

Article

Local Resource Governance and Community-Driven Circular Economy Practices in Sukolilo Village

Ahmad Imron Rozuli^{1*}, Moh. Muzakki², Anik Susanti³, Dano Purba⁴, Ika Hutaminingsih⁵

Corresponding author. *Email: imron@ub.ac.id

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Abstract

This study examines how Sukolilo Village constructs a community-driven circular economy through the management of its key local resources, including ornamental grasses, brown sugar, samiler chips, and the Gentong Mas water-based tourism area. Using a qualitative approach comprising interviews, focus group discussions, and field observations, the research investigates how local actors govern natural resources while sustaining economic, social, and environmental values. Findings show that ornamental grass cultivation forms the village's core economic identity, supported by long-standing networks among landowners, farmers, and collectors that enable informal yet resilient market circulation. Brown sugar artisans confront two major challenges: environmental concerns arising from the use of tire-burning as fuel and intense competition that has reduced the number of producers. These pressures have prompted the formation of an artisan association to strengthen collective bargaining and production standards. Meanwhile, samiler chip producers integrate traditional knowledge with modern marketing, relying on kinship-based distribution, social media, and regional networks. Across sectors, local beliefs, norms, and tacit knowledge help regulate extraction, maintain land fertility, and reinforce environmentally conscious practices. The study concludes that Sukolilo's circular local economy emerges not from formal policy but from adaptive community agency, strong social relations, and embedded cultural values.

Keywords: economy; natural resource management; local actors; rural economy; community networks.

¹ SDGs Brawijaya University, Jalan Veteran, Malang 65141, Indonesia. Email: imron@ub.ac.id.

² SDGs Brawijaya University, Jalan Veteran, Malang 65141, Indonesia. Email: dr.mohmuzakki.msi@gmail.com.

³ SDGs Brawijaya University, Jalan Veteran, Malang 65141, Indonesia. Email: anik@ub.ac.id.

⁴ SDGs Brawijaya University, Jalan Veteran, Malang 65141, Indonesia. Email: danu@ub.ac.id.

⁵ SDGs Brawijaya University, Jalan Veteran, Malang 65141, Indonesia. Email: ika.hutaminingsih@gmail.com.

I. Introduction

Resource management is a strategic step that has thus far been evaluated by each party, especially for those who engage with the potential they manage. The main principle prioritized is how to carry out management accompanied by sustainability values (Alfian & Akbar, 2020; Holle et al., 2022). Management can be seen as a process of managing potential to create a product that influences society. The expected impact of this management aims to improve economically, socially, and environmentally (Burano, 2017; Lubis, 2003). Ideally, resource management practices are carried out by stakeholders, residents, and the government. Involving several parties is expected to open a space for two-way interaction, mutual negotiation, expression of inspiration, and constructive ideas to answer the problems faced (Dharmawibawa, 2019; Surono, 2017). The reason is that in managing operations, it will encounter risky challenges associated with the environment and relevant regulations. Namely, dealing with the Ministry of Village Regulation No. 23 of 2017 concerning the development and application of technology for managing village natural resources, it is stated that those who use technology in managing village potential resources must pay attention to the values of environmental sustainability and community involvement. Furthermore, another issue is that the management should also carry out an evaluation of the local community, focusing on the significance of beliefs, myths, and symbols that hold sacred meaning in relation to the environment (Sandjojo, 2017).

There are many risks as a result of managing the potential of the village, which has an impact on local communities, namely research conducted by Burano (2017) explained that the results of the analysis of resource management in wetland agricultural areas in rural areas using SWOT analysis stated that the area development plan is related to institutional development, agricultural sector development, preservation of community cultural values, environmental management and conservation, rural infrastructure development, and rural community development. The findings of Sahureka (2016) indicated that traits of the community in their use and management of forest resources are influenced by factors such as group, education level, occupation, and overall income. The land utilization patterns of the Hukurila village community can be categorized into five types: residential yards, cultivation areas, dusung agroforestry, natural woodlands, and coastal regions. At the same time, the phases of land management include land preparation, sowing, upkeep, gathering, selling, and post-harvest processing.

From these two research results, it can be understood that resource management does not only focus on the object of potential that is managed but how the object of potential opens a potential management climate related to other institutions, including management licensing institutions, social and environmental impact analysis, planning institutions, and local communities that enter the management ring. It is done because things related to potential management will intersect with the relevant institutions, the environment, and the community. For example, if the management is related to the potential of sugarcane and water, it will be related to the agriculture office, sugarcane companies, and sugarcane farmer groups. Various stakeholders engaged in management tasks will establish the guidelines regarding the selling price, cultivation costs, labor wages, maintenance expenses, distribution of products, and marketing activities. It means that resource management is a practice of processing potential in which it comes into contact with technology as a processing tool, the system as a production flow, and agreements as game rules that are mutually applied by several parties involved. In other words, resource management is a

systematic form of how production systems are applied to produce products with economic value, use value, and social value that have consequences for the economic growth of the community and impact the quality of the surrounding environment.

