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# Corporate Social Responsibility Program of PT Pertamina EP Jambi Field: Community Welfare through the Gerai Energi (Green Edu Agrowisata Rumbai Energi) Program in Kenali Asam Atas Village, Jambi City

**Afrianto[1], M. Zainul Arifin[2], Lutfia Nur Hidayah[3], Safrida[4]**
*[1]Officer Comrel & CID Zona 1, Indonesia*
*[2,3,4]Community Development Officer PT Pertamina EP Jambi Field, Indonesia*
*Email: afrianto2@pertamina.com*



**Abstract.** Climate change poses a significant threat to Indonesia, including Jambi City. This issue is exacerbated by large-scale land conversion, leading to the shrinking of agricultural areas. In response, PT Pertamina EP Jambi Field has implemented the Gerai Energi (Green Edu Agrowisata Rumbai Energi) CSR program in Kenali Asam Atas Village, Jambi City. This study employed a descriptive qualitative approach, with data collected through interviews with program beneficiaries and stakeholders, program observation, and corporate documentation (strategic plans, work plans, monitoring reports, evaluation reports, and media coverage). Data sources were selected through purposive and snowball sampling. The findings indicate that the Gerai Energi program has had a tangible impact on improving the local economy. Additionally, the program was developed with an environmentally friendly approach, featuring the use of solar cells and a Liquid Fertilizer Generator Bioreactor (BPPC). This program also supports PT Pertamina EP Jambi Field's operational activities, as the Gerai Energi program in the Ring I area of PT Pertamina EP Jambi Field has fostered a sense of ownership and mutual care for the production facilities within the community, ensuring smooth company operations.

***Keywords:*** *Agriculture, Agrotourism, Community Empowerment, Urban Farming, Corporate Social Responsibility.*

## A. INTRODUCTION

Climate change not only adversely affects the economy but also threatens human survival. One of the primary consequences is the increasing difficulty in meeting food needs. The main factor contributing to this is the extreme climate change that significantly impacts the agricultural sector. Climate anomalies, such as changes in the intensity and pattern of rainfall, rising air temperatures, droughts, floods, and increased pest and disease outbreaks, are manifestations of climate change that can affect the productivity of crops, particularly food crops (Suryana, 2014). Hence, climate change poses a serious challenge for countries worldwide, including Indonesia, in ensuring food security (Shikwambana, Malaza, and Shale, 2021).

In Indonesia, the impact of climate change on agriculture, especially food crops, is indicated by the El Niño Southern Oscillation (ENSO) phenomenon (Sarvina and Sari, 2020). ENSO refers to the fluctuations in sea surface temperatures in the Pacific Ocean, which cause shifts in the rainy season in Indonesia (Nabilah, Prasetyo, and Sukmono, 2017). ENSO has three phases: El Niño, La Niña, and neutral (Liu et al., 2014). El Niño represents the warm phase of ENSO, while La Niña is the cold phase (Hidayat et al., 2018). These conditions impact rainfall, with increased rainfall during La Niña and decreased rainfall during El Niño in various regions of Indonesia.

El Niño can lead to drought and subsequent crop failure, while La Niña may result in floods, which can trigger an increase in pest and disease outbreaks (Irawan, 2006). In addition

to affecting rainfall variability, El Niño and La Niña also influence the duration of the rainy and dry seasons, which in turn affects planting schedules. ENSO has a greater impact on food crops than on perennial crops because the shorter growing seasons of food crops make them highly dependent on weather and seasonal conditions (Irawan, 2006).

This extreme climate change increases the risk of repeated crop failures for farmers. If left unaddressed, food security in a region or country could be threatened. According to Law No. 18 of 2012, food security is defined as the condition in which food is available for the nation and individuals, reflected by the adequate, safe, diverse, nutritious, and accessible supply of food that aligns with religious beliefs, cultural practices, and social norms, allowing individuals to lead healthy, active, and productive lives sustainably.

These challenges posed by climate change must be faced by all regions of Indonesia, including Jambi City. The local government's responsibilities are particularly complex, especially given that out of Jambi City's 260 square kilometers, only about 2% (1,400 hectares) is available for agricultural use. Of this, approximately 420 hectares are used for rice paddies and horticultural land, while the remaining 450 hectares are idle land (Wijanarko, 2024).

