

Case on KSU Jatirogo. Bina Swadaya PROSE Research Team. December 2016 Jakarta, Indonesia

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ABBREVIATIONS/ACRONYMS

ASEAN	:	Association of Southeast Asian Nations
CPU	:	Central Processing Unit
CSV	:	Creating Shared Value
CUC	:	Control Union Certification
GB	:	Gula Batok
GRAISEA	:	Gender Transformative and Responsible Agribusiness Investment in South East Asia
GS	:	Gula Semut
ISEA	:	Institute for Social Entrepreneurship in Asia
KSU	:	Koperasi Serba Usaha
LSM	:	Lembaga Swadaya Masyarakat
PROSE	:	Promoting the Role of Social Enterprises
SIDA	:	Swedish International Development Agency
SAVC	:	Sustainable Agriculture Value Chains
SEAVCs	:	Social Enterprise Agriculture Value Chains
SWOT	:	Strengths, Weaknesses, Opportunities, Threats

I. Brief History and Profile of KSU Jatirogo and its Primary Stakeholders

Non-government organizations Lestari Mandiri and Hivos Netherlands have been engaging the communities in Kulon Progo District, Special Region of Yogyakarta since 2001 in the development of a sustainable organic cultivation program on rice commodity. The implemented program aims to alleviate the condition of the farmers. However, the program's evaluation did not show significant impact in increasing the economic condition of the targeted community members in the five-year run of the program. This prompted Lestari Mandiri to evaluate the potentials of other existing agricultural businesses within the community and saw the potentials of developing the value chain of organic crystal brown sugar. Since coconut trees are abundant in the assisted communities and most of them know how to make batok sugar¹, Lestari Mandiri assessed that the implementation of the new intervention will not be that difficult.

The NGO initially encouraged community members to shift their products from batok sugar to organic brown sugar. Since the process of making the two coconut by-products are almost the same, with a slight difference in the crystallization process, most of the community members were easily convinced to implement the suggested shift and further development of their product.

Lestari Mandiri, Hivos Netherlands, and Swisscontact forged a partnership to further conduct a business development study on the product through a social enterprise. On November 26, 2008, KSU Jatirogo Multi-purpose Cooperative was established with the primary objective to become a provider of organic certification and to serve as the marketing arm of the farmers' coconut products. The cooperative also manages the organic palm plantation within the Kulon Progo Subdistrict, Special Region of Yogyakarta, Indonesia.

The cooperative envisions the promotion of unity in the aspects of economic, social, cultural, and organic farming for the welfare of the farmers, the cooperative, and the whole community. KSU Jatirogo's day-to-day operations are guided by its missions to facilitate and bridge the needs of the farmers through fair trade; provide assistance to improve the community's quality of life; strengthen the economic aspect of the cooperative through professional cooperative management; and strengthen the quality of the organic products produced by the KSU Jatirogo farmer-members.

Further, KSU Jatirogo, in the long term, will improve the bargaining position of agricultural producers of organic brown sugar in aspects of product quality, variety, and prices of the products. Improvements in mentioned aspects are expected to bring economic changes for the disadvantaged producers of organic brown sugar in Kulon Progo Subdistrict.

KSU Jatirgo is operating in twenty-six (26) hamlets within five (5) villages and the three (3) districts of Kokap, Samigaluh, and Giri Mulyo.



¹Batok' is a form of solid brown sugar, a usual product made from coconut sap and sold to local markets in the rural areas.

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There are currently 1,731 families assisted in the production of organic brown sugar working in a total of 795.52 hectares of land. All of which have been certified organic by the three international organic standards with Control Union Certification (CUC) as the certification institution.

Each household owns and manages around 10-15 coconut trees as source of raw materials in the production of organic brown sugar. As a support in the production process, KSU Jatirogo has built six (6) units of Central Processing Unit (CPU) with fifty (50) collectors assisting the needs of the farmer-producers. With these figures, an approximate of 17,310 – 25,965 trees are utilized as source for raw material of organic brown sugar. Ideally, around 143 coconut trees can be planted in a hectare of land. The available land for cultivation in the area can still accommodate around 61,755 more coconut trees.

Since its establishment until 2015, KSU Jatirogo membership have reached more than 2,500 listed members, with 1,004 full-pledged members and 1,500 prospective members. Membership in the cooperative is family-based where the head of the family, usually men, are listed as members. However, all members of the family play an active role. For households where the men are not present, the women are registered as members of the cooperative. In 2014, around 119 women are listed as heads of households.

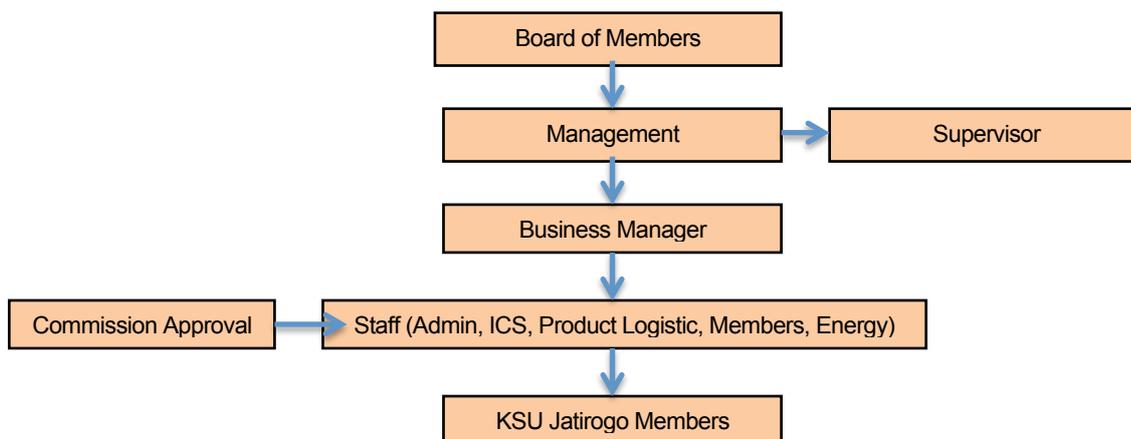


Figure 1. Structure of KSU Jatirogo

The agenda to improve the welfare of its members has been directly linked with the increased production of organic brown sugar. The other services provided by the cooperative to its members and prospective members are:

- expertise and assistance in the marketing of by-products of organic brown sugar. Since 2016, the cooperative has been marketing gula batok product of its members;
- free costs on membership and organic certification for members and prospective members;
- savings and loans for members to help in the capital and needs of the households with service fee of 1% per month or 12% per annum;

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- d) organic production inputs of brown sugar to 1,300 members and prospective members;
- e) 1,400 units of healthy furnaces and woks to 1,400 members and prospective members as their tool for their production of organic brown sugar;
- f) health insurance of 650 members who work as tappers;
- g) safety tapping tools for tapping farmers;
- h) educational assistance in the form of scholarships for the children of tappers;
- i) dividend and assistance in the nine basic staples for members;
- j) training and capacity building for members;
- k) facilitation of the Central Processing Unit (CPU) construction from its systems and equipments

The Central Processing Unit (CPU) was introduced as part of the production process. It is built within a village of about 150-200 households. Farmers can directly sell their palm sugar to the CPU instead of transporting their produce to the market, which is around 3 hours away from the communities. The CPU also serves as the tracking system for the source of the palm sugar. The CPU plays a vital role in setting a reasonable buying price and ensuring the quality of the brown sugar products. A unit of CPU within a village is owned and managed by the community members.

