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Sustainable Livelihood Strategies of Farmer Groups in the Food Security Program of Kute Siantan

Tuzhara Ramadhanty Majid[1]

[1] Universitas Gadjah Mada, Indonesia
* Correspondence e-mail; tuzhararamadhantymajid@mail.ugm.ac.id

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Abstract

The Food Security Program in Kute Siantan District, Anambas Islands Regency is a form of Corporate Social Responsibility (CSR) by Medco E&P Natuna Ltd in support of Sustainable Development Goal (SDG) 2. This program aims t reduce the community's dependence on food supplies from outside the regio by strengthening the capacity of local farmers in vegetable production. Thi study aims to analyze the livelihood capital of the community to formulate sustainable livelihood strategy for farmer groups. The research employs qualitative approach, utilizing ethnographic methods and document studies which were conducted over approximately two months, from February to Apri 2025. Data were collected through participatory observation and in-deptl interviews with 21 informants, comprising farmers, program assistants, an village officials. The results of the study indicate that farmers possess five mai forms of capital: human, natural, social, physical, and financial capital, whicl still face numerous sustainability challenges. Based on the analysis, fiv strengthening strategies are recommended, namely: (1) determination of ke farmers through measurable assessments to reduce dependence on companions (2) the use of abandoned land and local organic matter as an alternative t inorganic fertilizers; (3) strengthening the value of cooperation in the activitie of farmer groups; (4) maintenance and management of agricultural equipmen collectively; and (5) market expansion and diversification of agricultura products. The strengthening of the five capitals is the foundation for th sustainable livelihood strategy of farmer groups, supporting the sustainabilit of the Food Security Program beyond the end of the CSR intervention.

Keywords Farmer; Food Security Programs; Sustainable Livelihood Strategy

1. INTRODUCTION

The topic of food security continues to be discussed globally and is even included in the Sustainable Development Goals (SDGs) set by the United Nations since 2015 (Viana et al., 2022). The Food and Agriculture Organization (FAO), through the Summit held in Rome in 1996, defined food security as physical and economic access to sufficient, safe, and nutritious food for the lives of all people at all times in a healthy and active manner (Afzal et al., 2023). In the context of the SDGs, achieving food security is a shared responsibility among countries worldwide, including Indonesia. As was done in the New Order in the 1990s with food self-sufficiency in rice commodities (Tuesday, 2021). Then, during the Covid-19 pandemic, the government reallocated the budget for more seed and seed assistance, food price guarantees and food stock stability, distribution activities, and food transportation to prevent major food shortages (Rhofita, 2022). Most recently, the central government allocated one-fifth of the existing village funds to support regional food security, as stipulated in Ministerial Decree Number 3 of 2025 regarding Villages and Development of Disadvantaged Regions.

The existence of a large enough budget for food security does not necessarily make the region capable of meeting its primary food needs, as seen in the Kute Siantan District, Anambas Islands Regency, which remains heavily dependent on various agricultural commodities sourced from city centers, such as Batam City and Tanjung Pinang. The location is quite far away and has limited access, making people accustomed to buying agricultural products at high prices, but with a quality that has declined due to the lengthy trip taken. Even if it is the north wind season when the waves are high, the distribution of produce from the city will not operate at all due to ships that cannot sail (Tony & Jhon, 2022). As a result, a scarcity condition arises, causing prices to soar while fewer and fewer product choices are available.

This condition then became a concern for the CSR (Corporate Social Responsibility) of a company in Kute Siantan, Medco E&P Natuna Ltd, following social mapping conducted in several villages there. They found that the distribution of foodstuffs that rely on supplies from outside the region is not proportional to the high needs in the community. Building on this discovery, a design for community empowerment activities in the agricultural sector emerged in a program called the Food Security Program, which assists communities in cultivating vegetables to meet the food needs of households and regions. Assistance was provided by experts in the field of agrotechnology who are members of the Bina Tani Sejahtera Foundation (YBTS) and then switched to Tunas Negeri Anambas. The first step of the food security

program begins with sharing agricultural knowledge owned by homemakers who are members of the PKK (Family Empowerment and Welfare) Group, utilizing their yards to grow various types of vegetables. The program then expanded, focusing not only on yards but also on conventional land. Its members also reach out to youth and gentlemen who have the desire and seriousness to participate in running food security programs. The companion provides cultivation training by following Good Agricultural Practices (GAP), a guide to cultivation that ensures correct, good, safe, and environmentally friendly practices (Sjamsijah et al., 2023), thereby minimizing exposure to unwanted and harmful chemicals. Assistance is provided, including knowledge of seeds, how to sow and cultivate land, types of fertilizers and their applications, and methods for controlling pests and diseases. Farmers are also equipped with information on pesticide safety and crop processing. The activity was carried out directly by companions to farmers, both individually and in discussion groups. In addition to assisting, efforts are also made to increase agricultural production by supporting production facilities with essential items such as seeds, medicines, fertilizers, fertilizer sprayers, nets, water pumps, cultivators, and various other equipment.