Referring to the data above, it is evident that the agricultural sector in Jambi City has yet to make a significant contribution, especially for its farmers. According to the latest data from BSIP Jambi Agriculture, the Farmer's Exchange Rate (NTP) in May 2024 decreased by 0.96% compared to April 2024, as did the Agricultural Business Exchange Rate (NTUP), which dropped by 0.98%. This situation was driven by a 0.81% decrease in the price index received by farmers for commodities such as palm oil, rice, potatoes, coconuts, areca nuts, and broiler chickens. Meanwhile, the price index paid by farmers increased by 0.16% (for commodities like shallots, sugar, garlic, machine-made clove cigarettes, gasoline, cooking oil, and gold jewelry). Additionally, the production cost and capital goods index rose by 0.17% (for items such as farmland rent, NPK, Urea, KCl, TSP/SP, ZA fertilizers, and harvesting wages).

These various issues must be addressed seriously and in a well-planned manner. Social mapping could be an initial solution to address the agricultural problems in Jambi City. Sociologically and philosophically, social mapping aims to chart the socio-cultural conditions of a community in a specific area, providing a foundation for program planning. The concrete result of social mapping activities is preliminary data and information about local socio-cultural conditions, including the social groups and influential figures in the community, which will serve as a basis for determining programs (Syahrani, 2016).

Raising awareness of the agricultural potential in Jambi City should be initiated through community empowerment. According to Untung (2014), community empowerment is a series of activities aimed at increasing the assets and capabilities of impoverished communities so that they are willing and able to access various resources, capital, technology, and markets, using approaches such as assistance, capacity building, and learning toward self-reliance. Empowering communities, therefore, is an effort to enhance the dignity and status of societal groups that, in their current state, are unable to escape the traps of poverty and backwardness (Dewi, 2016).

For this reason, PT Pertamina EP Jambi Field, through its Corporate Social Responsibility (CSR) program, conducts community empowerment by implementing social mapping in the agricultural sector of Jambi City. Based on the results of this social mapping, the program initiated by Pertamina EP Jambi Field is the Community Empowerment Program through the Development of *GERAI ENERGI* (Green Edu Agrowisata Rumbai Energi) in Kenali Asam Atas Village, Jambi City. This program aims to develop the agricultural and plantation potential of the Kenali Asam Atas community, thereby creating a new ecosystem to

enhance the local economy and establish an integrated education center on hydroponics and urban farming.

## B. METHODS

In this research, the researchers employed a descriptive qualitative method (De Fina & Georgakopoulou, 2015). This method was selected due to its ability to describe or explain an event, incident, or series of events connected chronologically. Data collection techniques included interviews with program beneficiaries and stakeholders, program observations, and company documentation (strategic plans, work plans, monitoring reports, evaluation reports, and news documentation).

Data sources were selected through purposive and snowball sampling, based on the assumption that the informants were the most knowledgeable and that the initial limited number of sources would increase over time (Parker et al., 2019). The collected data were then analyzed using three steps: first, data presentation; second, data transcription; and third, drawing conclusions.

## C. RESULTS AND DISCUSSION

The process of development, whether in economic, social, or cultural aspects, continues to be pursued by policymakers. Various efforts have been made, but they become more effective when multiple parties collaborate. The business world or corporate sector is obliged to participate in this process through Corporate Social Responsibility (CSR). In Indonesia, CSR is regulated under Law No. 40 of 2007 concerning Limited Liability Companies and Government Regulation No. 47 of 2012 on Corporate Social and Environmental Responsibility. Based on these regulations, social and environmental responsibility is a company's commitment to contribute to sustainable economic development and to improve the quality of life for stakeholders, both internal and external, as well as for the surrounding community and society at large (Parnoto, 2014).

CSR can address the challenges that companies face within society, as the potential for resistance from local communities is quite high. Many residents perceive companies operating in their area as external entities with different identities and activities. Naturally, communities position themselves differently from the company. If the company engages in the exploitation and exploration of natural resources, it is often seen as infringing on the community's sense of ownership over the resources in their environment. This situation can worsen if the community feels they are receiving little or no benefit from the company's activities. Such conditions may spark conflicts between the two opposing parties, the company and the community, potentially disrupting or even halting the company's operations.

Therefore, CSR is seen as a strategy to minimize the risk of conflict with the local community. According to Gunawan (2018), CSR is a company's effort to enhance its image in the eyes of the public by implementing charitable programs, both externally and internally. Such programs can also serve as a means for a company to continue operating successfully within the community. This aligns with legitimacy theory, which states that a company will endure as long as the surrounding community believes that the company operates in alignment with the community's values (Sari, 2013).

