Prosperity with Sugar: A Strategy for Sustainable Livelihoods for Coconut Sap Farmers in the Pendekar CSR Program

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Abstract

This article aimed to describe the sustainable livelihood strategy of coconut sap farmers in the PT Pertamina Patra Niaga Fuel Terminal Maos CSR Program of Karangsari Sap Tappers /Penderes Badeg Karangsari (Pendekar) in Karangsari Village, Adipala District, Cilacap Regency. The method employed in this study was qualitative with a theoretical approach to CSR, empowerment, and sustainable livelihoods. Informants in this study were determined by purposive sampling, which included 5 farmers and members of the Nira Cahaya Sejahtera Cooperative. The primary data was gathered through observation and interviews. while secondary data were obtained from CSR reports, related journals, and mass media which were then reduced and categorized based on certain themes and validated through triangulation. The results of this study indicate that 1) Coconut sap farmers in Karangsari Village already have the basic capital to survive by utilizing natural resources, specifically coconut trees which grow abundantly in Karangsari Village with a total area of 20 hectares. 2) The company provides assistance with five assets, including natural capital, human capital, financial capital, social capital, and physical capital in the coconut sap farmer empowerment Pendekar Program. 3) the SROI value for the Pendekar Program received by the company was 1: 2.33.

Keywords: *CSR*, *Community Empowerment*, *Sustainable Livelihoods*, *Farmers.*

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A. INTRODUCTION

Poverty is a complex issue that can occur anywhere in the world, including villages. Empirical evidence shows that even villages with abundant natural resources face complex issues regarding the welfare of their citizens. The economic factor is one of the social issues that arise in the Karangsari Village area. There is complexity when viewed through the lens of social morphology, which is translated as physical space and social space. In Karangsari Village, physical space is related to the physical environment (land and natural resources), whereas social space is related to work and income (Sutopo, 2017).

In the context of the social space of Karangsari Village, poverty triggered by a low level of education is a major social problem in the region. Based on data from the company's Social Mapping (Sucofindo, Pemetaan Sosial PT Pertamina Patra Niaga FT Maos, 2020), the majority of residents in Karangsari Village have an elementary school education background, with 1,183 residents working as coconut sap farmers and farm laborers. In Karangsari Village, 707 residents received Non-Cash Food Assistance (BPNT). The elderly who do not have a job or a steady income, as well as people with low education who are affected by COVID-19, make up the majority of the poor in

Karangsari Village. Furthermore, a new social problem has emerged in relation to the COVID-19 pandemic, which is the decline in people's income. Several people who had moved out of town lost their jobs and had to return home. Meanwhile, in terms of physical space, Karangsari Village's environmental conditions are characterized by yards and agriculture. An area of 20 hectares of land is used to grow coconuts. This physical space benefits the residents of the community, as the majority of Karangsari Village's residents work as coconut sap farmers.

Many poverty alleviation programs have been implemented, both long-term and short-term programs. Long-term programs are carried out through empowerment, whereas short-term programs are carried out through the provision of government-provided social security assistance to meet the basic needs of the community. However, this does not appear to be able to help people get out of poverty, especially if community active participation remains low and the programs being implemented are not effective. As a result, there is a need for direct community involvement in all stages of planning, implementation, monitoring, and evaluation. With a participatory approach, various problems that are specific identify solutions and alternatives.

Furthermore, the characteristics of the causes of poverty alleviation failure, particularly the poverty alleviation programs that have been implemented (Waluyo, 2006), are explained in the mapping column as follows:

Table 1. Characteristics of poverty alleviation

Weaknesses of the programs	Poverty alleviation efforts	The principle of poverty alleviation
Planning, targeting, and criteria for poverty, as well as technical arrangements for implementation carried out by the central government/agency (top-down), are often not in accordance with the needs of some communities or regions.	Educating the poor to continuously recognize the potential of individuals, families, and the environment (skills, materials, and natural resources) as the basic capital for improving their well-being.	Poverty reduction programs must lead to a comprehensive approach (multi-sector).
Sectoral programs frequently result in ego-sectoral enthusiasm and overlap.	Encouraging the growth of confidence in their ability to break free from the shackles of poverty.	Planning and targeting are carried out by the community in collaboration with field officials in order to meet the needs of the community.

