produce sweet condensed milk, milk powder, ultra heat temperate milk and other milk products.

Ngudi Makmur group received aid from local BNPB (The National Disaster Management Agency) in the form of dairy cows. This aid could help the farmers to build their farming and improved their income after they lost almost all their wealth (house and cattle). Until now, the group doesn't have any other relationship to other company for selling the milk produced besides the cooperative.

Another member of the GAPOKTAN is Sidodadi group. This group joins UPP Kaliurang Cooperative. Sidodadi group organizes regular meeting once a month. The meeting agenda consists of social gathering, knowledge sharing and discussion of selling milk problems in the groups. *Arisan* activity and distribution of money (from selling milk) are the way to bind the farmers willing to attend the regular meetings of the group. Within group, members have to pay contribution as much as IDR 2,000. This amount of money consists of IDR 1,000 for group treasury and another IDR 1,000 for saving that will be distributed back to the member in Idul Fitri (end of Ramadhan Celebration). As member of UPP Kaliurang Cooperative, they have to pay IDR 7,000 for membership fee per month.

Related to recovery condition after disaster, GAPOKTAN help the groups to shore up cattle population, empower the group, and develop their group's organization. The board of GAPOKTAN consists of delegates from each farmer group. GAPOKTAN organize groups and distribute government aid to groups.

3.1 Dairying Activity Aspect of the groups

Most of dairying activities is done in group coordination. In order to connect each other, members of groups have colony cage for their cattle. This is also because farmer's individual cage has been broken due to eruption disaster. With colony housing, smallholders house their cows together in a large dairy shed but are still responsible for feeding and maintaining their cattle. By group, these innovations can be realized, because these require a large investment in buildings but they do allow smallholders to own and manage their own stock in a well-constructed durable shed and with the benefits of magnitude of size. Communal forage production, large-scale feed (silage, concentrates) production, using milking machine and rearing of young stock are other benefits of the member in group.

Table 3 presents characteristics of dairying activity of the groups. Sedyo Mulyo group has good experience in implementing the Artificial Insemination (AI). The dairy cows in this group reached the best service per conception (S/C) 1. The level of S/C was good (decrease) because of a good implementation of artificial insemination in the dairy cow. Low S/C can be attained by weaning the calf early (immediately after colostrum period) followed by milk feeding with bucket or nipple so that the cow return to estrus soon after calving. In this group, farmers do not like to practice early weaning, because it needs much labor. Most of farmers prefer to wean the calf after 3 months.

The daily milk production of Sedyo Mulyo farmers is up to 1,000 liters per day. This amount fluctuates depending on the quality of feed and dry phases of dairy cows. The highest production ever achieved is 12 liters per day and a low of 8 liters per day. The average daily production of milk is 10 liters per day.

Milk quality is counted to be fair (specific gravity is 1.023 to 1.026), fat content 3.5%, and solid-non-fat (SNF) 7.6%. Physical characteristics of milk such as color and smell can pass the standard of SNI. Checking milk quality is conducted prior to morning and evening milk deposit every day. Farmers may cheat by debasing milk with sugar, water, urea, peroxide or vegetable oil to increase the quantity. However, the group leader suggests farmers not to add any component in milk to keep the quality.

Milk compositions criteria in Table 3 are based on every group's data. Every group sells their milk to different cooperative which has different standard in quality and price of milk. For instance, Sedyo Mulyo group join Warga Mulyo Cooperative. This cooperative sell the milk to Sari Husada, the biggest milk processing company in the province, which has own standard and complex criteria in receiving milk from farmer/group. Other two groups i.e. Ngudi Makmur and Sidodadi group join Saroni Makmur cooperative and UPP Kaliurang Cooperative, respectively, with their own criteria.

Farmers used forage and concentrates to their cows. They sometime add wheat pollard and by product of tofu industry in the concentrates. Farmers commonly buy concentrates from the group, but many of them can provide it from outside with better quality. On average, the utilization of concentrates reach 21 tons/month (18 tons was purchased from the dairy cooperative and 3 tons from others). Farmers prepare forage from their own plantation or by purchasing.

Cows are kept in the colony houses because they are not able to rebuild the cow houses. Colony houses in Sidodadi group came from local government aid. Total dairy cow in the colony houses are 54 heads. In the colony houses, each farmer has responsibility to maintain their own cattle with on average 2 cows/farmer, including feeding and cleaning. Milking is conducted by a staff from the dairy cooperative using milking machine.

