Organic Farming for Sustainable Development in Peri-Urban Community

Sumardjo[1], A. Firmansyah[2], L. Dharmawan[3]

{sumardjo@apps.ipb.ac.id[1], adifirman@apps.ipb.ac.id[2], leonarddharmawan@apps.ipb.ac.id[3]}

Department of Communication and Community Development Sciences, Faculty of Human Ecology, IPB University, Bogor, West Java, Indonesia[1], Center for Alternative Dispute Resolution and Community Empowerment, Institute for Research and Community Service, IPB University, Bogor, West Java, Indonesia[2], Vocational School of IPB University, Bogor, West Java, Indonesia[3]

Abstract. This research aims to analyze the development of urban-farming in peri-urban communities by utilizing yards and other available lands to sustainable development farming. The research method used qualitative research through participatory action research with a cybernetics approach. The study take place in a peri-urban community in Majalengka Regency, West Java, considering the rapid conversion of agricultural land to non-agricultural. The study employs the concepts and theories of organic farming, urban-farming, and sustainable development in community empowerment. The results show that organic farming in the development of urban-farming in yard is adaptive to the dynamics of the need to prevent the prevalence of non-communicable diseases. The peri-urban community empowerment approach combined with organic farming has the potential to lead to the achievement of the SDGs. This effectiveness is conditioned by a participatory empowerment approach and increased farmer interdependence. Increasing human capital is a critical factor of managing community capital through strengthening social capital.

Keywords: empowerment, organic farming, urban-farming, SDGs.

1 Introduction

One of the problems in the agricultural sector in Indonesia is the conversion of agricultural land to non-agriculture. There has been a conversion of paddy fields from 7.75 million hectares in 2013 to 7.1 million hectares in 2018 [1], which is equivalent to 130 thousand hectares per year. Meanwhile, according to BPS calculations, the harvested area decreased from 11.38 million hectares to 10.68 million hectares in 2019 and is expected to decrease again to 10.48 million hectares in 2020 [2].

On the other hand, the population continues to increase every year, which has implications for increasing food needs. One alternative solution to overcome this problem is to use yards, vacant land, or unproductive unused land to increase food security and family nutrition. Through the Food Security Agency (BKP) in 2010-2019, the government has implemented the Sustainable Food House Area Program (KRPL). In 2020 it will become a Sustainable Food Garden or P2L

RUSET 2021, September 14-15, Bogor, Indonesia

DOI 10.4108/eai.14-9-2021.2317171

program [3]. This activity is also carried out in the context of handling priority areas for stunting intervention and handling priority areas of food insecurity or strengthening food security areas. This program is also carried out in an effort to contribute to the achievement of the SDGs.

Presidential Decree No. 59 of 2017 concerning the Implementation of Achieving Sustainable Development Goals requires business actors to create SDGs. This is supported by the issuance of Regulation of the Minister of National Development Planning/Head of BAPPENAS Number 7 of 2018 concerning Coordination, Planning, Monitoring, Evaluation, and Reporting on the Implementation of Sustainable Development Goals (PERMEN No. 7/2018). Indonesia is one of the countries that became the United Nations Voluntary National Review in implementing the SDGs. SDGs are a global development agenda targeted at human and environmental welfare that was released on October 21, 2015, as a common development goal until 2030. This has been agreed by various countries in the United Nations (UN) forum, has 17 goals, 168 targets, 241 development indicators. Business actors also responded by contributing directly or indirectly to the SDGs to improve the company's reputation.

Two village in Sumberjaya District was chosen as the research location because it is in the priority ring-1 area affected by the company's operations. On that basis, the company's CSR implements a community empowerment program in the area. As many as 50 percent of the population relies on agriculture for their livelihood, mainly relying on lowland rice and horticulture (vegetables and fruits). However, the rampant construction of factories and the construction of the Cipali toll road in this sub-district has reduced agricultural land. There has been a shift from rural to peri-urban communities.

Based on these conditions, PT Pertamina EP took the initiative to carry out a participatory empowerment program to implement Corporate Social Responsibility (CSR) to utilize the yard. The yard has not been widely used by the community, introducing an integrated organic farming innovation or bio-cyclo farming system. Bio-cyclo farming, in this case, is an agricultural system that utilizes the biological cycle, namely the use of kitchen waste and livestock waste for plant fertilizers. This program is business-oriented by optimizing narrow land management, organic planting, utilization of kitchen waste, selection of high-value products, post-harvest handling to network, and market development. Specifically, the objectives of this program are (1) to change people's behavior regarding the use of yards with organic farming; and (2) to increase community income from yard utilization activities accompanied by value-added processed products.