Meanwhile, in terms of its approach, resource management can be seen from three scopes of approach, namely small, medium, and large. Management with a limited scope is undoubtedly connected to overseeing the potential associated with the participation of a few residents, and the utilized potential remains relatively modest. For instance, this can be seen in the management of sugar cane resources cultivated by farmers. While medium scope management is related to group involvement, usually in this management, there is a connection with group management such as the management of sugar cane produced by associations of farmers. The production of sugar cane will be distributed to sugar or soy sauce companies so that it proceeds to the management of large-level potential (Holle et al., 2022; Silvitiani et al., 2018). In this stage, the process of managing the potential carried out by the community will directly impact economic growth and local welfare. The reason is that the community, seen as a managing actor, will agree on several applicable rules, starting from agreements related to cooperation, management time, and agreements on the selling price of sugar cane. Then, the relationship between sugarcane landowners, sugarcane farmers, sugarcane distribution, sugarcane collectors, and sugarcane intermediaries is equal, considering profits. Although structurally and systemically, the potential managers have tiered profits, they directly share the same profit according to their positioning. Thus, this condition can be understood as the management of potential being linked to the circular economy. The greater the circular economy that occurs, the more sustainable the management of the potential will be (Lubis, 2003; Marwasta, 2017).

The evolution of potential management will similarly align with regulations concerning the utilization of large machinery or technology; in this context, the time and volume constraints of potential management must be taken into account. If the control is not managed properly, it can lead to environmental issues such as air pollution, water pollution, deforestation, abrasion, flooding, and various other concerns (Sahureka, 2016; Surono, 2017). To ensure effective management, it is essential to pay close attention to the individuals involved and their values. Connections to regional values such as beliefs, myths, and community traditions also serve as signs for preserving potential. Specifically, the trust that the local community has in the forest leads them to believe that nature will yield positive benefits when their efforts to safeguard the forest are at their highest, such as not cutting down trees carelessly, conducting illegal logging, and carrying out actions prohibited by the customary head of the forest (Erawati & Mussadun, 2013; Marwasta, 2017). It means that from several explanations related to potential management, a critical analysis can be taken namely in practice that potential management cannot be separated from the involvement of several parties, requires an analysis of the consequences of management activities, requires calculation of economic circulation, and assessment of the impact on the environment as a result of on-going activities. Consequently, researchers are focused on examining how potential management is conducted organically and in accordance with local practices, as residents collaboratively tend to their environment in order to support local economic flow and ensure environmental sustainability while considering conservation principles.

The site chosen for the research is situated in Sukolilo Village, located in Wajak Subdistrict of Malang Regency. The researchers selected this site due to its local potential in ornamental grasses, samiler crackers, brown sugar, and the management of Gentong Mas

tourism that leverages water resources. During the survey, several issues that posed significant risk emerged, especially concerning education and the collaboration of local institutions with the government. In general, when people are economically stable, they can access education. In Sukolilo, however, young men who complete from junior and senior high school do not pursue further education. The reason is that they have been working as grass farmers for a long time and can make money personally, so they are reluctant to continue their education. Based on observations, farm laborers can earn a wage of 3 million rupiah per month. There is also a side benefit when market demand for the ornamental grasses increases. As a result of the stability of the local rural economy, residents also enjoy the art of bantengan, which they see as a way to fill their spare time. However, behind the action of the art is a higher level of deviant behavior in the use of alcohol and gambling. The actors of palm sugar, ornamental grass, and samiler chips do not want the village government to interfere. They believe that the government's involvement in regulating local activities will complicate the circulation of the local economy and hamper the community's activities. For instance, in Bunut, the government organized the main producers of samiler chips to serve as a pilot model, which is still unfinished, as they were required to pay a fee for the construction of dusun gate. As for the ornamental grass farmers, the government will issue a policy on taxation and control of intermediaries. The farmers do not want this because it will hamper their transaction process during the harvest.

From these two problems, researchers see that residents already have the capacity to reject government policies. Residents have found satisfaction in the financial outcomes resulting from their efforts to manage the village's potential. Without a top-down program, local economic actors can maintain what they manage. Both from the institutional aspect, the relationship between actors, and the values they agree on together. As a result, scholars are keen on examining the viewpoints of local inhabitants regarding the potential of their village and how collaborative efforts in environmental upkeep are reflected in the approach to sustaining that potential through local wisdom.

This research uses the circular economy concept to analyze the process of managing local natural resources carried out by local actors in Sukolilo Village. Most of Indonesia's existing economic framework continues to rely on a linear economic model that prioritizes maximizing outcomes and profits, yet is neither sustainable nor viable in the long run. The principle of the linear economic model is to use the "take-use-dispose" method. (Low Carbon Development Indonesia Ministry of National Development Planning/Bappenas, online). The linear economic model is a pattern of production from raw materials to products that are consumed and then discarded. The linear economic model could create issues if the supply of raw materials is limited or non-renewable (Damone, 2021 in Sitompul, 2023). It is due to extracting natural resources that become raw materials produced into consumption products. Residues or waste are discharged into nature and harm the environment (Forest Digest, 2023).