Total milk production from Sidodadi group is relatively low. Before Merapi eruption, this group supplied almost 40% of total milk needed by the cooperative of about 3,700 liter/day but after eruption milk production decreased to less than 30% of cooperative's need. Group has to pass standard of milk quality. The group only uses specific gravity to select accepted milk from farmers. The

Table 3. Dairying aspect of dairy farmers groups

Description	Sedyo Mulyo	Ngudi Makmur	Sidodadi
Model of dairy cow cage	Individual housing	Colony housing	Individual and colony housing
Feed supply	Concentrates from dairy cooperative and farmers Roughages: farmers themselves	Concentrates from dairy cooperative Roughages: farmers themselves	Concentrates from dairy cooperative Roughages: farmers themselves
Concentrates utilization (ton/month)	± 18 (from dairy cooperative) and 3 ton (nondairy cooperative)	± 20 (from dairy cooperative)	± 8 (from dairy cooperative)
Health services	Animal health division of the Agriculture department	Animal health division of the Agriculture department	Animal health division of the Agriculture department
Milk production (liter/day)	± 1000	± 1100	± 500
Milk composition	Specific gravity Morning milk: 1.023 Afternoon milk: 1.022 - 1.023 Milk fat : 3.5 - 3.6% SNF : 7.6% - 7.7%	Fat : 3%, TS: 11.5%	Specific gravity Morning milk: 1.024 Afternoon milk: 1.020

Note: SNF (solid non fat), TS (total solid).

Source: Field Survey, 2012.

level of specific gravity was 1.020 to 1.024.

Cooperative will receive milk with minimum total solid of 11.5% and milk fat of 3%. The highest milk production reached 15 liters / day, but the condition cannot be maintained for a long time. Average daily milk production was 500 liter. This is because of the low quality of feed given. The group needs around 6-8 tons concentrates/day.

Total number of dairy cows in the Sidodadi group was 176 head before Merapi eruption. Farmers who keep more than one cow normally consists of different age. At least they have dry cow to change when lactating cow reach end of production. Concentrates and forage are main feed of member's cattle. Each member has to provide feed by themselves and mostly are purchasing from Saron Makmur Cooperative.

3.2 Economic Aspect of the dairying groups

Important costs of dairying are feed cost, labor (family labor) and veterinary cost (including insemination cost). Sedyo Mulyo Groups can purchase the concentrates from cooperatives and sell it to farmers. Concentrate prices from cooperative are IDR 120,000.00 but group sell it to farmer at IDR 122,000.00 (extra IDR 2,000 is for group's saving). The group also take IDR 25.00 per liter of milk sales for group's operational cost. Each member of the group generally deposits the milk to the group but they are also entitled to sell to other customers.

The sale may be made through the marketing channels and they have remained committed to the cooperative. Each group member has an obligation to pay compulsory savings of IDR 5000.00 per month. Savings can then be taken back if the farmer takes a year or every once shared.

Selling price of milk to the cooperative is IDR 3,000 and the selling price to consumers outside is IDR 4,000. Cooperative sales to reach 1,000 liters per day, while sales came out to 200 liters per month with a selling price of IDR 4,000 per liter. Depositing the milk cooperatives to IPS (milk processing company) every 2 days is as much as 3,500 liters. Cooperatives in addition to deposit into the IPS (i.e. Sari Husada) also make direct sales to consumers. Direct sales to consumers reached 600 liters per day at a price of IDR 4,250 to IDR 4,750 per liter. The group benefited from the sale of cattle feed and milk sales outside the cooperative

Analyzing profitability ratio of each group, Figure 2 shows that Ngudi Makmur had low profit ratio but high production. It can be explained that this group have high operational cost for their farming condition. Farmers of the group have to buy feed with high cost. They have to buy forages due to limited forage plant after eruption. In other cases, they need concentrate in high quality and high price. Groups that has many young female or male (not productive) cows were causing high farming cost. On the other hand, they sell whole milk production to cooperative with low price. Average profitability of Ngudi Makmur group is 39%, while