Based on this theory, CSR that directly involves community participation becomes the solution. Community development programs can be launched, where the community is guided to expand their access to improved socio-economic and cultural conditions compared to before the development activities. As a result, the local community is expected to become more self-reliant, with better quality of life and welfare. There are three key aspects of community

development: it is community-based, utilizes local resources, and is sustainable (Gunawan, 2018).

PT Pertamina EP Jambi Field, a company engaged in upstream oil and gas activities in Jambi, has fulfilled its social responsibility toward the surrounding environment. One of the programs implemented is GERAI ENERGI (Green Edu Agrowisata Rumbai Energi), located in Kenali Asam Atas Village, Jambi City. PT Pertamina EP Field Jambi does not act alone in executing this program, collaborating with several partners. Contributors include Rumah Belajar Pertamia (Rumbai) as the program's facilitation partner, Mbloc Market Jambi supporting product marketing, and the Jambi City Agriculture Office assisting in capacity building for group members. Additionally, the Kenali Asam Atas Village Women's Empowerment and Family Welfare Group (PKK) helped market products, Snova Senja contributed to enhancing group members' skills, and WUJBI supported product sales. This program aims to empower the Kenali Asam Atas community to increase their income through agrotourism and culinary businesses developed as part of the initiative.

In implementing this community empowerment program, PT Pertamina EP Jambi Field adopted a community-based empowerment approach. Community-based development is part of a broader paradigm shift, responding to well-documented criticisms of the top-down, modernist, and authoritarian approaches that have dominated development policies (Dasgupta & Beard, 2007).

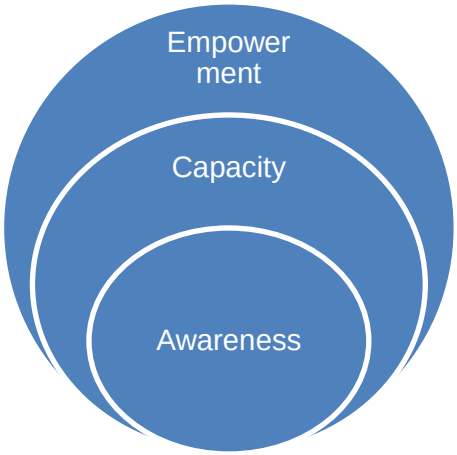


**Figure 1. Stages of Achieving Community Empowerment**

Community empowerment will be realized when the stages to achieve it are properly fulfilled. According to Syevira (2022), the first stage is awareness, where the group or community is provided with an understanding so that they can address poverty and the social issues that bind them. The second stage is capacity building, where the community is equipped with resources to improve their quality of life. At this stage, not only new knowledge is provided, but also values to establish empowerment rules and procedures. The third stage is empowerment, in the form of material support or opportunities that align with the capacities the community has gained from the previous processes.

According to World Bank criteria (Resnawati, 2018), the implementation of the GERAI ENERGI (Green Edu Agrowisata Rumbai Energi) program meets the characteristics of empowerment execution, such as involving the community, who are considered most knowledgeable about their local conditions; the community serves as the program's designers and drivers; the community is required to actively manage the program until its goals are achieved; the community is directly involved in sub-project implementation; and finally, they participate in monitoring and evaluation. This means that the community, as beneficiaries, are the primary subjects receiving the full benefits of the program.

Based on the social mapping results, it was found that Kenali Asam Atas Village has a tropical climate, with annual rainfall ranging from a minimum average of 143.50 mm/year to a maximum average of 231.43 mm/year. Temperatures range from a low of 22.70°C to a high of 32.40°C. The average humidity ranges from a low of 8.33% to a high of 84.00%. Wind speeds range from a minimum of 7.00 knots to a maximum of 11.25 knots. Topographically, Kenali Asam Atas is higher than surrounding villages, though it still falls within a lowland region and is slightly hilly. The village's topographical position lies at an average elevation of 10–60 meters above sea level. The soil types found in Kenali Asam Atas are suitable for plantation and agricultural activities (Syevira, 2022).

This region covers an area of 7.43 km², or 20.58% of the Kotabaru District. Most of the land is used for residential areas and some community activities such as agriculture and fisheries. According to Syevira (2022), the total population of Kenali Asam Atas Village, based on the latest data (2020), is 7,694 people, with 1,890 male-headed households and 160 female-headed households.