Through the Food Security Program, which has been running for three years, the community is starting to feel the benefits. Now, they have the choice to become farmers, produce crops with economic value or direct use for their households, and reduce their dependence on various types of food supplies from outside. With the transformation both in terms of the process of meeting food needs and also the transition of profession to agriculture, the researcher seeks to capture asset dynamics, survival strategies, using the Sustainable Livelihood Framework (SLF) developed by the Department for International Development (Legatzke et al., 2024) to describe a more complete portrait or reality of the reality of the livelihood of community groups observed with an emphasis on human capital, natural capital, physical capital, social capital, and also financial capital (Saragih et al., 2007). Vulnerability factors and the role of institutions are also considered in the formation of survival strategies (Scoones, 1998), This has led to many empowerment programs utilizing SLF as an analytical approach.

Although previous studies have shown that *the Sustainable Livelihood Framework* (SLF) is an effective framework for analyzing the livelihood dynamics of people based on their assets or capital, most of these studies still focus on mapping assets and the impact of empowerment programs during interventions. Research conducted by Yulasteriyani et al. (2025), Wibisono et al. (2023), and Fatkhullah et al. (2021) highlights

the role of SLF in facilitating the mobilization of human, social, natural, and physical capital to enhance people's well-being. However, it has not specifically linked the analysis to long-term sustainability planning after the end of the empowerment program or CSR intervention.

Thus, a research gap remains in the study of sustainable livelihoods, particularly in understanding how SLF can be utilized not only as a tool for analyzing people's livelihood conditions but also as a basis for formulating a systematic and contextual exit strategy following the completion of the CSR program. In fact, the success of empowerment programs is not only determined by achievements during implementation, but also by the community's ability to sustain and develop their livelihoods independently after external support is withdrawn (Rogers, 2004).

Departing from this research gap, this study offers a *novel approach by utilizing the Sustainable Livelihood Framework (SLF) to analyze the sustainable livelihood strategies of farmer groups in the context of the exit strategy following the completion of the CSR program under* the Food Security Program in Kute Siantan District, Anambas Islands Regency. This research not only maps the human, natural, physical, social, and financial capital owned by the community, but also identifies vulnerability factors and the role of institutions that affect the sustainability of livelihoods. Through this approach, the research is expected to formulate an exit strategy that is adaptive, participatory, and oriented towards community independence, ensuring that agricultural activities remain sustainable even after the CSR program has ended.

2. METHODS

This research employs a qualitative, ethnographic approach to gain an in-depth understanding of the daily livelihood practices of farmers involved in the Food Security Program. The researcher conducted a *live-in* with the community for approximately two months, from February 21 to April 19, 2025, in Payalaman Village, Kute Siantan District, Anambas Islands Regency. During this period, the researcher was directly involved in various agricultural activities with farmers and program facilitators, such as seeding activities, plant care, harvesting, counseling, and group discussions that took place in the five villages where the program was located. This involvement enables researchers to gain a deeper understanding of the social, economic, and institutional dynamics that influence program implementation. Despite being positioned as *an outsider*, the researcher is well received by the community through a participatory approach and direct involvement, and is also reflectively aware of the researcher's positionality through field recording, which helps minimize potential academic bias.

Data collection was conducted through participatory observation, in-depth interviews, and document analysis. Interviews were conducted in a semi-structured manner with informants selected purposively based on their level of involvement in the Food Security Program, including farmers, program assistants, and village officials. The study of documents includes program archives, activity reports, articles, and relevant news to complement the field data and strengthen the research context.