Many poverty alleviation programs treat the community as an object, preventing it from actively participating.	Recognizing that no person/family/environment can break free from poverty without the efforts of the person/family/environment itself.	The community is positioned as "the main actor in the war against poverty" in order for them to actively participate.
Because of the difficulty in maintaining program continuity (new programs are not continuations of old programs), many poverty alleviation programs are no longer sustainable.	Creating awareness that poverty alleviation is a shared duty and responsibility of the government and society.	Accountability to the government and society in order to increase transparency and accountability.
Accountability is only administrative to the government, so openness and public accountability are not built. As a result of the project approach, the success of the program is only measured by the percentage of aid distributed successfully and the number of target recipients.	Creating jobs and business opportunities to strengthen the local community's economy. Providing assistance with facilities (funds and expertise) needed to strengthen the potential of existing community organizations/groups.	It is an ongoing program. The measure of success is determined by the community's empowerment to break free from the shackles of poverty, and, strengthen the community's economic capacity by creating access to production factors and markets.

Source: Hamid in Waluyo (2006)

Based on these data, poverty alleviation can be carried out through an effective empowerment process in order to build resources (asset capital, in this case, Karangsari Village farmers) that will allow them to escape poverty. Personal empowerment and social empowerment are addressed through the strengthening of existing local farmer organizations in order to build institutional capacity that outnumbers coconut sap farmers.

These circumstances became the focus of Pertamina Patra Niaga Fuel Terminal Maos' attention in carrying out the Pendekar Program (Penderas Badeg Karangsari / Karangsari Sap Tappers). The company communicates persuasively with local stakeholders to engage them in program implementation by preparing Strategic Plans (Renstra) and Work Plans (Renja). As a result, in addition to using Social Mapping as

the foundation for program implementation, the company employs a persuasive integrated communication pattern so that the company's vision and mission in implementing the CSR programs that have been established can coexist with the vision and mission of stakeholders and the community.

Against this background, this study aimed to analyze the sustainable livelihood strategies of tap farmers in the Pendekar CSR program. Furthermore, this study employed the theory of Sustainable Livelihood Theory. This theory was first popularized by Chambers and Conway in the late 1990s by emphasizing two components of sources of livelihood, including the ability to obtain a source of livelihood (assets) and ownership of assets. Furthermore, sustainable livelihoods are interpreted as the ability of households or individuals to deal with problems and eliminate shocks and pressures by increasing assets and access to welfare without reducing the quality of existing natural resources (Nurbaini, Hamdani, & Fuad, 2022). As a result, the practical findings of this study can serve as a point of reference for the existence of a new theoretical discussion space in scientific discourse on the empowerment of tap farmers in CSR programs run by companies with a long-term livelihood in mind.

B. METHOD

This study used a qualitative approach that began with a framework for interpreting the meaning of social reality in society. The qualitative method is a research method used to examine the condition of natural objects. In this paradigm, social reality is viewed as holistic, complex, and dynamic. Data collection in qualitative research is guided by facts discovered during field research rather than theory (Abdussamad, 2021). As a result, the data analysis performed is inductive, based on the facts discovered, and then constructed into a hypothesis or theory. So, in qualitative research, data analysis is used to develop hypotheses, whereas, in quantitative research, data analysis is used to test hypotheses.

The locus of this study was Karangsari Village, Adipala District, Cilacap Regency. The data used in this study were primary data and secondary data. The primary data were observation and in-depth interviews with five key informants, namely tap farmers who are beneficiaries of the Pendekar CSR Program. Meanwhile, secondary data consisted of data owned by the company, CSR reports, program implementation reports, SROI reports, social mapping reports, relevant journals, and mass media.