The circular economy has emerged as an alternative to reducing resource consumption and minimizing environmental impact. The circular economy approach encourages different industries to manufacture goods, repurpose their waste, and maintain this circular process. It will influence the economic process that was once linear, transforming it into an endless circular cycle. When successfully implementing a circular economy, waste can be eliminated, natural resource extraction reduced, and the environment regenerated (Forest Digest, 2023). Mongabay (2023) adds that the circular economy model

will drive renewable energy production and shift society away from consumerism. The National Standardization Agency or BSN (2022) defines the circular economy as a circular economic system approach by maximizing the usefulness or added value of a raw resource, resource component, and resource product to reduce the amount of waste material that is not used and disposed of in landfills. Its application can encourage green economic growth.

The circular economy, as outlined by PBL (2017 in Schröder, et.al, 2019), focuses on maximizing the utilization of products and raw materials while minimizing waste and harmful emissions to soil, water, and air. The European Union is beginning to shift towards a circular economy model, which aims to maintain the value of products, materials, and resources within the economic system to reduce waste as much as possible (Schröder, et al., 2019). Additionally, Schröder, et.al (2019) emphasises the significance of engaging social institutions in executing circular economy strategies that require the transformation of the entire product chain or systemic alterations. These changes include how consumers relate to products, actors in the production chain working together to implement the circular economy model, and all institutions need to facilitate the implementation of the circular economy model. The circular economy model should also be embedded with power relations (Moreau et al., 2017 as cited in Schröder, et al., 2019).

According to the Ellen MacArthur Foundation (2015 as cited in Schröder et al., 2019), boosting the value of products and raw materials isn't sufficient to enhance the flow of these items for the purpose of promoting economic growth in the circular economic model. It can be done by 1) preserving and increasing natural capital by controlling finite stocks and balancing the flow of renewable resources 2) optimizing the resources that can be generated from the circulation of products, components, and raw materials that are utilized as high as possible 3) the effectiveness of the coaching system is done by showing and designing negative externalities. Baranzini and colleagues (2017 as cited in Schröder, et al., 2019) claim that natural resources should be assigned an inherent value connected to their scarcity and the capacity of the biosphere to handle waste production.

The Ministry of National Development Planning or Bappenas, in collaboration with the Danish Embassy in Jakarta and UNDP (2021), defines that the circular economy aims to generate economic growth while maintaining the value of products, raw materials, and resources in the economy for as long as possible to ultimately minimize the social and environmental damage caused by the old linear economic approach. The activities of a circular economy encompass the 5Rs: reduce, reuse, recycle, refurbish, and renew. The streamlined circular model can be achieved by minimizing waste within the production and supply chain, digitalizing products and services like e-books, conserving energy or enhancing energy efficiency, and re-engineering products to require fewer resources. The circular reuse method involves sharing resources like homes, vehicles, and various equipment; utilizing pre-owned items; and enhancing asset utilization by providing products in the form of services. The circular recycling method involves repurposing current materials and utilizing anaerobic digestion along with biochemical extraction for organic waste. The circular refurbishment method involves remanufacturing or recreating products or parts, along with extending the product life cycle through maintenance. The circular renew strategy emphasizes the use of energy and sustainable materials, such as substituting plastic packaging with paper packaging.

A circular economy represents a commitment to attaining sustainable development, which involves striving for environmental integrity, well-being, and fairness in both

economic and social aspects (Kirchherr, Reike, and Hekkert, 2017 in Sutomo, et.al, 2022). The circular economy combines economic development with the preservation of the environment (D'Amato and Korhonen, 2021 in Sutomo, et al., 2022). The circular economy also seeks to minimize the exploitation of natural resources by reducing the exploitation of nature itself, reducing environmental degradation, and reducing emissions and waste by applying the concept of sustainability (Strielkowski, 2016 in Sutomo, et.al, 2022). The initiatives represent one of the approaches aimed at shifting economic activities toward the adoption of sustainable practices (Maryna, Cali, and Welfens, et.al, 2017 in Mukhlis, et.al, 2021).

II. Methods

This research uses descriptive qualitative research. Researchers use descriptive qualitative research to describe and examine the perspectives of residents regarding the potential of natural resources in the village as well as environmental maintenance behavior embodied in the pattern of maintaining potential based on local village wisdom. Data collection techniques conducted through in-depth interviews, Focus Group Discussions (FGDs), observation, and the review of documentation. The research subjects were selected purposely, namely the selection of informants with a purpose and consideration. The research subjects in the study were representatives of ornamental grass farmers, representatives of people who make a living in the UMKM sector, and representatives of brown sugar artisans, with a total of six informants. This study employs source triangulation to assess data validity by analyzing the interview outcomes of one informant alongside those of other informants concerning local residents' views on the potential of natural resources in the village and their actions in preserving the environment, as reflected in their approaches to maintaining resources grounded in village cultural wisdom. This study employs data analysis techniques based on Miles and Huberman, utilizing the phases of data condensation, data presentation, and conclusion formulation.