Data analysis was conducted in stages, utilizing coding techniques and thematic analysis, in conjunction with the Sustainable Livelihood Framework (SLF) matrix developed by DFID. The initial stage of analysis begins with *open coding* of interview transcripts, field notes, and documents to identify initial themes related to livelihood practices, asset access, vulnerability, and the role of institutions. Furthermore, these themes are grouped through *axial coding* into the five main capitals of SLF, namely human capital, natural capital, physical capital, social capital, and financial capital. They are associated with the context of vulnerability and institutional structures that affect farmers' livelihood strategies. The results of the grouping are then presented in the form of an SLF matrix, facilitating the analysis of the relationship between capitals, the dynamics of changes during the program, and their implications for livelihood sustainability.

To ensure the validity of the data, this study applied triangulation of sources, methods, and time. Source triangulation was carried out by comparing information obtained from farmers, program assistants, and village officials. The triangulation method was carried out by linking the results of participatory observation, in-depth interviews, and document studies. Meanwhile, time triangulation is carried out through repeated observations on different phases of agricultural activities, such as planting, maintenance, and harvest periods. This triangulation process allows researchers to verify the consistency of the data and strengthen the reliability of the research findings.

The results of the analysis using SLF were used to identify the strengthening of livelihood assets and vulnerability factors during the Food Security Program. These findings then served as the basis for formulating an adaptive and sustainability-oriented program exit strategy, taking into account local capacity, the independence of farmer groups, and the socio-economic conditions of the research area.

3. FINDINGS AND DISCUSSION

3.1. Human Capital

The statistical data for Kute Siantan District shows a total of 3,852 residents, comprising 2,002 males and 1,850 females. A total of 2,647 residents fall within the

productive age range, specifically 15–64 years old (Andrianingsih & Asih, 2021). The large population of productive age is a potential for empowerment activities, including assistance in the agricultural sector in the Food Security Program, which currently only totals 44 farmers. According to one of the companions, to become farmers assisted by the program, the community needs to demonstrate its seriousness in farming. In addition, indigenous people received priority over immigrants because there was historical value for the development of the area of origin for indigenous peoples. Even so, the program companions do not close the opportunity for non-assisted farmers and immigrants to gain knowledge about agriculture or the land they cultivate. *"Saya memang belum menjadi petani dampingan, namun saya mendapat arahan dan bantuan untuk mengolah cabai ini. Semoga setelah ini saya sudah bisa memanen hasilnya*" said PDL, a farmer from North Sumatra whom I met in his garden.

The community's enthusiasm for farming is now also spreading to the youth. According to the companion, there are now three children who have just graduated from high school who are excited to start gardening. Together, they cleared the land that was planned for growing vegetables and fruits. The companions shared their input and views on plants suitable for them to plant. The presence of a companion is crucial in enhancing crop production in Kute Siantan District. There needs to be a plan to help farmers become slightly more independent. *"Saya tidak bisa kalau tidak ada pendamping. Perawatan tanaman - tanaman ini masih belum saya kuasai, untuk itu saya masih butuh pendamping,"* said PCT in his garden in Payalama Village.

There is a dependency; it is feared that farmers' activities and productivity will cease if the program is halted. For this reason, it is necessary to have a design that enhances the independence of farmers, ensuring the sustainability of agricultural activities even after intensive assistance is no longer provided.

Human capital in Kute Siantan District shows great potential, as evidenced by the dominance of the productive age population and the increasing interest of the community, including youth, in engaging in agricultural activities. However, the study's results also revealed a high level of dependence on program companions, which has the potential to hinder the sustainability of post-program livelihoods. In the SLF study, this condition shows that the strengthening of human capital has not been fully transformed into adaptive capacity and independence (Scoones, 1998; Saragih et al., 2007).

Dalam konteks kepulauan, keterbatasan akses terhadap sumber pengetahuan Alternatives and the lack of local support institutions reinforce this dependency. Therefore, the formation of *local champions* or key farmers, as recommended in

contemporary SLF, is an important strategy in formulating exit strategies, ensuring that knowledge transfer continues even after external partners have withdrawn.