The population of Kenali Asam Atas Village, according to the latest data from 2020, was recorded at 7,694 people, with 1,890 male-headed households and 160 female-headed households. Based on quantitative data gathered in the field, 29% of the community works as daily laborers, such as construction workers, oil and gas laborers, and manual transport workers. Additionally, 22% are involved in service provision, such as online motorcycle taxi services and similar fields. The third most common occupation (17%) is factory laborers. Many residents are employed by companies or projects in Kenali Asam Atas, whether by Pertamina or other firms. Furthermore, 10% of the population works for state-owned enterprises, followed by civil servants and street vendors. Some residents of Kenali Asam Atas also work in the agricultural sector, including plantations and fisheries. Additionally, 3% of the population is employed in the private sector, while 2% work as small shop owners or for non-governmental organizations (NGOs) and other non-profit organizations.

Considering that Kenali Asam Atas Subdistrict has potential in the agricultural sector, the data above is somewhat concerning. Few residents are willing to optimize the existing potential, preferring instead to work as laborers or service providers such as online motorcycle taxi drivers. In reality, there are already 25 neighborhood associations (Rukun Tetangga or RT) that have developed agriculture, plantations, and fisheries through group efforts or self-help initiatives. Initially, these ventures ran smoothly, but over time, most of them folded due to limited capital. This condition exemplifies the challenge faced by farmers in Indonesia, who struggle with a lack of business capital. This is influenced by the uncertainty of nature and seasons, leading creditors to hesitate in providing loans or financial support to farmers. Furthermore, the agricultural sector suffers from past weaknesses, such as a narrow focus on farming, weak macro-political support, and a centralized approach. As a result, Indonesian agriculture is dominated by enterprises characterized by (a) small scale, (b) limited capital, (c) simple technology, (d) seasonal dependence, (e) local market areas, (f) family-based labor leading to agricultural involution (hidden unemployment), (g) very low access to credit, technology, and markets, and (h) agricultural markets dominated by large mono-oligopsonistic traders, leading to price exploitation that disadvantages farmers (Juwanda, 2023).

On this basis, community empowerment in the Kenali Asam Atas area is crucial, so that residents receive guidance and capital assistance for agricultural endeavors. This effort is important not only to improve the economic standard of living but also to prevent potential food insecurity. Given the various challenges, including climate change, limited land, and job opportunities, the Kenali Asam Atas region could experience seasonal food insecurity. This condition is predictable due to these factors, but the duration tends to be short since seasonal food insecurity can be addressed quickly with the right strategies. Such insecurity arises from

cyclical patterns and limited access to food, affected by harvest cycles, job opportunities, and seasonal changes (Shaw & Shaw, 2007).

To address these challenges, PT Pertamina EP Jambi Field implemented a community empowerment program centered around agrotourism through the GERAI ENERGI (Green Edu Agrowisata Rumbai Energi) initiative. Agrotourism is a form of tourism that leverages agribusiness activities as a tourism attraction, aiming to expand knowledge, provide experiences, offer recreation, and facilitate business relations in agriculture (Utama, 2019). Additionally, agrotourism is designed to generate supplementary income for farmers, while also providing an opportunity to educate the public about agriculture and its ecosystems (Utama, 2020). Agrotourism represents a new model for developing the agribusiness sector in the modern era. Its development emphasizes three aspects: (1) shifting the agricultural development approach from production-oriented to business-oriented, ensuring competitiveness and sustainability; (2) recognizing that agribusiness development is not merely a sectoral effort but also an intersectoral one, influenced by downstream and upstream agroindustries and supporting institutions; and (3) viewing agricultural development as integrated with regional development and the improvement of farmers' incomes. Through this agrotourism approach, agribusiness can become a new source of growth for regional, agricultural, and national economies (Deptan, 2005).

Agrotourism offers tangible benefits for regional development and local economic growth. However, this program cannot achieve its full potential without the involvement of the local community, specifically the residents of Kenali Asam Atas. Pradini (2019) explains that community participation is a crucial component in the empowerment process and the pursuit of independence. The role of the community is vital, as it determines the sustainability of the program. The involvement of the local community in the development of tourism enterprises is expected to foster positive interactions in various activities, helping to sustain the tourism project (Nisa et al., 2019). The target of this program is the residents of Kenali Asam Atas, representing the 25 Neighborhood Units (RTs) as program beneficiaries, including representatives from RTs, the local youth organization or Karang Taruna, and the local Family Welfare Empowerment (PKK) group in Kenali Asam Atas. To formalize the community's role, the local government, through the Village Head of Kenali Asam Atas, institutionalized the community activities under the cooperative Koperasi Gading Mas Jaya.