III. Results, Analysis, and Discussions

3.1. Ornamental Grass Management

The potential of ornamental grass is currently a local economic identity for Sukolilo Village because this potential has come a long way. In 1980, the Sukolilo community was still involved in cultivating sugar cane, with farmers creating a type of sugar cooker to process the *tegalan* or dry land, and at times, they would share meals together with other farmers. Gradually, along with the development of the village, one of the Sukolilo villagers named Umi Hj. Husnia saw a garden in the sub-district that was decorated with grass. As per interview, during the 1980s, a sub-district secretary travelled to Japan, and at that time, the role of sub-district secretary also served as an administrative function. Upon her return from Japan, she brought back ornamental grasses to be planted in the courtyard of the sub-district head office, and the residents named them Japanese grass.

After the Japanese grass grew well, Hj. Husnia asked to plant it behind her house. She shaped the ornamental grass with the word's goodbye because Hj. Husnia was going to work in Kalimantan. After five years, as she came back to her hometown, she noticed that the grass growing behind her house was flourishing and beautifying her yard. Ultimately, Hj. Husnia

began to think the grass could be sold, especially to decorate residents' plants. It was in 1985 that ornamental grass became a commodity plant, Hj. Husnia began to invite young people as co-workers and offer ornamental garden services in people's yards. Unexpectedly, the interest of the locals and those from outside the village was high enough to queue to wait for their turn.

The way residents carry out the planting process until finally harvesting, based on the planting process, ornamental grass is divided into several stages, from loosening the soil, planting seeds, watering, fertilizing, and pest control to harvest time. Farm laborers are often allocated to work on the land during loosening the soil, planting seeds, fertilizing, and harvesting. During planting to harvesting activities, there are landowners, laborers, and forepersons. Each party has different responsibilities; in particular, the landowner acts as a capital provider, pays wages, and purchases materials for soil loosening. Meanwhile, grass farmers play a role in the planting preparation process, namely cleaning the land and loosening it. Then, carry out the grass planting process and maintain the volume of water so as not to overdo it, causing damage to the grass. According to Mrs. Tina, one of the ornamental grass farmers in Sukolilo Village who has been involved in this sector for the past 36 years, she said:

“The land cultivation process takes approximately ten to twelve days if done by ten people. As for the harvesting process, it usually only takes two people to help cut the ornamental grass plots that will be on the market.”

The interview indicates that the cultivation of land requires a span of twelve days, with adjustments made according to specific areas of land being worked on. Based on the research findings, grass farmers typically cultivate land ranging from 300 to 500 square meters; the more extensive the area they manage, the longer the process tends to be. After going through the planting process, farmers take one to two months to harvest. During harvest season, collaboration between farmers and collectors is essential to promote the marketing of ornamental grasses. Researchers observed that the sales scheme for ornamental grasses in Sukolilo Village is primarily managed by collectors. In this scenario, the collectors arrive at the ornamental grass fields that are prepared for harvesting so they can buy them and distribute them to a broader market. Buyers arrive with their pickup trucks or vehicles to haul away grass that is prepared for sale. The practice is common along the land that is overgrown with ornamental grasses. The social network between ornamental grass farmers and collectors can occur spontaneously or repeatedly. There are times when grass farmers use the same collector in every harvest. Meanwhile, there are also those who some use the services of different collectors, depending on who comes to their land.

When the ornamental grass is ready to be produced for the market, the farmers set the selling price per plot with a size of 1 meter/cubic. They do not sell it independently but cooperate with collectors from the village and outside. Currently, farmers dealing with ornamental grass are experiencing issues regarding the low offers made by collectors, which leads them to adjust their price accordingly. The following table below calculates the income of grass farmers.

Table 1. Calculation of Actors' Income in Ornamental Grass Farming Activities

Actor	Harvest Time	Agreement	Average Sale	Average Income
Landowner	2-3 /month (jepang)	Rp 8.000,00 – Rp 10.000,00	500M = Rp. 5.000.000,00	(4000-8000- 12000)
Collector	3/month (swiss)	Rp 12.000,00 - Rp 15.000,00	500M =Rp. 6.000.000,00	(Rp 16.000.000,00)
Merchant	1-2/month	Rp 16.000,00 - Rp 20.000,00	500M = Rp. 8.000.000,00	
Buyer	Golf Grass	Rp 25.000,00 - Rp 30.000,00		
Grass Farm Laborer		Income: Rp 2.000,00 /meter, average minimum sale 500 M= Rp 1.000.000,00	(2000 x land area 500 M x piece work:x labor)	Rp. 1.000.000,00 /person
Owner		Sand cost of 1 <i>pick-up</i> Rp. 200.000,00 and chemical cost Rp 400.000,00		Planting cost expenditure; Rp 800.000,00 /harvest

Source: Data processed by researchers, 2024.

According to the table provided, the profit earned by farmers from a single harvest can be determined based on the size of the land cultivated. For Japanese grass planted on an area of 500 M (square), farmers sell 1 meter for Rp 8.000,00, so they get money of Rp 5.000.000,00 in 2 months. Next, subtract the salary of farm workers, amounting to Rp 1.000.000,00 per individual, and the expense for acquiring grass sand for one pick up load before planting, which is of Rp 400.000,00, for the maintenance of 400 square meters of land. The cost of fertilizers and grass pests is Rp 400.000,00. So, the net profit obtained by Japanese grass farmers is Rp 3.200.000,00 / every harvest. In comparison, the price of Swiss grass per meter is Rp 12.000,00. An area of 500 square meters of land generates Rp 6.000.000,00 over a three-months period, and after deducting expenses for planting, labor, and maintenance, the resulting net profit is Rp 4.200.000,00. Farmers do not always have full ownership of their land; some rent it, paying a rental fee of Rp 15.000.000,00 to Rp 20.000.000,00 for an area of 500-600 meters, depending on the quality of the land they are renting, for a duration of 10 years.