3.2. Natural Capital

An important aspect of community empowerment programs, including Food Security Programs, is the state of supporting Natural Resources (WIbisono, Nukha, & Dani, 2023). Kute Siantan is an archipelago located directly adjacent to the South Natuna Sea and other islands, offering great natural potential, particularly in marine resources that can be utilized for fishing or as a promising tourist destination. In the mainland, the people of Kute Siantan have gardens and agricultural land that are overgrown with various kinds of plants, including cloves and vegetables. This is recorded in (PPID Anambas Regency, 2021), In 2020, sub-districts in the Anambas Islands Regency area produced food crops, seasonal fruits and vegetables, as well as biofarm crops. Additionally, there is a Food Security Program that facilitates learning about and cultivating various types of vegetables, thereby increasing the diversity of garden products and hopefully meeting their needs. Of the total area of the sub-district, currently, the use of area for conventional agriculture is recorded at 1,000 – 2,000 m2 (Slamet, 2024). According to the companion, the soil in Kute Siantan is very suitable for planting various plants, including vegetables and fruits moreover, if the previous planting area was overgrown with wild plants. *"Meskipun saya menanam di tanah yang miring, cabai yang saya tanam tumbuh dengan subur. Saat ini saya bisa memanen dalam 1 sampai 2 minggu,"* said BAA in his garden in Payamaram Village.

In addition to good soil conditions, the supply of clean water in Kute Siantan is also quite adequate. Based on interviews with village officials and the community, this area has never experienced a shortage of clean water in the last 2 years. Although there have been no cases of drought at times, it is necessary to mitigate the impact if it occurs, considering that the decision to become a farmer is becoming increasingly popular. During the rainy season, which typically occurs in the third quarter of every year, the community also uses this time to plant corn. This then became a habit that took place, especially in the Teluk Bayur Village area. *"Biasanya kebun tua saja yang kami manfaatkan, tetapi kalau masuk musim hujan, masyarakat beramai-ramai menanam jagung. Oleh karena itu di akhir hingga awal tahun biasanya stok jagung disini melimpah dan harganya murah,"* explained MLP.

In addition to using nature to catch fish and grow plants, the existence of farm animals can also be a potential benefit. So far, animals such as cows, goats, and chickens have only been used for meat or eggs. In fact, there are still other things that may be used, such as the feces. As done by Lubis et al. (2023), who provide training to

the community in Banjaran Raya Village to utilize goat manure as fertilizer? Additionally, the quality of chicken, goat, and cow manure meets the requirements outlined in SNI 19-7030-2004, the standard for composting raw materials (Novitasari & Caroline, 2021). That way, the manure produced from livestock has the potential to be used by farmers for plant fertilization.

Even so, the Resilience Program companions have tried another way to nourish farmers' crops, namely by utilizing fish waste. This organic fertilizer is likely to be produced, considering that Kute Siantan is situated at the forefront of the sea and its residents engage in various professions, including fishing. The use of fish waste is carried out (Wicaksono & Rachmawati, 2022) Obtained different concentrations on papaya skin. Then the research was conducted (Anggarseti et al., 2023) Showed that the concentration of liquid fertilizer from fish waste affects the growth and yield of leeks. Various other natural areas in the Kute Siantan District have the potential to be developed and used together. Collaboration among the government, the private sector, and the community in managing the existing natural resources is crucial for Kute Siantan to continue developing and living prosperously.

The natural capital in Kute Siantan District is relatively high, characterized by fertile soil, abundant water resources, and proximity to marine ecosystems. These findings reinforce the view that archipelago areas are not always synonymous with limited resources, but rather possess certain comparative advantages when managed contextually (Afifah et al., 2021). The use of fish waste as an organic fertilizer is an example of local adaptation that aligns with the principles of SLF, specifically the optimization of local assets to strengthen livelihood strategies.

However, ecological vulnerabilities such as flooding due to high rainfall and climate change pose a serious threat to the sustainability of farmers' livelihoods. In the latest SLF literature, the dynamics of natural capital in archipelago regions are often volatile, requiring community-based mitigation strategies (Legatzke et al., 2024). Therefore, strengthening the capacity to adapt to climate risks should be an integral part of the *Food Security Program*'s exit strategy.

3.3. Social Capital

In its historical record, the Anambas Islands area has been known since the 7th century AD. It has been visited by people from various ethnicities, including Malays, Chinese, and Bugis (Arman, 2022), for various purposes such as trade, territorial control, and others. Over time, people from diverse backgrounds and interests mingled with one another, leading their lives in the Kute Siantan District area. To support social life, people participate in various types of forums and social groups. For

example, in each village, there are groups of fishermen, both capture fishermen and aquaculture fishermen. At the household level, there are PKK groups that women generally fill. The formation of groups provides convenience for distributing information from various sources to the community. Not only is information disseminated, but the distribution of aid is also facilitated by the existence of group organizations, for example, the provision of fish seed assistance to aquaculture fishermen carried out by Matak Village.