C. RESULTS AND DISCUSSION

1. Overview of Karangsari Village and Coconut Sap Farmers in Karangsari Village

Karangsari Village is administratively part of the Adipala District, Cilacap Regency. Karangsari Village is a lowland area with a slope of 2-10% and an elevation of ±250 meters above sea level. According to data from Statistics Indonesia for Adipala District in 2019, the administrative area of Karangsari Village is 350.73 Ha or 3.51 km^2

with a population of 9,369 people with a population density of 2323 km^2/people, divided into 4,808 men and 4,561 women. Karangsari Village's population is dominated by people of productive age of 35-39 years, with a total of 844 people. Karangsari Village is divided into 12 Citizen Association/RWs and 39 Neighborhood Association/RTs, with Nusasari Hamlet having 9 RTs in 3 RWs, Karangsari Lor Hamlet having 15 RTs in 4 RWs, Karangsari Kidul Hamlet having 6 RTs in two RWs, and Karangsembung Hamlet having 9 RTs in 3 RWs.

Land in Karangsari Village is used for residential areas, shops, plantations, and agriculture. Karangsari Village residents take advantage of the potential of available Natural Resources such as coconut plantations, agriculture, and nature tourism. The cultivated agricultural and plantation commodities are coconut, sago, vegetables, and rice. Therefore, apart from being laborers, the majority of Karangsari Village residents have livelihoods as farmers and tappers for sap. In the Karangsari Village area which is close to the Serayu River, there is potential for waters to be utilized by the local community for freshwater cultivation and rice field irrigation. The potential for natural beauty in Karangsari Village is Rawa Ndelik with natural views, hawker centers for local products, and Karangsari culinary specialties that can improve the economy of the surrounding community. The majority of people in Karangsari Village are of middle to lower economic status, with an average income ranging from IDR 1,000.00 to IDR 3,000,000 (41%), and less than IDR 1,000,000 (38%).

One of the social problems that arise in the Karangsari Village area is the economic factor. Poverty caused by a low level of education is a major social problem in the Karangsari Village area. Based on Sidesa data from Central Java Province, 550 belong to the 4th decile or households in the lowest 30-40% group, 990 belong to the 3rd decile or households in the lowest 20-30% group, 1,220 belong to the 2nd decile or households in the lowest 10-20% group, and 1,100 belong to the 1st decile or households in the lowest 10% group. The recipients of Non-Cash Food Assistance (BPNT) in Karangsari Village were 707 residents. The poor in Karangsari Village is dominated by the elderly who don't have jobs or steady income, as well as people with low education who are affected by COVID-19.

In addition to social issues, Karangsari Village has a center for coconut tree plantations covering approximately 20-30 hectares. 9.27 hectares of this total are productive coconut plantations used as raw material for sugar. The land is managed by 6.8% of the residents, who work as coconut sap presses (Sari, Purnomo, & Wijaya, 2023).

2. Strategy for Sustainable Livelihoods for Nira Farmers in the Pendekar CSR Program

The Pendekar Program (Penderas Badeg Karangsari / Karangsari Sap Tappers) is a Corporate Social Responsibility (CSR) program that PT Pertamina FT Maos has been running since 2020. This program is designed from the bottom up, through joint discussions with the community and the use of social mapping data to identify potentials and problems in Karangari village. Bottom-up planning, also known as

participatory planning, is a strategy in which the roles of the community and the government are divided during the planning process (Sumarto, 2009). The bottom-up planning method is intended to create a program that meets the needs of the community and raise public awareness about program implementation.

The planning of the Pendekar Program recognizes that the main potential of Karangsari Village is a large number of coconut sugar farmers. Coconut sugar has numerous health benefits, including a low glycemic index, which allows it to be used as an alternative sugar for diabetics. PT Pertamina Fuel Terminal Maos's Pendekar Program aims to improve the welfare of coconut sugar farmers by enhancing the quality and marketing of coconut sugar. Various efforts have been made to achieve this goal, including the formation of community groups, export marketing through the Nira Cahaya Sejahtera Cooperative, organic product certification cu878185, and the development of equipment and infrastructure in the manufacture of coconut sugar.