3.2. Brown Sugar Management

Alongside the possibilities offered by ornamental grasses, there is also an opportunity in brown sugar. According to the interview findings, Mrs. Warsinem's brown sugar business faces two specific challenges. Initially, related to the brown sugar production process, which

caused protests from residents. It arises because the sugar cane juice, boiled for two hours, requires supporting fuel. One of the materials used in addition to sugar cane milling waste is tires. The function of used tires is often complemented to traditional fuels such as coal or wood fuel because of their high calorific value. Generally, each pound of discarded tire rubber generates around 15,000 (BTU) of energy, and an individual tire can burn for as long as 50 minutes. It is equivalent to 25 percent more energy produced than coal.

As stated by Hansen (2022), although the incineration of used tires can serve as an effective energy source, the negative impacts of this process significantly surpass the advantages. Despite its efficiency, the smoke generated from tire burning is highly toxic to human health and harmful to the environment. The tire combustion process produces thick black smoke containing high levels of pollutants such as cyanide, carbon monoxide, sulfur dioxide, benzene, styrene, and 1,3-butadiene (Thompson, 2024). Carbon monoxide, for example, is harmful when inhaled by animals and humans because it can displace oxygen in the blood, causing damage to vital organs.

Residents near the brown sugar processing facility were also aware of the dangers associated with burning used tires. Their protests at the time stemmed from the puffs of black smoke that lasted every day for two hours. After deliberation, the solution to the problem was a request for compensation. This compensation is in parcels containing necessities and is given every Islamic New Year celebration (Eid al-Fitr).

The second issue that threatens the brown sugar industry in Sukolilo is fierce competition. Manurung and Nataatmadja (2016) contend that the brown sugar industry exhibits considerable profitability and is robust against fluctuations in the input-output pricing of brown sugar. It brings certain consequences for the intense competition among brown sugar enterprises and the Sugar Factory (PG), along with the competitiveness in the rural job market.

Mas Eko (Mrs. Warsinem's second son) recounted that there used to be at least 64 brown sugar processing places in Sukolilo (including home industries and factories). Nevertheless, the figure has diminished over time to just 24 home-based industries. The fierce competition that made many brown sugar industries in Sukolilo choose to go out of business arose from the non-standardized prices of sugar cane (raw material) and brown sugar (finished material). Sugarcane production and brown sugar distribution have their variations, thus triggering an unfair competition system.

During this frenzied competition, the 24 remaining businesses in the palm sugar industry finally realized their needs and similarities. This awareness is often known as a sense of belonging. A sense of belonging results from an individual's evaluation of a group, and his or her role in that group is considered one of the key factors influencing perceptions of social cohesion (Hurtado & Carter, 1997). Motivated by this sense of belonging and commonality of purpose, the 24 brown sugar industry business actors then formed a group called Paguyuban Sari Tebu.

The challenges encountered in the brown sugar trade reflect the dynamics within society, meaning that the process is inherently linked to conflicts and resolutions that ultimately foster cohesion among individuals. The existence of Paguyuban Sari Tebu can at least be the foundation for the sustainability of the brown sugar home industry in Sukolilo. As a result of this partnership, every brown sugar producer in Sukolilo has a platform to discuss and reach business agreements, covering everything from the cost of raw materials

to the selling price of their finished products. Along with addressing the issue of competition as a group, Mas Eko also disclosed an important strategy for managing it on an individual basis.

“The key to surviving for 24 years is to follow the flow. For example, if the price [of sugarcane] is expensive, it's better to stop first. Switch to being a distributor of sugarcane to the factory. For example, if the price from the landowner is 70,000, you can resell it for 80,000”. (Interview with Mas Eko, May 19, 2024).

Based on Mas Eko's explanation, as the head of production and distribution in the brown sugar home industry, the business can continue to run through adaptability and utilization of conditions. It indicates that the management of the brown sugar enterprise is flexible; it can function both as a producer and as a sales intermediary. This kind of business tactic has also been identified by Manurung and Nataatmadja (2016), so they divide the types of brown sugar entrepreneurs in East Java into four categories: 1) Brown sugar processors only; 2) Brown sugar processors + sugarcane farmers; 3) Brown sugar processors + traders; 4) Brown sugar processors + sugarcane farmers + sugarcane traders. Regarding the four categorizations, Mrs Warsinem's business belongs to group 3 (brown sugar processor and trader). The dual function of brown sugar entrepreneurs becomes apparent when the cost of sugarcane increases. Rather than being swept away by the competition, they tend to become sugarcane traders.