> "*Memang perlu adanya kelompok untuk penyerahan bantuan. Sebelumnya nelayan budidaya melakukan musyawarah bersama hingga akhirnya terbentuklah kelompok dengan 10 orang anggota. Setelah itu, mereka dapat mengajukan proposal. Hingga tahun 2025 ini, desa sudah 2 kali menyerahkan bantuan bibit ke ketua kelompok, untuk kemudian dibagi rata ke anggota,*" said one of the Matak Village officials.

For farmers, difficulties were found in forming groups. This was triggered by a conflict that arose some time ago. Both the community and the village apparatus recognize the need for an evaluation of the formation of farmer groups, so that groups can be reformed and conflicts can be avoided. The companions of the Food Security Program feel the need for this. In the absence of groups, the distribution of aid and counseling becomes slower. Therefore, the companions took the initiative to organize their fostered farmers to connect through a *WhatsApp Group.* He also strengthens social values among farmers by introducing the spirit of cooperation and cooperation.

> *"Saya mencoba mendekatkan para petani dampingan dengan bergotong royong. Misalnya panen besar kemarin di lahan PB, saya mengajak petani lainnya untuk datang membantu secara suka rela. Begitupun sebaliknya, nanti ketika petani lain butuh, PB juga akan datang membantu. Kemudian alat yang diberikan program yang menunjang kegiatan pertanian, menjadi tanggung jawab bersama. Ada juga iuran jika petani butuh menggunakan mesin yang cukup berat, misalnya cultivator. Iuran digunakan nantinya untuk perawatan mesin,"* said MGP as a companion.

The introduction of the value of cooperation among farmers provides great potential for social capital in Kute Siantan, which affects farmers' productivity and also higher selling value, so that the fulfillment of needs increases and the creation of farmers' welfare (Nur et al., 2022). Village farmer groups that previously experienced conflicts and are no longer running can be rebuilt in order to create empowerment by strengthening their abilities and improving their quality of life (Managanta et al., 2022).

In terms of land use in Kute Siantan by farmers, some are carried out without a land lease from the owner. High social capital plays a role in this, as the average

landowner does not mind that their land is used for agricultural activities and does not impose a burden on rental costs.

> "*Awalnya saya cari tahu dulu siapa yang punya lahan yang akan saya tanami sayur-sayur ini. Setelah ketemu, saya mendatangi pemilik lahan dan meminta izin untuk menanam sayur-sayuran. Pemilik mengizinkan saya dan tidak mau menerima uang. Oleh karena itu, setiap panen, saya menyempatkan untuk ke rumahnya dengan membawa beberapa hasil panen,*" said BRJ from Payamaram Village.

The same thing was revealed by PDL processing in Payamaram Village. "*Ini bukan lahan saya. Saya hanya menumpang menanam setelah pemilik memberikan saya izin. Tidak ada sewa, mereka senang lahannya tidak terbengkalai dan ada yang mengurus*."

This indicates that the trust of the landowners is substantial, which provides farmers with the opportunity to farm without considering the cost of rent. The relationship that exists between companions and farmers is not just about providing counseling. The companions also formed a market network for farmers' crops. Thus, the distribution of crops becomes even wider than the interactions that are formed.

Social capital emerged as one of the most prominent findings in the study. The high level of trust between individuals, including that between landowners and managing farmers, demonstrates the strength of informal social networks characteristic of island communities. From an SLF perspective, this kind of social capital serves as a *buffer* against the limitations of financial and physical capital (Wibisono et al., 2023).

However, the weak formal institutions of peasant groups indicate that strong social capital has not been fully institutionalized horizontally. This condition aligns with the findings of Nur et al. (2022), who suggest that facilitating goong royong-based social capital can lead to a more stable form of organization, thereby supporting the sustainability of post-intervention programs. In the context of the archipelago, strengthening institutions rooted in local values is crucial for preventing conflict and fostering social cohesion.

3.4. Physical Capital

Physical capital consists of basic facilities and infrastructure built to support people's lives and activities. The form of physical capital utilization is the ownership of assets and the use of public infrastructure facilities (Izzati et al., 2021).

Some of the locations of agricultural land are quite far from settlements, necessitating road access for farmers. Fortunately, there are roads, although not all of them are asphalt or cement; some are still in the form of paths. In addition to walking, farmers also use motor vehicles to access their gardens.