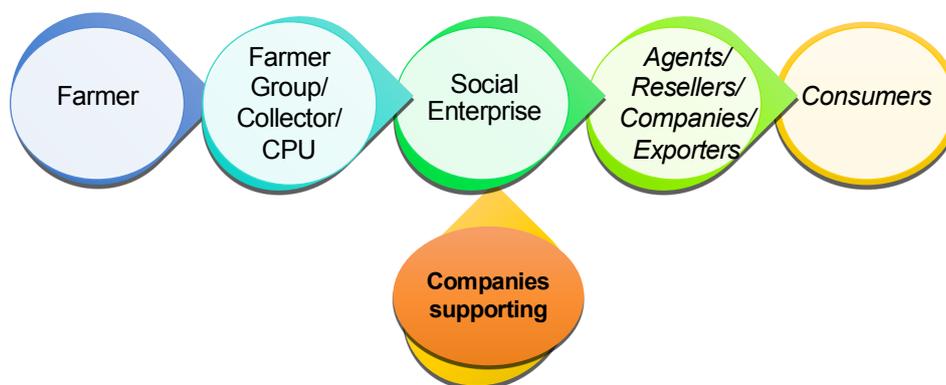


Figure 2. Main stakeholders in organic brown sugar chain

The main stakeholders of the organic brown sugar value chain developed by KSU Jatirogo include the farmers and farmers' organizations, wholesalers, Central Processing Unit (CPU), KSU Jatirogo, exporters/resellers/agents, and the end consumers. The new value chain upgraded the farmers' role in the value chain by encouraging them to produce brown sugar instead of batok sugar with the provision for organic certification.

Figure 2 below illustrates and compares the new value chain developed with the organic brown

2008	-
2009	1,721,908,870
2010	611,099,586
2011	738,482,835
2012	1,678,136
2013	3,812,817,941
2014	3,929,142,750

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sugar with the traditional value chain of batok sugar. With the shift to organic brown sugar, farmers get to have an increase of Rp 2,000/kg. The new value chain also opened up markets for export in other countries in Asia, Europe, and America. The alternative markets increased the demand and opportunity for farmers to earn more compared to the limited market of the traditional coconut by-product. In 2015 alone, approximately 600 tons of brown sugar valued at around Rp 10 billion has been exported to different countries.

Figure 3, on the other hand, explains the various activities undertaken by the different players within the value chain. A gender lens was employed in the analysis of the division of work/ labor in the whole value chain process.

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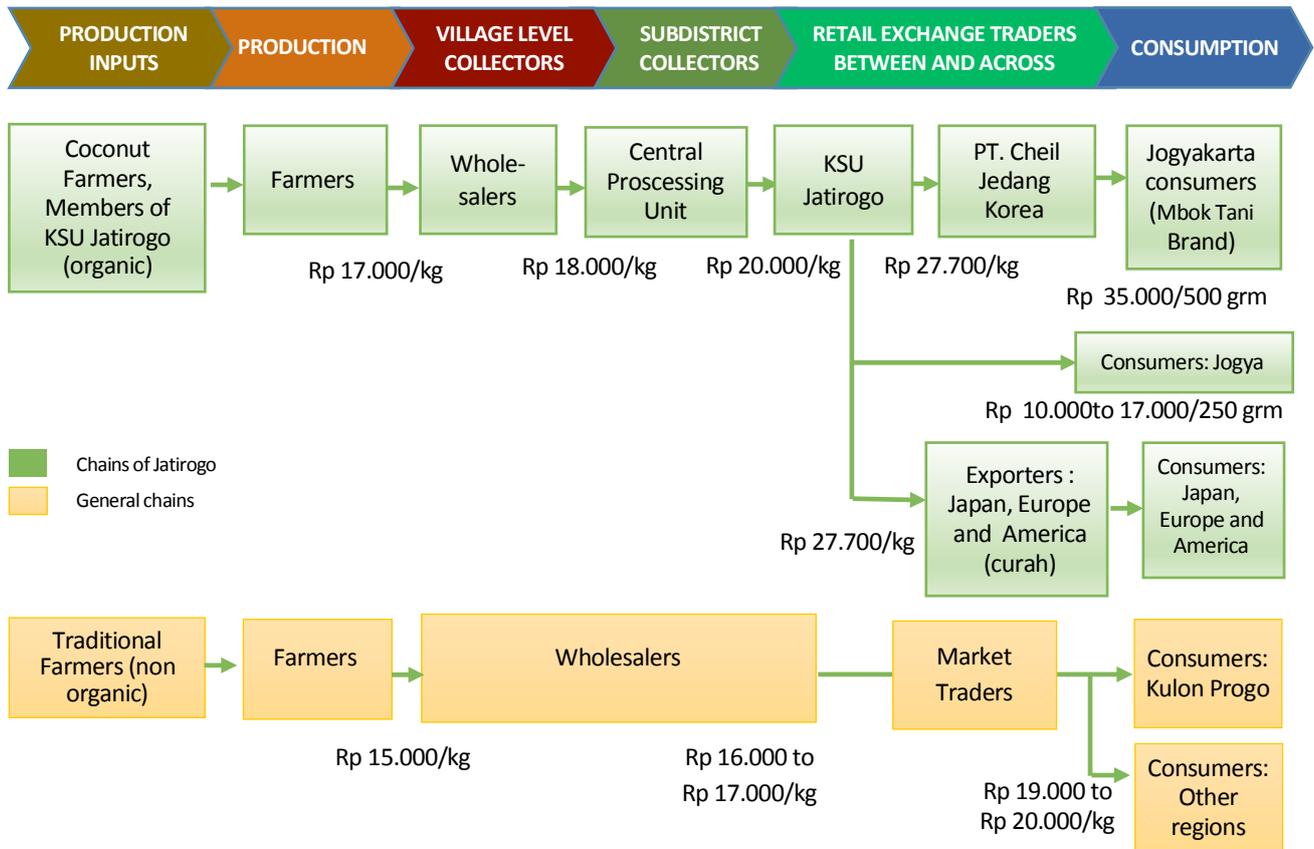