The GERAI ENERGI program was planned and initiated as early as 2019. At that time, the main focus of community empowerment was land development, infrastructure provision, and group formation. In 2020, a hydroponic greenhouse was constructed, and the Hidroponik Barokah group was formed, focusing on the integrated intensification of urban farming. In 2021, a culinary group was established, specializing in the local cuisine of Kenali Asam Atas. By 2023, the GERAI ENERGI program's activities focused on adding materials to support hydroponic management, constructing solar panels, managing hydroponic compost, enhancing activity support systems, and strengthening group systems and management.

In 2023, the potential of the GERAI ENERGI program was further explored for community development, even expanding with the addition of a new sub-activity: the herbal drink group, complementing the already existing hydroponic group and cake culinary group. The two previous groups have already had a tangible impact, such as the hydroponic group, which has established partnerships with several modern markets in Jambi City and has been able to deliver vegetables weekly. The hydroponic plants produced by this group include pak choi, spinach, green lettuce, kale, water spinach, red lettuce, and medicinal plants (toga).

However, the group previously faced various challenges, such as a decline in sales due to overripe vegetables that exceeded their harvest time. Marketing also became an issue, as it relied only on traditional methods, offering vegetables from person to person. Eventually,

marketing was updated by focusing on selling vegetables and their derivatives through social media, along with creating educational online content. This had a highly effective impact, not only increasing sales but also attracting broader attention, even garnering media coverage. Additionally, public interest in hydroponics grew significantly, with some individuals starting to develop hydroponic systems in their own homes.

The positive response from the community prompted PT Pertamina EP Jambi Field and the hydroponic group to initiate the launch of a hydroponic edu-tourism package. According to Tkachuk (in Akhmedova, 2016), edu-tourism is a journey where tourists combine leisure time and learning, such as attending classes, receiving guidance to develop their knowledge, satisfying their curiosity, and achieving educational goals. This concept of edu-tourism has been smoothly integrated with the activities of the hydroponic group. Visitors to GERAI ENERGI come from both the city and various other districts in Jambi Province as local tourists, and many educational institutions, from early childhood education (Paud) to elementary schools, have participated in educational tourism at GERAI ENERGI. Visitors who wish to learn are charged an individual package fee of IDR25,000, which provides them with lessons on the entire hydroponic cultivation process from planting to harvesting, as well as a vegetable gift to take home. All members of the hydroponic group are assigned specific roles in educating visitors. Some explain the hydroponic system, while others guide them through the planting stages up to harvesting.

This edu-tourism initiative has gradually transformed into a hydroponic learning center in Kenali Asam Atas, becoming the only hydroponic educational tourism site in Jambi City. In addition to school visitors, community groups frequently hold study activities at GERAI ENERGI, particularly on hydroponics. Various groups are keen to visit this attraction, which has had a positive impact on GERAI ENERGI, especially in expanding the market segmentation for sales, thus providing the group with a new source of income.

Positive outcomes were also achieved by the cake culinary group, which has successfully established partnerships with local cake entrepreneurs in Jambi. This collaboration is crucial to enhancing the group's capabilities in terms of quality, marketing, and institutional development. Before this partnership, the cake culinary group faced challenges such as monotonous cake production, which tended to be unappealing to consumers. PT Pertamina EP Field Jambi partnered with local cake entrepreneurs in Jambi City to provide guidance and training to the group, resulting in improved and more attractive products.

Structurally, the activities of the three groups were carried out separately, although collaboration between them still occurred. One such collaboration was between the hydroponic group and the cake culinary group. The cake culinary group's flagship product, mint cookies, uses mint leaves grown by the hydroponic group. This choice was made because the mint leaves grown by the hydroponic group had distinct qualities and flavor compared to commercially available mint, giving the mint cookies a unique taste. This resulted in a symbiotic mutualism value chain between the two groups. The hydroponic group benefited from selling mint leaves, while the cake culinary group received fresh, high-quality mint, allowing them to produce high-quality products.