To support agricultural activities, farmers in the Food Security Program are assisted in acquiring essential farming equipment, including water pumps to irrigate plants from water sources, fertilizer pumps to fertilize plants and control pests, and cultivators to facilitate soil management. Then, farmers also receive assistance in the form of vegetable and fruit seeds, fertilizers, pesticides to eradicate pests, and mulch to reduce weed growth. These various forms of physical capital help farmers carry out activities and become empowered. With the assistance provided, farmers can manage the income obtained from crop sales to support their next planting activity.

3.5. Financial Capital

People's life activities are very influential and influenced by their ability and financial access. For example, to become a farmer, a person needs to have physical capital, such as seeds, fertilizers, and other necessary resources. The capital is obtained from the financial capital it has. Likewise, to become a farmer member of the Food Security Program. Farmers need to demonstrate their seriousness by undertaking independent land management efforts, allowing the companion to make informed decisions. This business, of course, requires financial capital to operate. This may be an obstacle for community members who lack sufficient financial capital but desire to become assisted farmers.

Then, there is a policy stipulated "Decree of the Minister of Villages and Development of Disadvantaged Regions Number 3 of 2025 concerning Guidelines for the Use of Village Funds for Food Security in Supporting Food Self-Sufficiency is based on the Regulation of the Minister of Villages, and Development of Disadvantaged Regions Number 2 of 2024 concerning Operational Guidelines for the Focus of the Use of Village Funds in 2025, the focus on the use of Village Funds for the Food Security program is allocated at least 20% (twenty percent) and involving Village-Owned Enterprises, joint Village-Owned Enterprises, or community economic institutions in the Village (tanahrata.berdesa.id, 2025)" provides opportunities for the community to be able to have financial capital that is used for various things in the field of agriculture and food security, such as crop diversification, market expansion, and collaboration between various actors.

The physical and financial capital in Kute Siantan shows considerable dependence on external support of the program. Limited road infrastructure and limited ownership of equipment collectively are typical challenges of the archipelago. The SLF literature states that in remote areas, access to physical and financial capital is often the main limiting factor in livelihood sustainability (Saragih et al., 2007).

The Village Fund policy, which requires allocations for food security, opens up

new opportunities for farmers' financial sustainability. However, without strengthening managerial capacity and group governance, this potential risk may not be optimal. Therefore, the results of this study emphasize the importance of integrating structural policies with strengthening local capital in designing *a realistic* exit strategy.

Based on the analysis of the capital owned by the people of Kute Siantan, the data is presented in the form of a table, referring to research by WIbisono, et.al (2023) This contains potential problems, sustainability strategies, and justifications, as shown in Table 2.

Table. 2. Community Capital

Capital	Potential	Problem	Sustainability Strategy	Justification
Humans	The population, which exceeds 1,000 people, has the potential to increase the number of farmers.	Assisted farmers still have concerns about losing a companion figure.	Assisting farmers who receive more support than their companions can be a key person for new farmers.	The Food Security Program has initiated a process of knowledge exchange between farmers and companions. There needs to be a clear and measurable assessment, so that later people or key farmers can really help other farmers after the absence of a companion
Nature	Much land is still left to be	The presence of heavy rainfall in	Land that remains	The assisted farmers have

	abandoned bushes. Additionally, the land and water sources are sufficient to meet the community's needs, including those of farmers. The area, which is also adjacent to the sea, offers opportunities for utilizing fish for consumption and the manufacture of organic fertilizers, which can be further developed by incorporating other natural materials.	certain seasons results in floods that affect farmers' crop yields. Then, soil that has never been planted with vegetables before requires special attention to be adjusted to suitable soil conditions.	abandoned can serve as the initial capital for individuals who wish to start farming. In the use of natural ingredients as fertilizer, it is essential to disseminate knowledge to farmers, either through education, direct practice, or other methods. In addition, water reservoirs are also useful when rainfall is high as a water reserve for later in the day.	begun to use the land that was previously left alone. Together with their companions, farmers are equipped with the right soil conditions to plant vegetables and utilize fish waste as a source of plant fertilization.
Social	The relationship between communities feels quite harmonious. One of them can be observed in the relationship between landowners and land management	Although relationships between individuals are well-established, relationships within groups are not always harmonious. The reason is that complaints	Building solidarity through group activities with real action can be a solution to the problems of social capital.	Farmer group activities initiated by companions from the Food Security Program, which emphasize the principle of cooperation, can serve as an