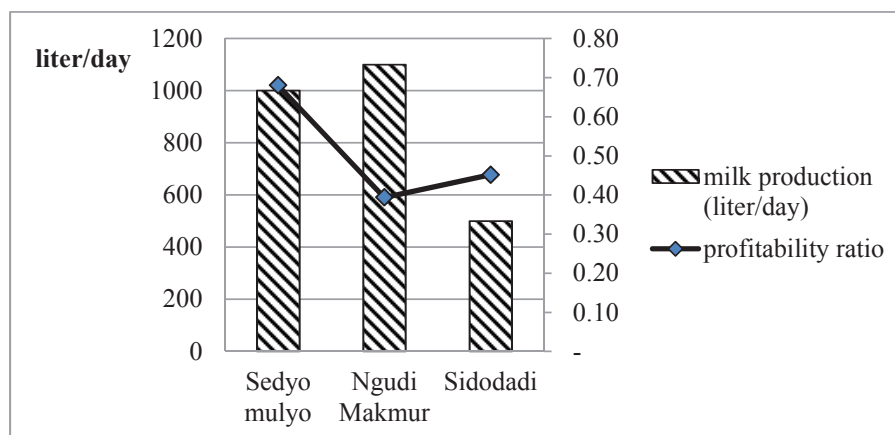


Figure 2. Profitability ratio and milk production of three dairy farmers groups (2012)
Note: Profitability ratio = (Gross Profit / Sales of milk) × 100%

Sedyo Mulyo and Sidodadi group are 68% and 45% respectively. A high profitability ratio indicates that the dairy farming can make a reasonable profit, as long as it keeps the overhead cost in control.

Milking labor in Ngudi Makmur group get salary from cooperative, but farmers also have to pay IDR 15,000.00 per cow milked per month. Artificial insemination is also done by the power of the cooperative at a cost of IDR 40,000 per insemination. The fee applies per March 1, 2012, before insemination cost is IDR 35,000.

As member of cooperative, farmers and group get easy milk marketing and supply of input such as concentrates and farming utensils. According to group's information at the survey day, average concentrates need per month of Ngudi Makmur group is ± 20 tons at a price of IDR 3,000/kg. Payment of concentrates purchasing to cooperative is deducted from total price of milk deposit.

The highest price ever achieved in this animal group is IDR 3,200 per liter, while the lowest price ever received is IDR 3,040 per liter. Quality and the price received by Ngudi Makmur group is quite good. Compared to other groups, farmers received milk price of IDR 2,900 per liter and, in some other cases get more than IDR 3,400. This is expected to increase farmer's motivation to improve milk quality to get high price. Groups can sell milk to other customers at a price from IDR 4,500 to IDR 5,000 per liter, but only in small quantities (100 liters per month) due to the agreement with cooperative. Payment of milk from the cooperative to dairy group is made on 10th of every month, and members will recetre from the group on 15th of every month.

Cooperative will pay half of milk price if the milk in bad condition, such as antibiotic content or high bacteria level. Sarono Makmur cooperative have full power to decide on milk price level. Selling price of milk from Sidodadi group before joining GAPOKTAN was IDR 2,800.00 and, after joining, they can sell at a price of IDR 2,900.00. Every member of this group can provide feed by themselves. They can buy from cooperative directly. Quite different from other two groups, Sidodadi group's member have to pay cash when they are buying feed from cooperative. Consequently, if farmers don't have money, they can borrow from the bank. Insemination cost in this group is IDR 35,000 for each insemination.

Feed procurement is done by the farmers. Farmers can buy concentrates on Sarono Makmur Cooperative. Purchasing of feed in the cooperative is paid in cash and if farmers do not have enough money, they can borrow from commercial bank on behalf of the individual farmer rather than group.

Milk price reached IDR 2,900 per liter and would be paid by cooperative every month or every 45 days. Farmers sell their cattle's milk production only to cooperative. They don't have other marketing channels besides cooperative. Groups' farmers have experience when they get high milk price, that is IDR 4,000 per liter, but it is very rare. Small portion of milk production is given to calf if its mother is dead. Marketing of dairy cattle in the group has been only limited to the dairy cooperative marketing channel.

Milk marketing can be carried out extensively by the groups, but they have economic, social and cultural bond with the dairy cooperative (Ilham and Priyanti, 2011).

4. Role of GAPOKTAN to dairy farmers groups

The union of smallholder farmers group (GAPOKTAN) is an association of several farmer groups who work together to improve the economies of scale and efficiency of their farming enterprise (Permentan 273/Kpts/OT.160/4/2007). GAPOKTAN has been recognized since early 1990s. GAPOKTAN is expected to contribute further to the fulfillment of the functions of agricultural capital, fulfillment of production facilities, marketing of agricultural products, and include providing various information needs of

farmers (Syahyuti, 2007). By 2006, at least 3,000 units have formed GAPOKTAN. In 2007, the target formation of GAPOKTAN was 22,000 units. End target was to have an active 66,000 GAPOKTANs by 2009. This means that all villages in Indonesia will have GAPOKTAN. Different from other agricultural institutions in Indonesia, GAPOKTAN is organized by farmers and can enhance the ability of its members in developing their farming.