Figure 3. Value chain of organic brown sugar production developed by Jatirogo

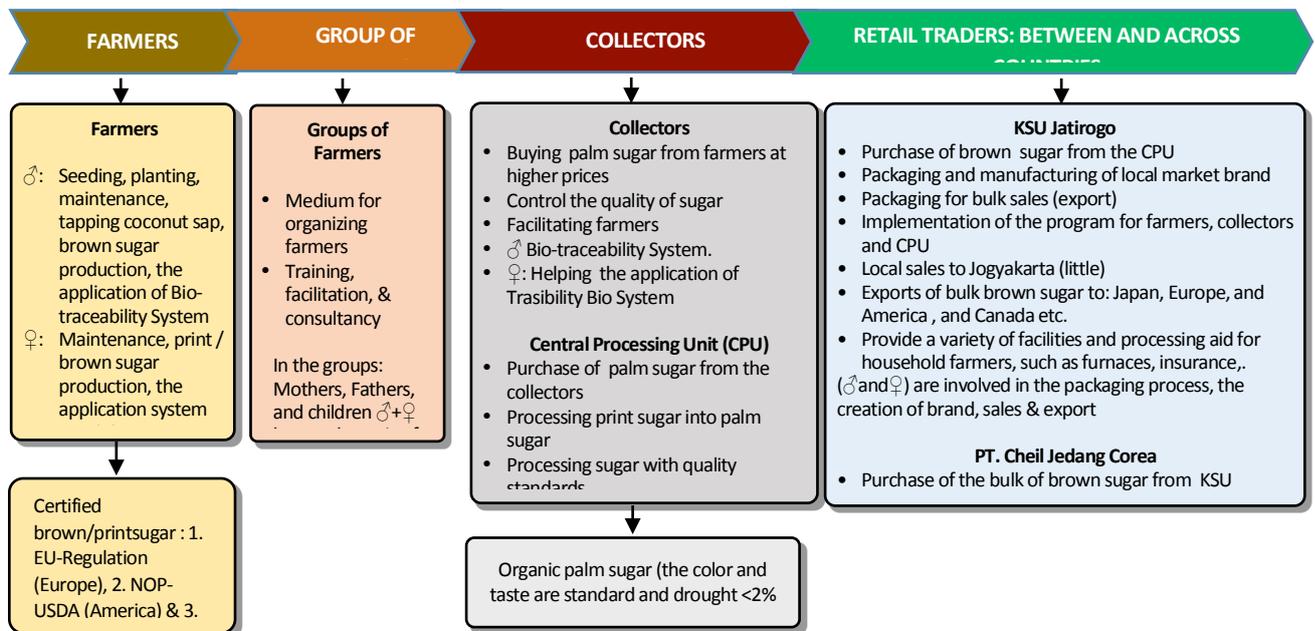


Figure 4. Division of work/ role of the players in the sugar value chain of Jaya Abadi

In general, the difference between the roles of men and women in the organic palm sugar value chain is not significant. Men focus on the regeneration of old trees that

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are too high (15-25 meters) for the tappers to climb. The maruk system is usually followed in cases where certain households are unable to tap their own trees. In this system, a household will hire a tapper with an arrangement alternative weekly harvest as the payment. Women, on the other hand, do most of the tasks in the cooking process of the organic brown sugar. The women also do certain tasks prior to cooking, such as gathering of the firewood, sometimes with the assistance of the men. The cooking process takes around 3-4 hours. In some cases, women are assisted by their husbands in the sugar crystallization process which tedious because of the needed constant stirring. The income earned from the sale of the brown sugar is also managed by the women and is allotted for expenses of the family on food, clothing, schooling of the children, social and religious activities, and for the development of their business.

Aside from the major players of the value chain presented in the previous figure, there other stakeholders that provided support and played significant role for the development of the brown sugar value chain.

Table 1. Other Stakeholders that provided support to the business development of organic brown sugar

No	Name of Institution/ Stakeholder	Provided Supports	Perceived Benefits
1	NGO Lestari Mandiri	Initiating the establishment of KSU Jatirogo; Business capital loans	Increasing incomes of the poor members of the cooperative
2	Hivos-Netherlands	Support to Lestari Mandiri in initiating the establishment of KSU Jatirogo; Assistance in the brown sugar certification	Poor people can become members; Increasing the value of brown sugar products, selling prices and demands; Increase in income of members.
3	LPSO Netherlands	Facilitating the process of organic certification	Increasing value of brown sugar products, selling prices and demands; Increasing income of members.
4	The Central Bank of Indonesia (BI) Yogyakarta Branch	Cooperative socialization, organic warehouse and place for processing brown sugar; Warehouse equipment and production facilities	The cooperative has a place and equipment for the processing and storage of brown sugar for export.
5	Ministry/ Cooperative Service	Warehouse production equipment and storage of organic brown sugar	The warehouse has supporting equipment for improving the quality of production of organic brown sugar.
6	Agriculture and Forestry Service of Kulon Progo	Training on the production of organic fertilizers and pesticides	The members understand and are able to make fertilizers and pesticides from organic materials available in their community.
7	Industry and Trading Service of Kulon Progo	Facilitating brown sugar marketing activities and equipment	The cooperative has opportunities to get involved in trade fairs and equipment s (cooking tools) for the processing of brown sugar
8	Local Government of Kulon Progo	Provide information to the community on existence of brown sugar production	The cooperative's brown sugar products are well known at the national and international levels
9	Agriteria Bogor	Training on Cooperatives; Training on traceability system for KSU members Jatirogo; Financial management training	KSU Jatirogo and its members can implement a traceability system in the management of the production of organic brown sugar; KSU Jatirogo and its members can manage finances of their business
10	PT Cheil Jedang Indonesia	Creating shared value in improving the welfare of palm sugar farmers in Kulon Progo District	Being able to promote and sell brown sugar from KSU Jatirogo and help improve the welfare of the farmers

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As part of their capacity-building efforts, KSU Jatirogo also provides trainings to its members. However, some of the training activities are focused on the men cooperative members because most of the training materials are retrofitted for the men members. The limited number of women participants also contributes to the limited efforts to reach out to the women members. The socialization of organic activities is done mainly around the village/*padukuhan*. In 2014, the cooperative board members implemented a monthly socialization that was attended by the men, women, and their children.

Table 2. Trainings provided by KSU Jatirogo to their members

Name of Training	Total Participants
1. ToT in Three Place (Gunung Kelir, Jatimulyo, Girmulyo)	25
2. Comparative Study in Bandung KPSBU	15
3. Training in Financial Management and Logistic System	13
4. Training in Manufacture of organic fertilizers and pesticides in Suropati	36
5. Training in Manufacture of organic fertilizers and pesticides in Banyuganti, Jatimulyo, Girmulyo	32
6. Training in Traceability for Agriterra	14
7. Training in Financial Management for Agritera	4
8. Training in Financial Management and Traceability from Mr. Iskandar Zulkairanin	9
9. Training in Cooperative Management agritera in Segajih, Hargotirto, Kokap	36
10. Training in Cooperative Management agritera in Gunung Kelir, Jatimulyo, Girmulyo	23

II. Outcomes and Impacts on Small Scale Producers and Women's Economic Empowerment

The issue of gender still plays an important factor, especially in rural communities in Indonesia. The inherent imbalances and inequalities somehow hamper efforts to promote inclusiveness and equality in both the domestic and public spheres, specifically in the agriculture sector.

The family as a sub-system of society has a strategic function in instilling values of equality in the daily tasks and relationship patterns between family members. The Java community, as a case, traditionally has embraced a patriarchal concept of gender, with the women positioned subordinate to men. Further, the men as the heads of the family determine the roles of each member of the family. The head of the family has the highest authority in the family. This prepositioning gives the men the power over the women family members.

With these overarching situations at place, the Javanese women are depicted as weak and dependent on their respective husbands. This socio-cultural construction influences the different roles played by men and women within their households, as well the equal or unequal roles and work division of genders.