The purpose of establishing Gerai Energi was not only for the group members but also for the broader community. PT Pertamina EP Field Jambi positioned Gerai Energi as an educational center for the local community of Kenali Asam Atas. In addition to learning about hydroponics and culinary development, the Gerai Energi area was often used as a venue for healthy exercise for the elderly. Furthermore, collaboration with Rumah Baca Rumbai opened a creative space to engage children in activities at Gerai Energi, helping to develop their motor skills and creativity through engaging educational programs. Based on these efforts, Gerai

Energi, initially envisioned as an educational tourism site, is expected to serve as a platform for the Kenali Asam Atas community to develop themselves.

The concept of educational tourism has been running quite well, with strong community enthusiasm for Gerai Energi. This factor has driven further development of the program. Consequently, the idea of a passion fruit cultivation garden was proposed to complement the hydroponic area and the activities of the affiliated groups. The passion fruit garden was chosen based on the background of Kenali Asam Atas, which was once a center for passion fruit cultivation but gradually declined as land became scarce due to land use conversion. The development of the Passion Fruit Garden is also expected to have a positive impact on the surrounding community, the environment, and the company.

Economically, this program has had a positive impact on the participating groups. 26 out of 30 impoverished households in Kenali Asam Atas have been lifted out of poverty, amounting to 7.90% of the community. In terms of income, the beneficiaries have been able to earn from the production of hydroponic vegetables, culinary cakes, and herbal drinks, which, when accumulated, average IDR10,000,000 per month. One beneficiary, whose income before the Gerai Energi Program was IDR300,000 per month, saw an increase to IDR1,300,000 per month, a rise of IDR1,000,000 or 77%. Another example is a housewife who previously had no income but now earns IDR1,300,000 per month, marking a 100% increase.

The Gerai Energi program not only aims to improve the local community's economy but also promotes environmentally friendly practices. One application of this is the installation of solar cells to support the activities of the group members. These solar cells are used to operate the nutrient machines and cooking appliances, as the cake culinary group uses induction stoves.

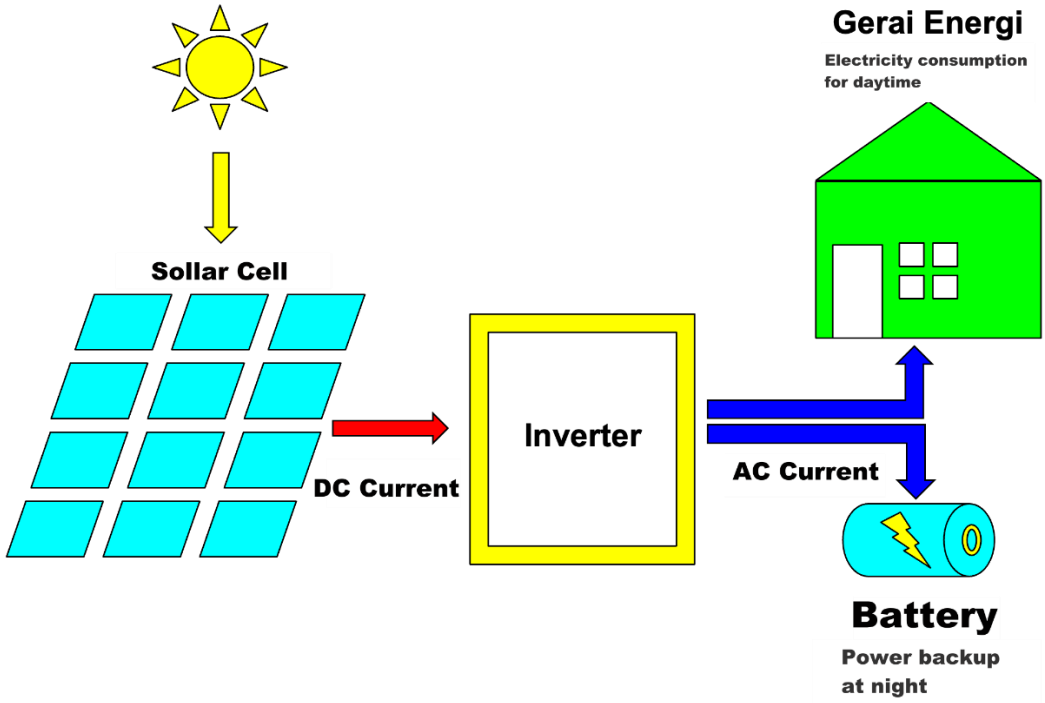


**Figure 2. How Solar Cells Work**

The Solar Cell used in the Gerai Energi program is a Hybrid Inverter, where the system utilizes solar energy channeled through solar panels, which is then converted into DC electricity and subsequently passed on to the Inverter. The Inverter then converts and transmits the DC electricity into AC power that can be used in production activities. This AC power is also transferred to a battery as a power reserve for nighttime use and during bad weather.