Although various interventions have been implemented in the Pendekar Program to achieve the program's objectives, namely the social welfare of sugar farmers, a Sustainable Livelihood Approach (SLA) is required to assess the program's success. The Sustainable Livelihood Approach (SLA) is a framework for analyzing long-term social welfare. This approach emphasizes the significance of understanding the relationship between various social, economic, and environmental resources in achieving long-term social welfare. SLA is represented by an asset pentagon, which depicts the relationship between the five assets (natural, human, social, financial, and physical assets) and the assets owned (Saleh, 2014).

The first asset to consider is human capital. This is significant because humans play a role in all aspects of economic activity, including production, consumption, and transactions (Nurkholis, 2018). Human capital can be defined in three ways. The first is the concept of human capital, which is defined as individuals with knowledge and skills. (Rastogi, 2002) defines human capital as competence, knowledge, health, attitudes, and traits possessed by humans. The second definition of Human Capital is skills and knowledge acquired through the accumulation of a specific process (Alan, M, & Roussel, 2008), such as training activities, courses, or schools. The third definition of human capital is that it is a component of the production process, as (Romer, 1990) contends that human capital is a fundamental source of economic productivity.

The population in Karangsari Village in 2020 was 9,369 people with 4,808 male residents and 4,561 female residents. Karangsari Village's population is dominated by people of productive age, namely 35-39 years, with a total of 844 people. The majority of the population in productive age is capital or potential for community development because it is still in an energetic condition that has the potential to participate in community development. The majority of Karangsari Village residents are farm laborers of 1,183 people, with the remainder working as fishermen, industrial workers, construction workers, civil servants, TNI/POLRI, and retirees.

In implementing the Pendekar Program, Human Capital can be seen from the Pendekar Group which produces coconut sugar, and the Nira Cahaya Sejahtera

Cooperative which assists in the product marketing process. The Pendekar Group is a group consisting of sugar farmers who had skills in producing printed sugar which has been passed down from generation to generation by their ancestors. These farmers were then organized and given the training to improve their skills as part of the Pertamina FT Maos CSR program. The training includes safety in climbing coconut trees, clean and healthy sugar production, efficient use of firewood, and replacing chemicals with organic materials when harvesting coconut sap. Furthermore, through the CSR program, assistance activities are carried out to help organize groups and strengthen the Nira Cahaya Sejahtera cooperative's administrative and marketing skills.

The next asset is Natural Capital, which is important for sugar farmers' well-being because land, water, and biodiversity are the primary resources used in sugar production. This case, in particular, is related to coconut plantations. According to (Alexander & Pratto, 2014), natural capital is a stock of limited and renewable natural resources and ecosystems that can provide direct or indirect benefits to the economy or society.

Karangsari Village is a rural area that is not yet densely populated, so there are plenty of green open lands. The total area of Karangsari Village is 338.48 Ha, of which 194.70 Ha is used as rice fields, 116.03 Ha for residential areas, 25 Ha for moor/garden land, 2.9733 Ha for public facilities, 38.05 Ha for crooked land, and 0.56 Ha for social facilities. Because of the small population of Karangsari Village, most of the houses have large yard areas. According to community interviews, 81% VII-62 of Karangsari Village residents have a yard larger than 5 m^2. 59% of the people in Karangsari Village use their yards to grow ornamental plants. As many as 22% of people use their yards as production land for business purposes, growing vegetables, sweet potatoes, and hydroponics.

The majority of Karangsari Village residents (51%) rely on groundwater/wells for a source of clean water. 49% chose PDAM/artesian water as a source of clean water, while no community used bottled water or river water. 62% of Karangsari Village residents believe that the quality of groundwater used as clean water is still relatively good. 5% of the community considers groundwater quality to be very good, while another 27% considers groundwater quality to be quite good. Karangsari Village is dominated by the agricultural/plantation sector. The majority of people (78.4%) think that the agricultural/plantation sector in Karangsari Village is quite good, while 18.9% of them think it is very good. The most important agricultural/plantation commodities in Karangsari Village are rice and coconut. The coconut commodity has the potential to be utilized by the community to produce powdered brown sugar which can later increase the income of the local community. However, several factors affect the yield of rice and coconut commodities, including the emergence of pests and diseases as well as weather factors. Several potential agricultural/plantation commodities that can still be developed include crops, jackfruit trees, banana trees, etc. Apart from the agricultural/plantation sector, Karangsari Village also has a large water sector. The Serayu River is a water sector in Karangsari Village which is used as a source of water

for irrigating rice fields, and fresh fish cultivation by some communities. However, several factors sometimes affect the development of the waters of the Serayu River, including weather factors and limited availability of fish seed. According to the majority of the local community (43.2%), the water potential of the Serayu River is quite good. Some other people (37.8%) consider the potential of the waters of the Serayu River to be good