	farmers. According to the researchers' findings, landowners do not charge land rent and are not obligated to share the proceeds from it. This then became the concern of the companions, who began to build solidarity between the farmers they assisted with cooperation activities.	were found in group activities, particularly in areas of awareness and commitment. Additionally, complaints have arisen regarding efforts that benefit only a select few, rather than all group members.		example for other groups. That way, conflicts between members can be suppressed, and group activities can be successful.
Physical	The existing facilities and infrastructure support people's lives. Personal ownership of motor vehicles, farming tools, and other equipment makes activities easier to accomplish.	Although public facilities and infrastructure are available, some conditions are still subpar, for example, small roads that remain unpaved, making them potentially slippery when rain arrives. There are still a	Maintenance of the group's equipment is carried out collectively, ensuring it remains in good working condition for an extended period.	Farmers who are members of the Food Security Program have used a group ownership system. The use of tools such as *cultivator machines* is carried out with a fairly affordable

		few tools belonging to the group, so they still rely on private ownership.		rental method, which then becomes group cash. Additionally, the program offers assistance in procuring tools and materials, providing relief to farmers.
Financial	Farmers participating in the assistance program have the opportunity to create local markets, enabling economic growth within and for the community. Diversification of vegetable production is also an option to create new forms of business in the community.	Individuals with limited financial resources have fewer opportunities compared to those with substantial capital. Additionally, there is a potential for overproduction of agricultural products, which can lead to price declines.	In addition to sales from farmers to the community and from farmers to stalls, quality crops or other processed vegetables, as part of diversification, can compete in a wider market, such as outside sub-districts to districts, resulting in increased income.	The Food Security Program demonstrates that there is a market for local agricultural products, leading to an economic turnaround in the community.

Overall, the study's results indicate that dynamic interactions between SLF capital influence the livelihood strategies of farmers in Kute Siantan District, within the context of vulnerable yet potentially rich archipelagos. Social capital and natural

capital are the primary forces, while human, physical, and financial capital require ongoing strengthening. These findings reinforce the relevance of using SLF not only as an asset mapping tool but also as an analytical basis for designing an adaptive, contextual, and self-reliant *food security program* exit strategy for island communities.

4. CONCLUSION

Through the analysis of the Sustainable Livelihood Framework (SLF) in the Food Security Program in Kute Siantan District as part of the implementation of Medco E&P Natuna Ltd.'s corporate social responsibility, this study shows that the sustainability of people's livelihoods is highly determined by the strengthening and management of five main capitals, namely human capital, natural capital, social capital, physical capital, and financial capital. Human capital, which currently still relies on the role of facilitators, has the potential to become more independent through the determination of key farmers with measurable assessment criteria and indicators, allowing the knowledge transfer process to continue even when intensive mentoring is reduced. In terms of natural capital, the existence of unused land and the availability of local organic resources present opportunities for the development of sustainable agriculture that utilizes local resources. Community social capital, supported by the value of cooperation, contributes to the formation of stronger and more empowered farmer groups. In contrast, physical capital, in the form of ownership and management of shared assets, requires collective awareness so that it can be utilized optimally and sustainably. As for financial capital, expanding market access and diversifying agricultural products are crucial strategies for increasing income and enhancing the community's economic resilience.

Based on these findings, this study recommends the need for more synergistic engagement between local governments, Village-Owned Enterprises (BUMDes), and the private sector in supporting the sustainability of the Food Security Program. Local governments are expected to play a role in providing supporting policies, increasing the capacity of farmers through continuous training, and strengthening the institutions of farmer groups. BUMDes can function as managers of the value chain of agricultural products, starting from the procurement of production facilities, product processing, to marketing, so that farmers not only play the role of producers but also obtain economic added value. Meanwhile, the sustainability of CSR programs needs to focus on strengthening local capacity, rather than just providing physical assistance, so that communities can sustain their agricultural activities independently in the long term.

This research has several limitations. First, the scope of research that focuses on a single sub-district with an ethnographic approach yields findings that are contextual

and cannot be generalized to other regions with different social and ecological characteristics. Second, the duration of the live-in, which is limited to about two months, is insufficient to fully capture the long-term dynamics of changes in people's livelihoods, especially after the mentoring program ends. Therefore, further research is recommended to conduct longitudinal studies and compare regions to enrich the understanding of the exit strategy and sustainability of food security programs based on community empowerment.

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