An example of this gender disparity is evident on giving priority to men as members of the farmer groups or cooperatives. However, in the regulation of the Minister or Agriculture on guidelines for the development of farmer groups, there is no direct statement that discriminates against women to be members of farmer groups or cooperatives. This made it possible for women, specifically women as head of the household, to become members of the cooperative.

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Consequently, women non-members suffer from the patriarchal culture because they do not have access and control to asset ownership. The cooperative male-member policy is set-up with a common cultural practice where community participation is depended on the men heads of the family. Men are also entitled to ownership to land.

The existence of KSU Jatirogo for seven (7) years provided benefits to the community members of Kulon Progo by increasing their household income. The knowledge and skills of brown sugar processing are also made available to all cooperative members. The process is almost the same as the process of cooking batok sugar. The only difference lies on the final stage of the processing. The boiled sap has to be thickened to make sugar granules. On the other hand, the boiled sap is poured into a molding equipment to produce chunks of batok sugar.

- **Division of Roles/Labor Pattern**

The division of roles and labor pattern between women and men in the production of brown sugar in the community can be viewed on their 24-hour daily activities, divided among reproductive, productive, and social activities. The patriarchal culture of Indonesia assumes that men still hold the authority within a household. Women, consequently, are assigned to the daily management of the household and are burdened with various reproductive works, limiting their time for other productive and social activities.

Below is an example of the division of role/labor of men and women members of KSU Jatirogo in the in the brown sugar production. As an overview, the process of brown sugar production usually takes place in the kitchen with the women taking over most of the tasks. The whole process usually takes around three (3) hours. The palm sap in the wok does not need to be stirred constantly, so long as the fire is monitored regularly. It is evident that the women are more dominant in the production of the organic brown sugar, with both men and women equally contributing to the accomplishment of the other activities.

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Table 3. Division of roles/labor through productive activities

♂	Activities	♀
√	Tapping palm sap in their palm gardens	
√	Bringing home the palm sap harvest	
	Clearing of grass in their gardens	√
	Searching for firewoods	√
	Transporting of firewoods	√
	Furnace cleaning	√
	♂&♀	
√	Pouring of the palm sap into the wok	√
√	Lighting the furnace	√
√	Shuffling the palm sap	√
√	Putting the firewood into the furnace to maintain the fire	√
	Grating the coconuts, making the coconut milk and putting the product into the coagulating palm sap	√
√	Grinding the the sugar produced into granulated brown sugar	√
√	Producing batok sugar if the boiled palm sap failed to be granulated brown sugar	√
√	Putting the granulated brown sugar/ batok sugar in a storage container	√
	Washing the wok (frying pan)	√
	Marketing the brown sugar / batok sugar produce	√
√	Using the income from palm sap production for family and personal needs	√

Legend :

√ Conducted by ♀
 √ Conducted by ♂
 √ Conducted by ♂&♀

Through the women's workload is relatively more compared to the men, there are certain tasks that women usually do where men extend help and assistance. An example is when the women gather firewoods, the men take care of the children.

The role of women in the brown sugar production improved significantly their respective household economic conditions. Such was the case for Bu Satiyem who has been involved in the palm sugar business since she was 25 years old and had her own family. She said the intervention affected the price of her produce and made marketing and selling her products easier. She said she also doesn't need to depend on middlemen which often puts them in disadvantaged positions in the value chain. The cooperative also provides for assistance in business development. Bu Satiyem and her husband, who is the listed cooperative member, also manage the Central Processing Unit that contributes significantly to their monthly household income. Like Bu Satiyem, Bu Juminah's family depend solely from the income of palm sugar processing. Through the intervention of KSU Jatirogo Cooperative, Bu Satiyem underwent training. Bu Poniah, on the other hand, doesn't only benefit from the production of the high-value palm sugar, but is also earning as a hired coconut sap collector.

The cases of these three women are indicators of the success of the organic palm sugar business through the intervention of the cooperative for the improvement of the member's household income. Household economic improvement can be contributed to the increase in the buying prices of coconut sap (nira). An approximate of twelve (12) liters of coconut sap can be cooked as one batch in the furnace, which can produce around 2-3 kgs of palm sugar valued at Rp 16,000/kg.

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The process follows what is locally called as “maron” system which is done every five (5) days. A day usually consists of two (2) cycles of coconut sap collection and palm sugar processing. A CPU, following these figures, could produce around 20-25 kg of palm sugar valued at Rp 1.5 – 2 million weekly. Prior to the intervention, the palm sugar produce was valued only at Rp 10,000/ kg.

Further, the introduction of an appropriate technology, healthy woks, contributed to the efficient production of the organic brown sugar. The furnace was designed to make it more fuel-efficient . The wok is only a cm thick and is made out of superior materials which enables heat absorption and is durable. This tool helps to cook the palm sap quickly to become brown sugar. It is also tagged as healthy because the smoke produced, which generally contained impurities, is directed to the chimney out of the producer’s kitchen. This feature also prevents fire endangering the safety of the producers’ homes. However, not all members were provided with this equipment due to the constrained capital.

With the safety features of the wok, the women could attend to other reproductive activities while processing the palm sap. Other women are also doing other productive activities such as baking cookies and other processed products for sale.

The men, upon returning from fetching palm sap, will continue to do productive activities such as gardening. The sap tapping activities of the men are done twice a day, in the morning and in the afternoon.

Generally, the main activities of the women daily are processing the palm sugar, marketing and selling the palm sugar produce, and other social-related activities.

There is significant difference in the hours spent in selling the palm sugar where the women had to spend six (6) hours going to and from the market compared to the 15 minutes spent selling their produce to the CPU. Further, since the market is far from the village it takes about 2-3 weeks before women can sell their produce. The time saved going to the market enabled the women to socialize with other women at the CPU, increasing their time for socializing.

The tables below will further illustrate the labor division of Mrs. Juminah’s household, which is also representative of the labor division pattern among elderly men and women, and their children in the village.

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Table 4 Labor division pattern between women and men as family producers of brown sugar **BEFORE** the intervention of KSU Jatirogo Cooperative

Time	Family Members			
	Men (Father)	Women (Mother)		Children (School)
0 am	Sleep	Sleep		Sleep
1 am				
2 am				
3 am		Selling batok sugar every two weeks to the existing markets outside the village, with 3-hours round trip travel	Sleep	Bathing, breakfast, going to school
4 am	Coffee/tea time, sports, bathing, and breakfast		Cleaning the house, cooking/producing batok sugar, washing, making snacks from batok sugar residue	
5 am				
6 am	Sap tapping			At school
7 am				
8 am				
9 am	Bathing, communal work, gathering grass for the cattle		Going to the market and gathering firewood	
10 am				
11 am				
12 am	Lunch and Rest	Lunch then will continue with the production of batik sugar		
1 pm	Grinding brown sugar	Working in the garden and gathering of firewood		Doing homework, playing, helping parents
2 pm	Communal/Social work	Communal work		
3 pm		Preparing dinner		
4 pm	Sap tapping			Bathing
5 pm		Producing brown sugar, having dinner, taking a rest, while monitoring and maintaining the fire for production of batok sugar.		Dinner
6 pm				Studying
7 pm	Dinner and Rest/Social activities			
8 pm				Sleep
9 pm	Sleep			
10 pm				
11 pm		Sleep		