The dynamics of the problems faced by brown sugar actors are getting more complicated; the community around the sugar industry still complains about the presence of smoke produced during the production process. Since the smoke emitted from burning tires is uncontrollable, many young children experience feelings of suffocation and coughing, while the elderly are also affected by this issue. The village government and local security forces have mediated with several residents, brown sugar business owners, and factory workers. They asked them to reduce the number of tires used as fuel or to substitute other materials such as wood waste, tree branches, and other fuel types.

The village government has collaborated with the community health center or Puskesmas to explain to the community the impacts of burning tires. In particular, it impacted respiratory health, air pollution, plant ecosystems, and children under five or infants. In addition to this method, the village government also cooperates with factory owners to recruit residents as laborers; at least residents have been involved as actors in the brown sugar industry. It is at least able to suppress the pace of the local community movement for protests against the production activities of the brown sugar factory.

3.3. Management of *Samiler* Chips

The third local potential of Sukolilo Village is the production of *samiler* chips made from cassava. Based on its history, the *samiler* chips are inseparable from the habits of local farmers who utilize cassava agricultural products. Farmers used their farmland to grow cassava in 1970, and when it was harvested, it was processed on the spot. Farmers and residents were invited to eat together right on the *tegalan* or dry land. Gradually, the utilization of cassava was initially only sold outside the village but eventually experienced product diversification. Residents starting in 1990 have tried to modify cassava by making *samiler* chips.

Based on the process, the production of *samiler* chips goes through raw materials, molding, steam, drying, and packaging. At the beginning phase, the raw material process is

conducted by choosing quality cassava identified by standards and quality. Then, the cassava is peeled and washed. In the second stage, the cassava is grated with a grating machine, and the grated cassava is subsequently processed through the *samiler* molding procedure. Prior to the molding process, the stages of seasoning are performed and mixed into dough before shaping into *samiler*. The similar molding tool utilizes blue plastic in the form of a square and a circle. Furthermore, printing is done manually, by hand. The dough is positioned on the plastic and then flattened to the desired thickness before being stacked for the next step.

When the cassava is mashed and molded, it then enters the steam process, which is a process where the printed *samiler* is steamed and takes 10-15 minutes. Crackers are steamed using a steamer and cooked over a furnace fueled by firewood. Next, the drying process is carried out after the steaming process is complete by placing the *samiler* in the mold and placed on a rectangular wooden net for further drying. The drying duration is affected by weather; if hot weather prevents rain, 2-3 days sufficient for packing. The *samiler* chips are offered in both raw and fried forms based on the preferences of the customer.

After the chips are ready to be served, the last step that business actors do is to give a brand name. The designation is depending on the flavor and distinctiveness of every chip, the business participants also exhibit different flavors based on the spice blend, including different flavors of cheese, exotic, sweet or spicy. Flavoring and branding are two interrelated elements. If the buyer feels good, the consumer will buy the same product, and to make it easier for consumers to make repeated purchases, the brand plays an important role as a marker. This method is used to maintain local or out-of-village consumers. They maintain the taste according to the buyer's assessment and how long the buyers return to order.

Furthermore, to sell *samiler* chips, business actors carry out several marketing strategies locally and outside the village. They use a mixture of modern and traditional methods, namely conducting marketing strategies through family or *getok tular* and utilizing technology through social media. The approach via social networks, particularly the product launches conducted by business actors, especially in Pohkcek, originates from personal connections and subsequently disseminates the information to nearby store distributors. Marketing from this social network is often only known by relatives and residents around Sukolilo Village. For *samiler* chips players who have existing relationships with distributors, extra marketing efforts are unnecessary. The distributors also help market to other distributors from outside the village. It happens because the network owned by each distributor is also different.

So far, the marketing location taken by business actors has reached outside the village, which is carried out by the shop owner "Gabby Samiler" selling his products to the Gondanglegi, Tumpang, Tiban mosque, Sanarejo, Kendalpayak, Bonpring, and Garotan areas. In promoting their products, numerous business actors directly deliver their products to stores within a week. Some are delivered every Sunday to the Kendalpayak area, Wednesday to the Bululawang area, and Saturday to the Bonpring area. Besides marketing individually, most *samiler* cracker manufactures in Pohkcek offer their products in wholesale or large quantities for delivery or collection by distributors located in various areas of Malang Raya such as Gadang, Tumpang, Gondanglegi, and Batu.

As for product pricing, fellow sellers standardize different prices. The price range offered is around Rp 65.000,00 to Rp 80.000,00. The price offered to distributors with a 5-kilo package. However, some sellers provide almost the same IDR 15.000,00 for one kilo of

samiler crackers. The pricing indicator given by the producer is based on the flavor made. For example, a spicy flavor will be given a higher price, but the difference is not too much, around Rp 1.000,00 from crackers that have the original flavor. Pricing is also a form of competition in trade. This is due to the fact that *samiler* cracker manufactures will present options that reflect their individual qualities. Thus, consumers can choose their own crackers based on the price offered.