In terms of natural capital used in the Pendekar program implementation, the area of plantations in the Karangsari Village area reaches 20-30 hectares, of which 9.27 hectares are productive coconut plantations used as raw material for powdered brown sugar. As part of its efforts to preserve the environment and its Natural Capital, the Pendekar Group has undertaken a number of activities through the Pertamina FT Maos CSR Program. The first is coconut tree reforestation, which aims to increase land vegetation cover and replace old coconut trees. Furthermore, the Pendekar Group is capable of producing organic sugar and has been certified as such by the Control Union under the certification number Cu878185. Furthermore, the Pendekar Group has attempted to save energy by switching from firewood to gas fuel. 20 liters of coconut sap is typically cooked using firewood for 325 minutes (5.42 hours) and consumes approximately 27.2 kg of firewood per day, so the widespread felling of trees for the production of coconut sugar can certainly harm the surrounding environment (Jumadil, Rachman, & Hapid, 2018). Efficiency is achieved by replacing fuel to process 20 liters of coconut sap with 2 Kg of LPG gas, which can reduce production time to 98 minutes (1 hour 38 minutes), which is significantly faster than using firewood.

Social Capital and Financial Capital are two aspects that influence each other. Social Capital encompasses social networks, relationships, and norms that affect the social welfare of farmers. Social capital includes elements, networks, norms of reciprocity, and social organization that is closely related to the principle of sustainability in society (Dempsey, 2012). Meanwhile, financial capital can be defined as any resource that can be used to improve the community's finances or economy in order to achieve sustainable livelihoods.

Karangsari Village is made up of four hamlets. The relationships between communities are quite harmonious. According to the findings of an interview with Nasukin, the Head of Karangsari Village, the majority of the people in Karangsari Village have a positive attitude toward mutual cooperation. According to the social mapping survey results for the Karangsari Village community, 65% and 22% are active and very active in mutual cooperation, respectively. Residents in each hamlet are accustomed to socializing, participating in activities aimed at regional development, and taking the initiative. Karangsari Village residents are very enthusiastic and respond positively to community activities. Several community activities that encourage mutual cooperation include forums such as Village PKK, RW PKK, RT PKK, BUMDes, RW associations, and other social activities such as monthly community service and Friday night recitations. The Karangsari Village community is also open to and supportive of community development programs in their area.

This is shown by the results of the social mapping survey which states that the village community's participation in community activities is very active (always present) at 51%

According to the findings of a social mapping survey conducted in Karangsari Village regarding financia capital, 49% of the village community had savings of less than IDR 500,000, while the remaining 35% had no savings. The majority of Karangsari Village residents save in cooperatives or commercial banks, while the remainder saves at home or through PKK activities. Apart from saving, the majority of people (49%) borrow money from cooperatives or commercial banks. Each person's loan amount varies; 43% have loans of more than IDR 1,000,000, 14% have loans of IDR 500,000 to IDR 1,000,000, 5% have loans of less than IDR 500,000 -, and the remainder have no loans. Karangsari Village residents have easy access to financial institutions for savings and loan activities, such as access to BRI Bank in the Maos District, which is 4 kilometers away, Bank BRI in the Adipala District, which is 4.6 kilometers away, Bank Mandiri in the Maos District, which is 4.8 kilometers away, and Bank BNI Adipala District, which is 4.8 kilometers away.

This Social Capital and Financial Capital can be seen manifested in the existence of the Pendekar Group and the Nira Cahaya Sejahtera Cooperative in the implementation of the Pertamina FT Maos Pendekar CSR Program. Sugar farmers organize regular monthly gatherings through these groups, which can help them gain access to the sugar market. Even the presence of cooperatives can motivate sugar farming communities to produce export-quality sugar, which has been exported to countries such as Germany and France.