Table 5. Labor division pattern between women and men family producers of brown sugar **AFTER** the intervention of KSU Jatirogo

Time	Family Members			
	Men (Father)	Women (Mother)		Children (School)
0 am	Sleep	Sleep		Sleep
1 am				
2 am				
3 am		Sleep		
4 am	Coffee/tea time, sports, bathing, and breakfast	Cleaning the house, cooking, breakfast		Bathing, breakfast, going to school
5 am				
6 am	Sap tapping	Gathering of firewood		At school
7 am		Producing brown sugar or batok sugar, washing, cooking, making snacks from the sugar residue		
8 am		Other activities can also be done while cooking the brown sugar, such as going to the market and gathering firewood.		
9 am	Bathing, communal work, gathering grass for the cattle			
10 am		Helping wife to cook/produce brown sugar		
11 am		Lunch and continue the production of batok sugar		
12 am	Lunch and Rest	Lunch and continue the production of batok sugar		
1 pm	Grinding brown sugar	Working in the		Doing homework,
2 pm	Working in the garden or	Selling batok sugar		

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	communal/social work	garden/ searching for firewood	every two weeks to the CPU (15 minutes)	playing, helping parents
3 pm		Communal work		
4 pm	Sap tapping	Preparing dinner		
5 pm				Bathing
6 pm		Producing brown sugar, having dinner, taking a rest while monitoring the fire used in producing of brown sugar. If it failed to produce brown sugar, the husbands help their wives to print batok sugar.		Dinner
7 pm	Dinner and rest/social activities			Studying
8 pm				
9 pm	Sleep or help his wife in the kitchen			Sleep
10 pm	Grinding brown sugar			
11 pm	Sleep	Sleep		
12 pm				

Based on the 24-hour activities of the men and women cooperative members, it is observed that the women have more activities compared to their men counterparts. The women work a maximum of 19 hours and sleep for 5 hours, compared to the men who can sleep up to 7 hours. The children are expected to do their school tasks before playing and assisting their parents.

In reference to the chart above, the women get to rest/ nap while cooking the brown sugar, supplementing the 5 hours of sleep at night. In the brown sugar production process, the first 2-½ hours doesn't require much supervision so the women can sleep waiting. Generally, the kitchens of the producers are spacious enough for the women to lounge and rest.

Further before the intervention of KSU Jatirogo, the women had to sell batok sugar to the market by walking for three (3) hours. They go to the market in the morning before doing the processing activities. Most of them prefer not to sell it to middlemen in the village due to the low buying price. The establishment of the CPU made marketing and selling their produce easier and faster.

The men, although spend less time working compared to the women, face risks in their productive activities as sap tappers. Coconut trees often tower from 15-30 meters. Tapping the sap from coconut trees requires physical strength and guts that it is uncommon for women to do this task. However, Bu Poniah's case is an exception, a woman cooperative member who also earns from coconut sap tapping. She started doing the task when her husband succumbed to poor health that made it impossible for him to work. While the opaque system isn't one of her choices, she tried and succeeded to be the only woman coconut sap tapper in her village. Because of her acquired skill in tapping, Bu Poniah is also earning from tapping other's coconut trees.

Below is a comparison of the 24-hour clock activities within the household of Paiman, a manager of a CPU unit, before and after the establishment of a CPU within the communities.

OPAQUE (Maruk) : Sharing cropping system of rural communities

Members of KSU Jatirogo own coconut trees inherited from their parents. Generally, coconut trees that are already a few decades old are around 15-30 meters high. High coconut trees force families who can't tap their own trees to hire help through the opaque system, or locally termed as maruk, which has been a practice of the community for years. In the opaque system, the owner of the coconut trees get to have the rights for a week's harvest, while the hired tapper gets to have the rights to the succeeding week's harvest. Such provisions enable coconut owners who can't tap their own trees to produce 15 days worth of brown sugar. KSU Jatirogo included the welfare and safety of the tappers in their intervention through an insurance called Asuransi Jasa Putra.

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Before the establishment of CPU within the communities, brown sugar producers travel for almost three (3) hours to sell their produce in the market. The establishment of CPU within the communities helped in the marketing and sale of their products. Aside from the market and the CPU, producers have also the option to sell their brown sugar to the middlemen of what is locally termed as pengijon (a wholesaler) for a low buying price, often set by the wholesalers way lower than the standard price. Buying prices of the wholesalers fluctuate with a high buying price occurring a day before fasting and holidays, which is only 2-3 months a year. Most of the farmers are bounded with debt from the wholesalers (pengijon), which also constraint them from joining KSU Jatirogo.

PAINAH : Climbing 100 Palm Trees A Day

Painah (45 years old) never imagined that she would end up as a coconut sap tapper. However, due to their economic conditions, she was forced to learn and do the job. She started the job in 1987 where she taps a maximum of 100 trees twice a day. She gets the sap in the morning and puts a container in the afternoon. The coconut trees vary from 5 to 15 meters in height. She believes that the job of a coconut sapper require determination and perseverance.

Sources:

Direct interviews ad Jogya Daily, Tuesday, July 1, 2014

With the CPU built among their midst, the farmers can be freed from debt with the funds provided by the cooperative for lending to pay off their debts to the wholesalers.

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The loan service provided doesn't have interest and can be paid using their brown sugar produce at a price that is within the prevailing market prices. Further, regardless if a farmer borrowed money from the CPU or not, the buying price of brown sugar indicated in their respective contracts remains the same. A contract is valid for a year and is revised according to the prevailing market conditions.

The social activities of men and women are not limited to household management. It also includes organizing and joining advocacy groups, participation in social, cultural and religious groups. Men usually spend their social activities late afternoon to evening. Women, on the other hand, spend time socializing at any time of the day. The nature of the brown sugar processing activities allowed this flexibility to socialize for women. Further, it is vital to note that KSU Jatigoro has employed women employees, who lack skills and is unlikely to be employed in the formal sector, to work in the warehouse section. It also does not distinguish between men and women employees.

Table 6. Labor division pattern between women and men brown sugar producer and workers in a CPU BEFORE and AFTER the establishment of KSU Jatirogo's CPU

Time	BEFORE			AFTER		
	Men (Father)	Women (Mother)	School Children	Men (Father)	Women (Mother)	School Children
0 am	Sleep	Sleep	Stay in Batam, Riau Province, Indonesia	Sleep	Sleep	Sleep
1 am						
2 am						
3 am						
4 am						
5 am	Breakfast, Taking their children to school	Cooking, cleaning the house, and washing.	Managing and working in the CPU (receiving the sales of brown sugar from the cooperative members, heating the oven etc.)	Breakfast, Taking a bat	Cooking, Cleaning the house, Washing	Breakfast, Taking a bath
6 am						
7 am	Working in the field and searching for firewood	Producing batok sugar	Gathering firewood for cooking	Cooking/ Producing brown sugar at home	In school	Helping their parents run the CPU business
8 am						
9 am						
10 am	Rest	Rest	Cleaning the house and bathing	Teaching children/ grandchildren with their homeworks/ studies	Helping their husbands warm/ heat the brown sugar collected from cooperative members	Religious and social activities
11 am						
12 am	Searching for firewood and grass for the cattle.	Producing batok sugar	Sleep	Sleep	Sleep	Sleep
1 pm						
2 pm	Socializing within the community	Cleaning the house and bathing	Sleep	Sleep	Sleep	Sleep
3 pm						
4 pm	Sap tapping	Producing batok sugar	Sleep	Sleep	Sleep	Sleep
5 pm						
6 pm	Rest	Producing batok sugar	Sleep	Sleep	Sleep	Sleep
7 pm						
8 pm	Sleep	Sleep	Sleep	Sleep	Sleep	Sleep
9 pm						
10 pm	Sleep	Sleep	Sleep	Sleep	Sleep	Sleep
11 pm						
12 pm						

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- **Access and Control Over Resources and Benefits**

Access and control are the opportunities to and control over the resources in the family and the community. Below is an illustration of the access and control over the resources and benefits of men and women KSU Jatirogo community members.