Based on this discussion, ornamental grass farmers carry out a circular economy. They use local knowledge related to the importance of maintaining soil fertility for planting readiness and productivity of the ornamental grass produced so that grass farmers do not only take advantage of nature but maintain the sustainability of nature and land with local knowledge owned by grass farmers so as not to exploit or even damage nature. Moreover, sugar cane cultivators and brown sugar artisans exclusively use sugar cane based on the demand for brown sugar, just like similar businesses that grow and gather cassava as needed to make similar chips. Farmers manage the land using their local knowledge to ensure the sustainability of both the land and natural resources. Farmers and their families will suffer losses if the land and nature are damaged because farmers and families are in direct contact with nature.

IV. Conclusion and Recommendation

Ornamental grass is the identity of the Sukolilo Village community because it has been a commodity of Sukolilo Village since 1985. Actors in planting ornamental grass potential are landowners and grass farmers, while actors in the post-harvest period are farmers and collectors. The sale of ornamental grass is only coordinated by the collectors. However, collectors from a village will cooperate with collectors from outside the village to market ornamental grass products. The social network established between farmers and collectors occurs spontaneously and repeatedly. The net income of Japanese grass farmers is Rp 32.000.000,00 with each harvest. The net profit of Swiss grass farmers is Rp 42.000.000,00 every harvest.

Brown sugar artisans face several problems in terms of brown sugar production, namely protests from residents regarding the process of burning activities. This problem can be overcome by deliberation, which results in compensation for parcels containing necessities and is given every Islamic New Year celebration (Eid al-Fitr) to the surrounding community affected. The second problem is the intense competition that left only brown sugar artisans who finally formed the Sari Tebu Association as a form of existence of brown sugar artisans facing dynamics including conflicts, business agreements, production flow, prices, and other issues. Artisans not only serve as producers but also function as sales intermediaries. At present, discussions are ongoing concerning the effects of the brown sugar incineration procedure involving residents, artisans, manufactures employees, local administration, safety agency, and Puskesmas or community health center.

Samiler chips emerged in 1990 after cassava farmers modified the cassava harvest. Based on the process, the production of *samiler* chips goes through the process of raw materials, molding, steam, drying, and packaging. Product naming is based on the taste and distinctiveness of each product. The marketing approach is executed by family or *getok tular* and utilizes social media. The subsequent approach involves utilizing the network possessed

by the person and distribute it to nearby vendors retailers. Distributors will help market their products outside the village, utilizing the social network owned by the distributor.

Future research can conduct further studies on the circular local economy by analyzing how far the resilience of the local economy faces unexpected situations such as COVID-19.

References

- Administrator Sukolilo. (2013, July 29). *Desa Sukolilo Kecamatan Wajak Kabupaten Malang*.
- Alfian, F., & Akbar, T. (2020). Strategi Pengelolaan Sumber Daya Alam Kawasan Perdesaan Berbasis Perikanan di Kabupaten Gresik dan Tuban. *MUHARRIK: Jurnal Dakwah Dan Sosial*, 3(01), 55–72. <https://doi.org/10.37680/muharrrik.v3i01.224>
- Burano, R. S. (2017). Pengembangan Kawasan Pedesaan Berkelanjutan Berbasis Pertanian Lahan Basah. *Jurnal Pertanian Faperta UMSB*, 53(9), 1689–1699.
- Badan Standardisasi Nasional. 2022. Memahami Konsep Ekonomi Sirkular dalam Mendorong Pemulihan Ekonomi yang Berkelanjutan. Diakses pada <https://www.bsn.go.id/main/berita/detail/12996/memahami-konsep-ekonomi-sirkular-dalam-mendorong-pemulihan-ekonomi-yang-berkelanjutan>.
- Dharmawibawa, I. D. (2019). Kearifan Lokal Masyarakat Desa Seloto dalam Pengelolaan Sumberdaya Alam Di Danau Lebo. *Abdi Masyarakat*, 1(1), 29–35. <https://doi.org/10.58258/abdi.v1i1.941>
- Erawati, I., & Mussadun. (2013). Partisipasi masyarakat dalam pengelolaan sumber daya lingkungan mangrove di desa Bedono, kecamatan Sayung. *Ruang*, 1(1), 31–40. <https://ejournal3.undip.ac.id/index.php/ruang/article/viewFile/2821/2997>
- Forest Digest. 2023. Can Circular Economy be the Solution to the Climate Crisis?. Diakses pada <https://www.forestdigest.com/detail/2365/ekonomi-sirkular-krisis-iklim>.
- Hansen, C. (2022, February 2). *The harmful impacts of tire-burning*. EcoMENA.
- Holle, E., Nendissa, R., Matitaputty, M., & Matuankotta, J. (2022). Urgensi Pembentukan Peraturan Desa Adat Hutumuri Tentang Pengelolaan Sumber Daya Pesisir Berbasis Masyarakat. *Jurnal Dedikasi Hukum*, 2(1), 24–37. <https://doi.org/10.22219/jdh.v2i1.20533>
- Hurtado, S., & C. D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino College students' sense of belonging. *Sociology of Education*, 70, 324–345. <https://psycnet.apa.org/doi/10.2307/2673270>
- Kementerian PPN/Bappenas, Kedutaan Denmark Jakarta, dan UNDP. 2021. Ringkasan bagi Pembuat Kebijakan: Manfaat Ekonomi, Sosial, dan Lingkungan dari Ekonomi Sirkular di Indonesia. Diakses dari <https://lcdi-indonesia.id/wp-content/uploads/2021/02/Ringkasan-Eksekutif-Manfaat-Ekonomi-Sosial-dan-Lingkungan-dari-Ekonomi-Sirkular-di-Indonesia.pdf>.
- Low Carbon Development Indonesia Kementerian PPN / Bappenas. Ekonomi Sirkular. Diakses pada <https://lcdi-indonesia.id/ekonomi-sirkular/>.