This GAPOKTAN have given a new meaning, including new forms and roles. First, GAPOKTAN is regarded as an economic institution for dairy farmers besides farmer groups and /or cooperatives. This intergroup collaboration has a common interest in the development of dairy farming to raise productivity and income.

Second, GAPOKTAN is a social institution (Social Institution) in from of structural and cultural aspect. They build solidarity and partnership in achieving good farming and high productivity.

GAPOKTAN of Merapi Mandiri is quite different to other kind of GAPOKTAN. This is the only GAPOKTAN which involves smallholder dairy farmers group, while the member of other type of GAPOKTAN are farmers who raise beef cattle or plantation. This GAPOKTAN consists of three groups of small dairy farmers groups, those are Sidodadi (Weron), Sedyo Mulyo (Boyong) and Ngudi Makmur (Kaliadem). Each group of cattle is representing from three different cooperatives. Sidodadi group joined from UPP Kaliurang dairy Cooperative, Sedyo Mulyo group from Warga Mulya Cooperative, and Ngudi Makmur from Saroni Makmur cooperative.

GAPOKTAN Merapi Mandiri was established by initiative of groups of dairy farmers supported by the government. The establishment of MERAPI Mandiri occurred after Merapi disaster in 2010, because government needed to help and support dairy farmer build their farming. Farming has historically been the custom of people living around Mount Merapi, with farmers involved in planting rice, corn, cassava and a wide variety of fruits and vegetables. As farming traditionally has been the main livelihood and source of household income for villagers living around Mount Merapi, proper mechanisms and strategies for farm rehabilitation and reconstruction are therefore needed after disaster in 2010. Immediate actions will have a greater impact on the revitalization and survival of affected farming households.

The local government agency of BNPB was disbursing funds through local administration offices to the farmers to replace their livestock and purchase about 4,000 dairy cattle. In addition, the agricultural ministry was proposing provision of additional cattle through a social aid program, for revitalizing the dairy farmer's economy and milk production in areas located near the center of eruption.

Overall, GAPOKTAN was established in order to manage and distribute government aid such as livestock production infrastructure repair (cage and the utility). Livestock procurement and the provision of working capital to purchase feed and animal health service. GAPOKTAN can organize and monitor the aid flow. Practically, GAPOTAN receive and distribute social assistance funds by wire transfer to group's bank account. Funding from government is sent to GAPOKTAN's bank account and then withdrawn based on group activities and procurement schedule. Procurement of farming utility or group's need is based on market survey, price survey, and the type / quality of goods to be purchased. Procurement process was done transparently and based on the efficiency and effectiveness of the goods to be purchased and witnessed by community leaders or local village officials.

5. Conclusion

Majority of dairy farming is small scale farming. Small farmers have many challenges like scarcity of land at suitable elevation for dairy farming, limited farmer education, low dairy cow productivity, and low milk quality. About 85 - 90% of total dairy cows in DIY Province were in Merapi valley. Merapi mountain eruption in 2010 has damaged the dairy farming in this area and mostly caused by ash and hot clouds. Death of mother cows caused loss of significant quantities of milk of cooperatives in the region. Burns on most cows including the udder caused livestock sickness and reduced levels of milk. As farming traditionally has been the main livelihood and source of household income for villagers living around Merapi Mountain, proper mechanisms and strategies for farm rehabilitation and reconstruction were urgent. Immediate actions would have a greater impact on the revitalization and survival of affected farming households.

Dairy farmers group near Merapi valley were affected by volcanic matter of huge eruption. Dairy farmers group in this area need to recover their livelihood and their dairy farming. So far, dairy farmers group have relationship only with cooperative. After Merapi eruption in 2010, the dairy farmers groups join GAPOKTAN, namely Merapi Mandiri.

GAPOKTAN was established to solve smallholder farmers problems in farm management. Smallholder farmer has challenges of lack of government services, financial problems, difficulty on marketing channel, availability of farming input, and accessibility of knowledge and technology. GAPOKTAN expected to function with a fair partnership and mutual benefit. Further, GAPOKTAN is one of the important steps for improving sustainably smallholder dairy farming management. Through the GAPOKTAN, government incentive program can reach the farmers who join GAPOKTAN. GAPOKTAN role can enhance the linkages of other

institution to support group's farming activity in improving value of their milk production. Elected government offices, research institutes, universities, state and private corporations, NGOs and farming groups should work together to craft the best strategy for farm rehabilitation. Further in-depth studies in this aspect with help deepen discussions on the role of government in providing support to disaster victims.

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