Table 7. Access and Control over Resources and Benefits

Access and Control Over Resources and Benefits				
	Access		Control	
	♀	♂	♀	♂
Resources				
• Soil		✓		✓
• Production inputs		✓	✓	
• Workforce				
• Money	✓		✓	✓
• Education	✓	✓		
• Deposits	✓			
Benefits				
• Revenue from the outside			✓	
• Ownership access	✓			✓
• Basic needs: food, clothing, house	✓	✓	✓	✓
• Education		✓	✓	✓

The table shows that men and women, in general, have the same access and control over resources and opportunities. However, the fact remains that ownership and membership in legal entities is still dominated by men. The women have more access and control in the brown sugar production activities. An example is their hold on where, when, and in what form (batok/brown sugar) to sell the processed sap.

- **Analysis of Changes in Gender Relations on the Production and Economic Impact for Women**

The gender relations analysis yielded the following findings: a) the brown sugar production process has the potential to increase the household income, b) the time allotted by the men and women in the production process determine the volume of production of the processed sap, c) there is an existing imbalance of workload between men and women in the processing and marketing of the processed sap, and d) the existence of women's access and control on the production aspect to increase significantly the household income, with the aspect of ownership of land/ house and membership to the cooperative as an exception. The intervention of KSU Jatirogo altered the gender relations, and improved the time allocation and economic status of the women.

a) Impact of the introduced technology of energy-efficient furnace and customized wok

The energy-efficient furnace is more efficient in the utilization of firewood, saving the women time spent gathering for firewood. The furnace has also a feature where the smoke is directed to the chimney, minimizing the exposure of the women and the rest of the members of the household to hazards of smoke. With this feature, the kitchen and the processed products are cleaner the hazards of fire are also

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minimized. In addition to the furnace, the customized wok can easily absorb heat. The heat absorbed and stored by the customized wok is translated to saved fuel and better quality of brown sugar products compared to the regular wok. This enabled a more time-efficient processing of the palm sap to brown sugar. As a result, women are able to spend time on other productive, reproductive, and social activities.

Table 8. Improvements in the Furnaces and Woks

Before Interventions	After Intervention
Furnace located in the kitchen ❖ Conditions: <ul style="list-style-type: none">- Using 2 axes- Smoky in the kitchen- High temperature in the kitchen- Wood ash is scattered- Excessive use of wood for heat- Filthy furnace- Less capacity of the wok to stabilize the heat	Furnace is located in the kitchen but is separated from the area where meals of the family are cooked ❖ Conditions: <ul style="list-style-type: none">- Using 3 axes- Smoke is directed out of the kitchen through the chimney- Lower temperature in the kitchen- Wood ash is easily collected- More efficient use of wood because of the stable heat- Cleaner and more durable furnace- Longer capacity of the wok to stabilize and maintain heat

b) Impact on the economic and social conditions of the household, especially to the women

The improvement of the product from batok to brown sugar increased the value and selling price of the products of the farmers. In addition, the traceability system also encouraged the family members to be actively involved in the supervision of the production process. The other family members help the women, who are taking the lead in the production process, in the other tasks such as stirring the sap, gathering and putting the firewood to maintain the fire.

In the economic aspect, the brown sugar processing improved the household income by at least 50%. The increase is contributed to the higher value and selling price of brown sugar compared to batok sugar, the value increase of organic certification, and the stability of the buying price in a year through a contract. These conditions are not present when the farmers/ producers sell their processed products to the market and to the middlemen.

Women have a control to sell their palm sugar products. It requires quite long time and long distance to sell their products to the market (if they expect to get high prices). They get lower prices if they sell them to stalls or a middleman/wholesaler in their village. The presence of CPU is beneficial for women because it allows easy sales process.

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Table 9. Central Processing Unit (CPU) Development

Before Interventions	After Intervention
<p>Palm products of farmers are sold to the middlemen or to the market with the conditions where:</p> <ul style="list-style-type: none"> ❖ price is unpredictable and unstable ❖ distance and travel time to the market is around 3 hours 	<p>Palm products of farmers are sold: to the CPU where:</p> <ul style="list-style-type: none"> ❖ price is stable and is within the prevailing market price ❖ they can borrow capital if needed ❖ it is more time-efficient because of its proximity to the village <p>Batok sugar is still being sold to the middlemen/ market/ stalls in certain occasions.</p>

Tables 9 and 10 illustrate the various impacts of KSU Jatirogo's intervention to the farmer-producers in general and specifically to the empowerment of the women members.

Table 10. Impacts of the KSU Jatirogo intervention to the farmer-producers

Indicator	Before the intervention	With the intervention
Service area	None	<ul style="list-style-type: none"> ✓ 1 district, 5 villages, 26 sub-villages, 1,731 families ✓ 795 ha area certified by 3 organic standards ✓ 17.310 – 25.965 productive coconut/palm trees as raw material resources
Access to market	<p>Brown sugar was not available, only low-value batok sugar was produced</p> <p>Middlemen bargained the buying prices</p> <p>Difficulty in selling to the markets because of the distance</p> <p>Prices drop in cases of over production of batok sugar</p>	<ul style="list-style-type: none"> ✓ Marketing of higher-value brown sugar which increased the income of the farmer-producers ✓ Stability of the buying price in a year through a contract ✓ The existence of a Central Processing Unit / CPU provided ease of marketing the products ✓ They continued to market batok sugar, in cases where the coconut sap fails to become brown sugar due to low PH
Access to technology	<p>Use of traditional furnace that is not efficient in the utilization of fuel and is fire hazard.</p> <p>The non-durable regular skillet often damage the brown sugar produce reducing its market value.</p>	<ul style="list-style-type: none"> ✓ Healthy and energy-efficient furnaces are distributed. ✓ The pan is more efficient and does not damage the sugar and it is long-lasting (economical)
Access to financing	Supplied by the middlemen with high interests	<ul style="list-style-type: none"> ✓ Loans are provided through the CPU with low interests (1% / month). ✓ Members get dividend and other benefits at the end of the year
Access to security	No insurance for accidents	<ul style="list-style-type: none"> ✓ Safety equipment in climbing the coconut trees are provided ✓ Accident insurance for families suffering injuries from tapping are provided.