- Lubis, F. A. (2003). *Menumbuhkan (Kembali) Kearifan Lokal Dalam Pengelolaan Sumberdaya Alam di Tapanuli Selatan*. 239–254.
- Manurung, V. T., & Nataatmadja, H. (2016). Usaha Gula Merah dan Persaingannya dengan Pabrik Gula dalam Penyediaan Bahan Baku di Jawa Timur. *Forum Penelitian Agro Ekonomi*, 9(1), 27-35. DOI: 10.21082/fae.v9n1.1991.27-35.
- Marwasta, D. (2017). Pendampingan Masyarakat Desa Parangtritis dalam Pengelolaan Kawasan Gumuk Pasir melalui kegiatan Diversifikasi Usaha Berbasis Sumberdaya Pesisir. *Jurnal Pengabdian Kepada Masyarakat (Indonesian Journal of Community Engagement)*, 2(2), 133. <https://doi.org/10.22146/jpkm.26508>
- Mukhlis, et.al. 2021. Natural Resource Management to Support Tourism Using Circular Economics Business Model: Case in Jatirejoyoso Village, Malang Regency, Indonesia. Diakses pada https://www.researchgate.net/publication/357086519_Natural_Resource_Management_to_Support_Tourism_Using_Circular_Economics_Business_Model_Case_in_Jatirejoyoso_Village_Malang_Regency_Indonesia.
- Mongabay. 2023. Meninggalkan Ekonomi Hidrokarbon, Beralih ke Ekonomi Sirkular yang Mendukung Batas Planet. Diakses pada <https://www.mongabay.co.id/2023/12/12/meninggalkan-ekonomi-hidrokarbon-beralih-ke-ekonomi-sirkular-yang-mendukung-batas-planet/>.
- Rahman, A., & Abstrak, I. A. (2024). Volume 2; Nomor 1. *Januari*, 391–398. <https://doi.org/10.59435/gjmi.v2i1.267>
- Sahureka, M. (2016). Pemanfaatan Lahan Dan Pengelolaan Sumberdaya Hutan Oleh Masyarakat Sekitar Kawasan Hutan Lindung Gunung Sirimau (Studi Kasus Di Desa Hukurila Kota Ambon). *Jurnal Hutan Pulau-Pulau Kecil*, 1(1), 58. <https://doi.org/10.30598/10.30598/jhppk.2016.1.1.58>
- Sandjojo, E. P., & dkk. (2017). *Peraturan Menteri Desa, Pembangunan Daerah Tertinggal, dan Transmigrasi Republik Indonesia Nomor 23 Tahun 2017 tentang Pengembangan dan Penerapan Teknologi Tepat Guna dalam Pengelolaan Sumber Daya Alam Desa*. 1–24.
- Schröder, Patrick., et.al (2019). Chapter 1: Introduction: Sustainable Lifestyles, Livelihoods and The Circular Economy. Diakses pada https://www.academia.edu/120365232/Sustainable_Lifestyles_Livelihoods_and_the_Circular_Economy.
- Silvitiani, K., Yulianda, F., & Siregar, V. P. (2018). PERENCANAAN PENGEMBANGAN WISATA PANTAI BERBASIS POTENSI SUMBERDAYA ALAM DAN DAYA DUKUNG KAWASAN DI DESA SAWARNA, BANTEN (Coastal Tourism Development Based on Natural Resources and Carrying Capacity in Sawarna Village, Banten). *Jurnal Manusia Dan Lingkungan*, 24(2), 66. <https://doi.org/10.22146/jml.23076>
- Sitompul, Muhammad Rifqi. 2023. Ekonomi Sirkular dalam Pengembangan Bisnis Penerbangan di Indonesia. Diakses pada <https://ojs.baketrans.kemhub.go.id/index.php/warlit/article/view/2241>.
- Surono, A. (2017). Peranan Hukum Dalam Pengelolaan Sumber Daya Alam Skala Desa Oleh Badan Usaha Milik Desa (Bumdes) Dalam Meningkatkan Kesejahteraan Masyarakat

Desa. *Jurnal Rechts Vinding: Media Pembinaan Hukum Nasional*, 6(3), 459.
<https://doi.org/10.33331/rechtsvinding.v6i3.195>

Sutomo, et.al. 2022. A Circular Economy, Waste Management, and Sustainable Development: A Case Study of a Transmigration Rural Area on the Indonesian Island of Sumatra. Diakses pada http://repository.lppm.unila.ac.id/49684/1/20221210_84cd60e3-33cf-4f80-bf56-e6d984bd3c73.pdf.

Thompson, V. (2024, March 23). *How does burning tires affect the environment?*. Eco Green Equipment | Tire Shredders.