Meanwhile, physical capital refers to infrastructure and equipment that can help with household livelihoods (Edet & Francis, 2017). Infrastructure is divided into two, namely economic infrastructure and social infrastructure. Economic infrastructure includes access infrastructure such as road networks, electricity network utilities, and water network utilities. Meanwhile, social infrastructure refers to infrastructure that serves social and religious purposes, such as places of worship, health centers, *posyandu*, schools, and hospitals. Infrastructure makes it easier for people to access certain services and improve their well-being.

Karangsari Village's educational infrastructure consists of four elementary schools (SD) and one kindergarten (TK) building that are in good condition and easily accessible to the community. Karangsari Village's religious infrastructure consists of 6 mosques, 8 *mushola*, and 1 Protestant church. In general, the mosque in Karangsari Village is in good condition, sturdy, clean, and adequate for worship activities. While the condition of ablution places, in general, is poor, the mosque in Karangsari Village is clean and adequate, with clean and well-maintained bathrooms. The overall condition of the mushola building in Karangsari Village is clean and suitable for use in worship activities. The ablution area in Karangsari Village's *mushola* is in good condition. Some *mushola* are located on main roads with good paved road conditions, while others can only be reached by two-wheeled vehicles because they are located on environmental roads that are more accessible by two-wheeled vehicles or on foot.

Karangsari Village's security infrastructure consists of security posts located throughout the village. In general, the security post building is a non-permanent structure. The security post is wired with electricity, allowing it to install lights and power electronic devices such as TVs, fans, and cellphone chargers. Social awareness to maintain security in Karangsari Village is quite high because the routine patrol schedule is carried out by residents alternately according to the schedule made by each RT and RW.

The meeting infrastructure in Karangsari Village is the Village Hall at the Village Office. The Meeting Hall functions as a gathering place for village communities to hold discussions and carry out outreach and other activities. The Village Hall is in good condition and is fully equipped for meetings, including microphones, fans, tables and chairs, and trash cans. The access road to the Village Hall is in good condition and is easily passed by motorized vehicles, both two-wheeled and four-wheeled.

Karangsari Village's economic infrastructure consists of 1 minimarket/supermarket, 21 grocery stores/stalls, and 15 food stalls/stalls. The condition of economic infrastructure is relatively good, with the majority of economic infrastructure located in people's homes. Road access to economic infrastructure is good and can be passed by two-wheeled and four-wheeled motorized vehicles.

In addition to the infrastructure mentioned above, other physical capital is used by the community, particularly sugar farmers in the Pendekar Program. Previously, sugar farmers in Karangsari Village had the equipment to convert coconut sap into sugar. The equipment was then re-evaluated, replaced, and added to the Pertamina FT Maos CSR program to improve safety, efficiency, and effectiveness. For example, in order to collect coconut sap, the paint cans used as a "Pongkor" sap collection tool were replaced with food-grade equipment, and safety equipment such as safety belts and shoes were purchased. Then, during the sugar production process, a wood-fired stove is replaced with an LPG stove, which saves time. Furthermore, frying pans and other equipment were replaced with stronger iron versions. In addition, 5 healthy kitchen points have been made for the production room.

3. The Impact of Changes in the Pendekar Program (Penderes Badeg Karangsari)

The implementation of the Pendekar Program by CSR Pertamina FT Maos is one of the solutions to solving problems in Karangsari Village. This program can assist in providing access that was previously unreachable by vulnerable or poor communities. The accesses that can then be reached are:

Table 2. Conditions of Access Vulnerability Before and After the Program

No	Access Vulnerability	Before	After
1.	Access Training HR Capacity Building	There is no training to increase HR capacity in the production of powdered brown sugar.	There is training tailored to the needs of the community, such as production training, production K3 training, training for new tappers, etc. The Pendekar Collective Kitchen has been built as a center for group activities.
2	Product Market Access	The production output is determined by middlemen with a low bargaining value.	Production results are adjusted to meet premium product standards for international markets (Grade A) and domestic markets (Grade B), which are managed by cooperatives and groups formed through discussions with relevant stakeholders. In addition to being distributed by the cooperative as a distribution agency for powdered brown sugar production.
3	Access Assistance	Some previous assistance did not meet the needs of the community because it was provided from the top down rather than from the bottom up. As a result, it is stalled and cannot be used.	Aid is channeled using the bottom-up method, which is tailored to the needs of the general population, so the beneficiaries are more diverse and can be fully utilized.
4	Access to standard powdered brown sugar production equipment for	Do not have access due to limited capital and access to the availability of information related to the appropriate means of production.	Have access to and knowledge of production equipment in accordance with organic standards.

	organic production		

Source: CSR Document of Pertamina FT Maos

The Pendekar program also had an impact on the many changes in the sugar production process into powdered brown sugar compared to the previous production process when producing printed sugar. An organic commitment alters the mindset and pattern of community production. The following are the things that demonstrate the community's commitment to producing organic powdered brown sugar:

Table 3. Changing Conditions Before and After Program Implementation

No	Condition Before the Program	Condition After the Program
1	Using a wood-burning stove	Using a Kosaka gas stove (Karsa Sakti Stove)
2	Using cooking oil/coconut leaves to reduce foam when cooking sugar	Using Virgin Coconut Oil (VCO) to reduce foam when cooking sugar
3	Washing cooking utensils using laundry soap	Washing cooking utensils using coconut fiber
4	Distribution of product sales independently by directly dealing with collectors from outside the area	Distribution is held by the Nira Cahaya Sejahtera Cooperative (NCS) with guaranteed sales and transparent prices.
5	Carrying out product quality control independently without any quality uniformity.	Quality control is carried out by the Internal Control System (ICS) Team in accordance with a checklist and standardization of product quality to maintain consistency of production results.
6	Marketing only focuses on local areas (Central Java and DIY) with the production of printed sugar with stiff competition.	Marketing by the NCS Cooperative with the aim of the export market (Europe) with Premium Quality Organic Powdered Brown Sugar (Grade A). As for the local market, the Production of Organic Ginger Flavored Powdered Brown Sugar (Grade B) is a new alternative market differentiation.

7	Using an iron/metal sifter in the sieving process which is prone to rust	Using a stainless steel sieve which is not easy to rust in the sieving process
8	Using a 5-liter capacity used paint can as a "pongkor" (sap container).	Using 5-liter food-grade quality "pongkor" as a substitute for used paint cans.
9	Using Metabisulphite as an inhibitor for sap fermentation	Using laru (injected water and jackfruit chips)
10	Without using a safety belt when climbing a coconut tree	Using a safety belt when climbing a coconut tree

Source: CSR Document of Pertamina FT Maos

In this process, the initial steps carried out by the sugar tapper are preparing the needs for tapping, including, pongkor (sap container), laru (a mixture to inhibit sap fermentation), and safety belts. The pongkor used by tappers today is made of food-grade materials, as opposed to the pongkor cans of used paint, which do not meet food safety standards. When referring to organic standards, bamboo pongkor is used. However, the community modifies it to meet their needs (Pertamina, 2021).

Furthermore, as a sap fermentation inhibitor mixture, the community uses a solution of inkjet and jackfruit chips as a substitute for sulfide, which is a chemical mixture. Actually, if 2% of the total sap to be taken is used, sulfide is a food-grade chemical mixture. But most people don't care because each tapper has its own dosage and can be overused. If laru is used, only 2-3 cups of 150 mL and two jackfruit knuckles are needed.

After the pongkor has been administered, the coconut sap water must be extracted. The tappers usually take the sap twice a day, in the morning and in the evening. Tappers can produce up to 20 liters of sap per day, which is then cooked into sugar. To increase security, the sap must be collected by climbing a coconut tree. A safety belt is used when climbing the crane. The purpose of using this seat belt is to provide a sense of security while climbing a coconut tree and to reduce the risk of slipping or losing grip. The tappers used to take sap without any protection.