The use of Solar Cells has resulted in cost savings on electricity consumption for group members at Gerai Energi. For instance, the hydroponic group requires 7,200 watts of power to run the nutrient machine for 24 hours. By using Solar Cells, the group can save 7.2 kWh of electricity daily. Given that the electricity rate is IDR1,444 per kWh for a 2200 VA power supply, the group only spends IDR10,400 per month. This use of Solar Cells results in an annual saving of IDR3,742,848. In addition to cost savings, Solar Cells also reduce carbon emissions by 0.01Kg$CO_2$ or 3.6Kg$CO_2$ per year.

The issue of high electricity consumption can be addressed with the installation of Solar Cells, but another critical problem that needs to be tackled is waste management. Given the high production activities of the hydroponic, cake culinary, and herbal plant groups, the amount of waste generated is substantial. In a single harvest and daily culinary production, the groups can produce 2 kg/day of waste. This waste is often piled up, becoming a pollutant. If left unmanaged, this waste will contaminate the environment, including water, soil, and air. Polluted environments pose a serious threat to human health. Many diseases are caused by environmental contamination, such as asthma, lung cancer, typhoid fever, heart disease, typhus, impaired liver and kidney function, diarrhea, hepatitis A, and others (Purnama, 2016).

Waste in the Gerai Energi program is categorized as organic waste. According to Damhuri and Padmi (2019), organic waste can originate from agricultural waste (crop/ fish/ livestock farming), market waste, residential/ commercial/ institutional/ office/ yard waste, and fecal waste (from animals and humans). This type of waste is easily combustible, decomposes quickly, is biodegradable, and is easy to recycle. Therefore, the appropriate solution to this problem is recycling the waste from the three groups in the Gerai Energi program: hydroponic, cake culinary, and herbal plant.

In this program, the groups utilize a composter called the Bioreaktor Pembangkit Pupuk Cair (BPPC), which functions to convert production waste into liquid compost that can be reused as nutrients for the hydroponic group. The use of BPPC has multiple benefits from environmental, economic, and social aspects. Indirectly, BPPC allows the hydroponic group to avoid the use of urea fertilizer, resulting in more natural harvests. Excessive use of urea fertilizer has negative environmental impacts. Its high concentration releases carbon dioxide ($CO_2$), which negatively affects air quality (Afrianto, 2023).

Ensuring that the harvest is free from chemical substances is crucial for safeguarding the health of consumers who consume it. Essentially, this refers to a key component of food security, namely food safety. The food security component emphasizes that food must be safe to eat and pose no risk to human health (Ene, 2020). According to the definition of food safety in the Government Regulation of the Republic of Indonesia Number 86 of 2019 on food safety, food safety is the condition and effort required to prevent food from potential biological, chemical, and other contaminants that can harm, damage, or endanger human health, while also ensuring it does not conflict with religion, beliefs, or societal culture, making it safe for consumption (Government Regulation, 2019).

From an economic perspective, the use of BPPC (Bioreaktor Pembangkit Pupuk Cair) has a significant impact on increasing the income of the groups participating in the Gerai Energi program. After adopting the use of liquid compost from BPPC, the farmers' harvests have increased dramatically. Plant growth has become more optimal, resulting in a more abundant and higher-quality yield, enabling the hydroponic group to continuously meet market demand. Additionally, supplementary income can be obtained through the sale of BPPC liquid compost to other farming groups around Gerai Energi. With the high demand for effective liquid compost, program participants have gained new business opportunities. This not only helps boost the group's economy but also expands the benefits of BPPC to farmers in the surrounding area.