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Access to education and training	None	<ul style="list-style-type: none"> ✓ Capacity building training for members (women and men) ✓ Availability of scholarships for the tappers' children
Access to employment	None	<ul style="list-style-type: none"> ✓ Availability for employment of women in the KSU Jatirogo and in the CPUs

Table 11. Impacts of the KSU Jatirogo intervention on gender relations and women empowerment

Indicator	Before Jatirogo' existence	After Jatirogo' existence
Taking coconut sap	Conducted only by men	Women can participate in some of the activities
Cooking coconut sap	Dominated by women (lighting the fire, pouring the coconut sap into pans, and processing into batok sugar) since the production of sugar is done in the kitchen.	Carried out jointly by the all members of the household. The men take over in other reproductive duties when the women is cooking and processing the brown sugar.
Marketing the production of sugar	Done by women; batok sugar products are sold to the traditional markets that is far from the communities	Performed by both men and women because market is more accessible with the establishment of the CPU

III. Critical Factors that Contributed Positively and Negatively to the Outcomes and Impacts

High Export Demand of Brown Sugar. The organic brown sugar commodity is in demand in foreign countries, especially in Europe, Canada, and Japan. Organic brown sugar is preferred in countries with high obesity cases because of its low glyemic index. This health benefit contributes to the high potential for consistent trade export of the commodity.

Decreasing Source of Raw Material. With the increasing demand for organic brown sugar, the raw material coconut sap continued to decrease due to various factors. One factor is the erratic weather that is affecting the growth of the coconuts. The absence of rain and the long onset of summer hinder the production of coconut sap. Another factor is the ageing population of coconut tappers. Coconut tapping requires physical strength and skills to be able to climb up the towering coconut trees. The farmers inherited the coconut trees from their parents. As a practice, the trees are fertilized with manure of farm animals to produce coconut sap of high quality. The young generation are expected and depended on to boost the initiated community-based brown sugar business through rejuvenating the old coconut trees and increasing the number of goat farms for the production of fertilizer. However, most of the young generation have opted to take on jobs in the city and are not willing to continue their family's brown sugar business. Each farmer-household owns an average of 10-15 coconut trees that can produce 3-4 kg of brown sugar. The number of trees is not proportionate to the vast fertile land area.

After joining KSU Jatirogo, farmers were encouraged to plant 10-15 trees annually using local seeds. To accommodate the high demand, KSU Jatirogo and the farmers should be able to determine and introduce a different variant of seeds and appropriate technology that would expedite the production coconut sap.

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Establishment of CPU Within the Community. The presence of KSU Jatirogo, through the CPU, have provided benefits to the coconut farmers living in mountainous area. Before the coconut sugar produce of farmers was sold to the middlemen at a cheaper buying price. Most of the farmers were exploited and bounded by the ijon system. This system provided loans with high interest rates and an agreement where farmers should only sell their produce to the middlemen. This system puts the farmers in an unfavorable situation.

Cultivation Area of the Coconut Trees. The cultivation area for the coconut trees is located far from the rice fields, which generally are treated with chemical fertilizers and pesticides. This enabled farmers to apply organic farming practices. The brown sugar products have been certified organic and have added value to the products, making the business more competitive nationally and internationally.

KSU Jatirogo’s Strategic Linkages. The strategic partnerships with the government, national and international private and non-government organizations, provided various assistance to the cooperative. Specifically, these linkages have facilitated the establishment of warehousing and purchase of needed equipment for production. However, the access and awareness to the benefits are only made available to a few members. The continued product redirection of farmers to other market channels affected the production side of the value chain

Below presents the results of SWOT analysis (Strength, Weakness, Opportunities, Threats) on the brown sugar social enterprises developed by KSU Jatirogo.

Table 12, SWOT Analysis of Brown Sugar Social Enterprises of KSU Jatirogo

	Strengths	Weaknesses
Internal Factors	<ul style="list-style-type: none"> • Incorporated • Quality product • Organic certification • Group facilitating activities • Partnering with government, private sector and NGOs • Partnering with the farmers to build a CPU • Condition of land away from the rice fields which are treated with chemicals • Supportive to organic farming 	<ul style="list-style-type: none"> • The manager is doing many activities because it doesn't have human resources • Decreasing amount of production • Decreasing number of coconut sap tappers • Farmers opt to sell the coconut sugar to stalls / middlemen/wholesalers two months before holidays due to high buying prices • Not available/ unable to plant coconut trees with new varieties • Farmers continue to transact with middlemen because of attachments
	Opportunities	Threats
External Factors	<ul style="list-style-type: none"> • Very high market demand as manifested to the queuing of the consumers just to purchase the products 	<ul style="list-style-type: none"> • Effect of climate change affecting in the reduction of the production of coconut sap • Impact of the tax policy on the increasing prices • Lack of public awareness on the need and benefits of organic farming • Farmers opt to sell to the middlemen batok sugar at times when the buying price is high

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• Strategies and Policies of Social Enterprises

To upgrade the value chain of the coconut sugar production, KSU Jatirogo applied for organic certification. The three sub districts where KSU Jatirogo is operating have succeeded in getting the nod of three international organic certification standards of the Control Union Certification (CUC). All members of the households should be part of the production as part of the implementation of the traceability system. The organic certification doubled the income of the farmers.

Another strategy employed is the establishment of the CPU. Its presence encouraged the business growth of both cooperative members and prospective members.

These efforts propelled KSU Jatirogo to successfully export almost 600 tons of brown sugar to Japan, Europe, and Canada yearly.

Other policies and business development assistance provided by KSU Jatirogo that yielded significant outcome and impacts include:

- a) production inputs, containers of the fermented palm sap, and filters;
- b) 1,400 functional furnaces and specially-manufactured cooking equipment;
- c) accident insurance for 650 tappers;
- d) safety equipments for coconut sap tappers;
- e) employment for 20 women and men in the KSU Jatirogo; and
- f) free membership and organic certification costs for both members and prospective members.

Other policies for institutional and social strengthening were also provided to the members:

- a) savings and loan services to the members to help capital and services needs of the families with 1% monthly interest;
- b) scholarships for the children;
- c) dividends for the nine basic staple food; and
- d) training and capacity-building.

Though the brown sugar production process is still relatively traditional, innovations were implemented like the use of mangosteen sap and limestone to neutralize the pH level of the coconut sap. These maintained the coconut sap's level of consistency so that it can be crystallized into brown sugar. Such innovations are in accordance with the local's practices that are cheaper and are readily accepted by the community.

• Services and Resources

KSU Jatirogo has provided business services, especially to women because of the roles they play in the processing activities. The establishment of the CPU within the community has encouraged the women to sell their brown sugar products to KSU Jatirogo. However, current condition shows a decline in the exported brown sugar products due to the decline in production.

Below are the various additional support and services that need to be improved for both the cooperative and the farmers that would aid in the increase of production and improvement of the organic brown sugar business of the farmers.