One of the most important factors in increasing the efficiency of sugar production is maintaining a constant level of fire in the cooking process. Smith et al. in Haryanto and Triyono (2012) concluded that emissions from incomplete combustion products increased from unprocessed solid fuels (wood) to processed solid fuels (charcoal, coal) to liquid fuels to gaseous fuels (Haryanto & Triyono, 2012). People who had previously used wood-fired stoves as a cooking tools in the sugar industry were directed to use LPG gas stoves. When compared to firewood, gas stoves provide more consistent gas. The use of LPG gas reduces emissions from the logging of firewood, which is used as fuel

Several stages are carried out in its implementation to realize the specifications of the stove based on the needs of the tapper. The stove, which was designed to meet the needs of the tappers, was initially known as KOSAKA (Karsari Sakti Stove). The stages that have been completed are as follows:

a. Identifying issues and potentials between actors.
b. Providing solutions by making gas stoves.
c. Identifying the frying pan that is usually used by the tappers.
d. Designing the stove according to the crane's requirements (specifications).
e. Prototype-making process.
f. Prototype 1 gas stove trial.
g. Pipeline repairs and griddle holder correction for gas stoves.
h. Final product.

In addition to using the stove, the tappers use Virgin Coconut Oil (VCO) as a mixture when cooking. This method is intended to reduce foam overflow when the sugar is close to cooking. Following the completion of the cooking process, the cooking utensils must be washed. When the stove is still hot, the tap removes the remaining sugar from the pan and then pours hot water over the pan to dissolve the hardened crystals. The washing process is then completed with coconut fiber. To avoid soap contamination in the subsequent cooking process, do not use soap during the washing process.

The Internal Control System (ICS) is involved in this process to accompany and supervise the powdered brown sugar production process. The responsibility of ICS is to ensure that the tappers follow the SOP from the beginning of making laru to the end of packaging. ICS also has a checklist that must be completed during mentoring in order to account for reporting.

In the pre-packaging stage, the tapper performs sieving to sort out the sugar crystals using a stainless steel sieve. Stainless steel sieves are used as a food-safe material. After sifting, the packaging is done by applying HSE principles, including using equipment such as when cooking: aprons, head coverings, masks or face shields, and rubber gloves. This aims to reduce the level of contamination and the possibility of hair loss during packaging. There is no special packaging at this stage. The product is simply wrapped in 10 kg in bulk form and then sent to the cooperative to be distributed to buyers after going through a sorting and oven process to reduce the sugar moisture level to below 7%.

Farmers produce sugar products, which are then sent to the cooperative to be collected and subjected to a Quality Control (QC) process. The cooperative's role in sorting, sifting, baking, and repacking is also continued by ICS. This is done to ensure that none of the mutually agreed-upon processes are missed and to ensure hygienic and consistent sugar production in order to maintain product quality.

From the implementation of the Pendekar program, one way to measure the effectiveness of the Pendekar Program is to use the Social Return on Investment (SROI) method. In addition, the SROI assessment is used as a form of evaluation method for the improvement and improvement of program quality in the future. The

results of the SROI calculation for the Pendekar Program that has been carried out by PT. Sucofindo (Persero), shows a value of 2.33, which means that the company's investment of Rp. 1, - has a benefit value of Rp. 2.33, -. These findings suggest that the Pendekar Program is useful in assisting the village government in resolving social issues in the Karangsari Village area (Sucofindo, SROI Program Pendekar 2021, 2021).

D. CONCLUSION

The implementation of the Pertamina FT Maos CSR Program in Karangsari Village, Cilacap is an effort to assist in the resolution of social problems in Karangsari Village, particularly poverty. The Sustainable Livelihoods approach has aided in identifying community conditions and program implementation changes. Using this approach, it is possible to conclude that the Pendekar Program in general has improved the quality of human resources and maximized natural resource management in Karangsari Village. Collective awareness in the context of producing healthy sugar has resulted in many changes in the tappers' mindset. Organic standards that must be met as targets can be met in their own unique way, based on abilities, without interfering with one another. This change encompasses many aspects, not just the equipment used. The participation of many parties in the program strengthens it even more. Each actor plays a role according to their respective capacities without overlapping each other in order to lead to a prosperous society.

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