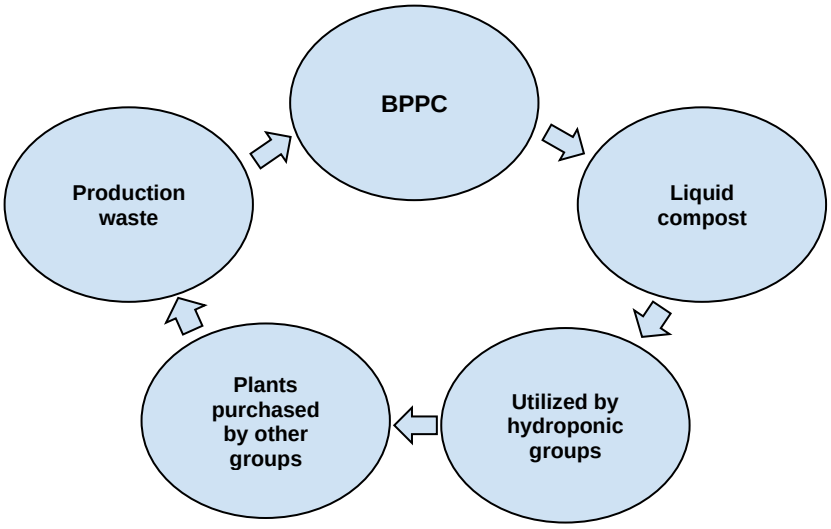


**Figure 3. Waste Management from the Three Groups at the Gerai Energi**

In the social aspect, BPPC (Bioreaktor Pembangkit Pupuk Cair) plays a crucial role in managing waste from the three groups: hydroponics, pastry culinary, and herbal plants. The waste from these groups is processed back into liquid compost, which can be utilized by the hydroponic group to fertilize their crops. As a result, the quality of the crops is maintained, and the pastry culinary and herbal plant groups can either purchase or use the compost, fostering a mutually beneficial relationship between the groups. Such a symbiotic relationship has already developed between the hydroponic and pastry culinary groups. The pastry culinary group has a signature product, mint cookies, with the mint leaves used in production purchased from the hydroponic group. These mint leaves have different properties and flavors compared to those sold on the market, giving the mint cookies a distinctive taste that has been well-received by consumers.

The working mechanism of BPPC is relatively simple, yet it offers numerous benefits in the natural decomposition of waste. This device is designed using special water tanks that are heat-resistant and have a black-painted top. This painting aims to absorb as much solar heat as possible, thus generating static electricity due to the temperature differences. During the process, waste placed into the container is sprayed with shredding bacteria and fungi, which trigger the decomposition process. This process is vital for breaking down the waste into more environmentally friendly materials. Moreover, the foul odor from the waste attracts insects that come to lay eggs in the container. These insects produce larvae that help shred the waste further. The larvae accelerate the decomposition process, resulting in a natural liquid from the waste, commonly referred to as “earth juice.” This liquid is then processed into natural liquid fertilizer. All decomposition stages in BPPC occur naturally, from solar heating to decomposition by bacteria, fungi, insects, and the support of static electricity generated.

The community empowerment program through Gerai Energi impacts not only the economy and environmental sustainability but also supports the operational activities of PT Pertamina EP Field Jambi. The potential for conflict between the company and the local community is significant, given that the activities take place in the heart of community areas. The establishment of the Gerai Energi program within Ring I of PT Pertamina EP Field Jambi has fostered a sense of ownership and mutual protection of production facilities located within the community, ensuring the company’s production activities run smoothly. The presence of this community development program in Kenali Asam Atas Subdistrict facilitates production activities and enhances the security of operational areas, involving local government officials. The benefits experienced by PT Pertamina EP Field Jambi align with the legitimacy theory,

which posits that a company can sustain itself within society if its presence aligns with the will of the surrounding community (Sari, 2013).

## D. CONCLUSION

The Gerai Energi program represents a new model in agribusiness development within urban areas, particularly in the city of Jambi, specifically in Kenali Asam Atas Subdistrict. This program has successfully addressed the challenges in the region, such as extreme climate change, limited agricultural or plantation land in urban areas, and the low interest of the community in agricultural work. Additionally, Gerai Energi has provided a solution to tap into the agricultural potential of the Kenali Asam Atas region. The benefits are directly felt by the local community, especially in improving the economic standard of living, with several households lifted out of poverty, achieving a reduction rate of 7.90%.

For PT Pertamina EP Field Jambi, the Gerai Energi program indirectly supports the company's operational activities. The potential for conflict with the surrounding community can be minimized, as Gerai Energi has fostered a sense of ownership and mutual protection of production facilities located within the community, ensuring that the company's production activities can run smoothly.

The success of the Gerai Energi program is tangible evidence that innovation and collaboration can address all the challenges faced in the agricultural sector of Kenali Asam Atas. With its agrotourism concept, the use of Solar Cells for electricity consumption, and BPPC for waste management, Gerai Energi has become a productive and sustainable program that enhances the local economy while preserving environmental sustainability.

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