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Table 13. Additional support expected by both KSU Jatirogo and the farmers

Cooperative Level	Farmers (Cooperative's members)
<ul style="list-style-type: none"> • Tax relief on export • Working capital to carry out brown sugar export export of brown sugar without third parties (intermediaries) • Strong commitment of the Board to empower the farmers through business development of brown sugar 	<ul style="list-style-type: none"> • Construction of a new CPU. • Recruit and train new farmers and middleman involved as a guarantor for the supply of organic brown sugar to KSU Jatirogo. • Superior coconut seedlings to replace the already high plants. • Assistance in kind of healthy, safe and energy efficient furnaces. • Assistance in kind of 1 cm thick woks/pans for processing brown sugar

Table 14. Services that need to be improved by KSU Jatirogo

Production Level	Post-Harvest Level
<ul style="list-style-type: none"> • Provide assistance for the production of functional furnaces and woks for the women members who weren't able to receive the equipment in the initial distribution • Program to encourage farmers to plant additional superior coconut seedlings to replace the old and less productive coconut trees • Assistance for the established CPU to have the capacity to empower and attract young farmers to be more involved in the business 	<ul style="list-style-type: none"> • Provide an opportunity for women to work in the cooperative as sorters, in packaging and administration.

The development of KSU Jatirogo is highly dependent on the policies of the government that highly affects the agricultural sector of the country. The government plays a vital role in the AVC, specifically in its current policies for export. The prices of the products in the international market are often marked higher and are more competitive compared to other ASEAN countries, which is mainly due to the VAT (10%). The government is also able to create a conducive business atmosphere by simplifying the export procedures and the reducing the export duties.

Further, efforts of the government for agribusiness development affects directly the empowerment of the rural farmers through the improvement of their bargaining powers. In addition, the establishment of institutions improves the position of farmers as members of a legal business entity. The effort for institutionalization provides value for the farmers to overcome the limitation of access to productive resources, such as land, and services, and to increase work productivity.

Aside from the government, other stakeholders; services and resources provided KSU Jatirogo improvement and sustainability of the sugar business value chain.

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Table 15. Stakeholders' support provided to and needed by KSU Jatirogo

No	Stakeholders	Provided Support	Other Required Support
1	NGO Lestari Mandiri	Initiating the establishment of KSU Jatirogo and facilitation in the development of cooperative through business capital.	Facilitation for regular group meetings to encourage and monitor the savings and loans business of the members
2	Hivos-Netherlands	Support for Lestari Mandiri in initiating the establishment of KSU Jatirogo	
3	LPSO Netherlands	Facilitating the process of organic certification that can both improve the value and selling prices of the and demand for the product	Easy financing for the organic certification process. At present, the cooperative has to pay expensive costs for the organic certification process
4	The Central Bank of Indonesia (BI) Yogyakarta Branch	Area and warehouse for brown sugar processing	
5	Ministry/ Cooperative Service	Various warehouse production and storage equipment for organic brown sugar for the improvement of the of organic brown sugar	Training and assistance for the cooperativemanagement and members; capital support for the developmet of the cooperative
6	Ministry of / Agriculture and Forestry Service	-	Assistance through distribution of coconut seedlings with improved variety, short coconut tree, for easier sap tapping; Delivery of innovations to neutralize the sap pH for the brown sugar processing
7	Ministry of /Industry and Trading Service	Distribution of other cooking equipment f; or the brown sugar processing Facilitation of marketing activities of the brown sugar products; opportunities for the cooperative to join trade fairs	Facilitation for export activities
8	Local Government	Dissemination of information to the community of the brown sugar production as part of its marketing	Connecting with media to further promote the organic brown sugar products of Kulon Progo
9	Universities	-	Conduct of researches that would improve the cultivation and processing of organic coconut sap to brown sugar

IV. Lessons and Insights Useful for Benchmarking Interventions in Agricultural Value Chains that transform the lives of Small Scale Producers and bring about Women's Economic Empowerment

Upgrading of existing community product through appropriate technology. The palm sugar value chains existing in the communities of Kolon Progo Subdistrict have been upgraded to a production of organic brown sugar that has higher value. The additional value translates to increase in income for the farmers up tot 50%. The introduced technology also brought about positive changes in the production process where it is now safer, secure, while ensuring the quality of the product. Further, the

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distribution of safe, functional, and energy-efficient furnaces and special woks has increased the value of the palm sugar products. These technologies benefit the farmers, especially the women. The furnaces have provisions to directly channel the smoke out of the producers' kitchens. The special wok is durable and can absorb heat well that is crucial in the processing of palm sap to brown sugar.

Accommodating the middlemen in the new value chain and the establishment of a CPU in the community. The location of the KSU-owned warehouse for processing of brown sugar is quite far from the farmers. With the establishment of a CPU, where the collection and drying of the coconut sugar takes place, more farmers are encouraged to be part of the cooperative. The CPU eased the process selling of products in terms of travel time and transportation costs. The concept of the CPU also accommodated the "middlemen" in the new value chain to avoid competition and further encourage the business development of KSU Jatirogo. The CPU owners are the middlemen or village-level entrepreneurs who have the ability and willingness to cooperate with KSU Jatirogo in empowering the farmers. The contract price of CPU with the farmers is fixed for a year and is within the price range of the prevailing market prices. This scheme prevents monopoly and manipulation of the price to benefit only a few people. However, there are still a few number of farmers tied with middlemen who are unwilling to cooperate with KSU Jatirogo. They are forced to produce batok sugar for the middlemen, especially before and during the Ramadan and Eid-al Fitr holidays when the price of batok sugar is high.

The increased roles and improvement of the situations of women in the value chain translate to their empowerment in the family and in the community. Generally, women have the control in the production and marketing of their palm sugar products. The income from the palm sugar products, either in the form of batok or brown sugar, is a significant source of the household income for the daily expenses of the family. This positions women in strategic positions in their household and in the community, where their contributions are recognized.

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KEY INFORMANT INTERVIEWS



Theresia Eko Setyowati is the manager of KSU Jatirogo. She contributed to the cooperative by mentoring farmers with the aid of NGO Lesman in the development of business activities. Her skills and capacity on mentoring is manifested in the increasing cooperative members and the successful penetration of the KSU Jatirogo products in the international market.



Painah became the family's backbone ever since her husband was stricken with illness. She taps their coconut trees and are hired by others to do tapping through the maron system. Her family members assist Painah in the production of palm sugar, which is the main livelihood of their household.



Juminah supports the needs of her three children. She is able to send her children to school with the income from the production of palm sugar, which is their main source of income. Aside from the production of palm sugar, she is also making various snacks for sale.

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RELEVANT DATA**Business Volume (IDR)**

2008	-
2009	1.335.854.750
2010	1.343.189.000
2011	1.482.492.785
2012	6.839.049.868
2013	11.866.179.000
2014	12.195.372.138

Business activities of buying and selling

Years	Omzet (IDR)	Profit (IDR)
2009	258.118.525	60.920.860
2010	287.833.650	53.822.816
2011	1.448.221.847	16.701.762
2012	6.875.652.873	243.200.441
2013	11.943.214.350	38.489.000
2014	12.224825.100	290.416.337

Business activities of buying and selling

Years	Buying (IDR)	Selling (Kg)
2009	114.006	108.133
2010	108.926	90.374
2011	56.977	95.845
2012	376.573	349.946,4
2013	587.175,5	565.550
2014	592.548	584.567,32

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DOCUMENTATION



Packaging of Organic Brown Sugar for export



Trasportation carrying Organic Brown Sugar for export



Women working in KSU Jatirogo Warehouse



Women Working in CPU Suropati



Women are cooking using the new furnace and work



Matured sap