The purpose of this study is twofold: (1) How to develop sustainable urban farming in peri-urban communities to meet food security needs, by utilizing yards, unused land, and other available unproductive land, by applying organic farming; and (2) How are appropriate and participatory community empowerment activities in realizing efforts to achieve sustainable development goals (SDGs).

The rationale used in answering these objectives is basically based on the proposition that sustainable development will be realized if the empowerment approach is participatory and the rise of creative social energy [4], [5], as well as the community self-reliance approach [6]. In relation to efforts to fulfill food security needs, efforts are needed to develop horticulture in organic agriculture by utilizing available yards and other land as well as the application of urban farming and integrated farming systems [4], [7], [8]. Efforts to achieve the SDGs require activities that can provide economic, social, and ecological value that can provide added value from organic urban farming [4]. The sustainability of the business carried out by the community

will be realized if the empowerment is successful in strengthening human capital and social capital in managing community capital and the functioning of creative social energy [5], [6], [9], [10]. This rationale is formulated from the experience of researchers in the context of community empowerment in the last 10 years.

The novelties of this research are: (1) A systematic series of community empowerment in peri-urban communities in a sustainable manner in the face of land conversion that threatens community food security; (2) Applying the concept of developing community independence through creative social energy in peri-urban communities with bio cyclo farming innovations.

Independence is the peak of empowerment or education or counseling efforts. A person's empowerment is characterized by high filterability, competitiveness, and comparability in life behavior [11] and adaptability [4], [6]. A person's filtering power is higher in line with the breadth of insight and intelligence he has. At the same time, a person's competitiveness is characterized by his high ability to manage business or resources in his life effectively, efficiently, and with quality. A person's strength is his ability to partner, network synergistically with other parties in his life. The essence of this pairing power is trust, being mutually reliable, mutually reinforcing, mutually trustworthy, which is the primary ingredient for building social capital in their environment [5]. The success of an empowerment program is basically how much the program increases the capacity of individuals or community members who are involved in the empowerment activities. The capabilities referred to are cognitive, psychomotor, affective, and conative abilities, as well as other resources such as physical or material ones [11]. Cognitive condition is essentially the breadth of insight and thinking ability based on one's knowledge and insight to find solutions to the problems at hand. Psychomotor abilities are muscle skills possessed by community members in an effort to support the community in fulfilling their life needs in the context of carrying out development activities. Affective condition is a feeling tendency possessed by individuals who achieve empowerment in being proactive and even anticipatory in adapting to developments or changes in their environment. A conative condition is a dynamic behavior of community members formed and directed at behavior that is sensitive to the realization of community empowerment values.

This per-urban urban farming empowerment activity synthesizes the concepts of bio cyclo farming and integrated farming system applied to urban communities. Empowerment of urban farming is carried out by utilizing unproductive yards and land in peri-urban communities, which are increasingly densely populated. This urban farming yard model is the development of the 'Sustainable Food House Area (KRPL)' or 'Sustainable Food Court (P2L)' developed by the Ministry of Agriculture [3].

Urban farming activities can include production, processing, and marketing, and biofuels, especially to meet the daily needs of urban communities [12] [4]. In this activity, intensive agriculture is applied by utilizing recycled household waste and livestock and fish waste produced by the community to produce various plants and livestock/fish, known as bio cyclo farming [13], [14] or integrated farming system [13].

The development of organic agriculture is based on the consideration of increasing public awareness to fulfill functional food, namely commodities that function to prevent or overcome non-communicable diseases [15]. The diseases in question are diabetes, hypertension, gout, heart problems, etc. Thus, apart from achieving the SDGs on alleviating poverty and hunger, it also encourages peri-urban communities to have sustainable businesses.

Aspects of the SDGs that can be achieved from this family empowerment effort are in line with the following goals (according to number): (1) Efforts to eradicate poverty, (2) Efforts to achieve food security and nutrition improvement, as well as promote sustainable agriculture, (3) Promote healthy living and promote well-being for all ages, (4) The potential to realize gender equality and empower women, (5) Encouraging innovation for semi-urban communities in organic farming efforts in the yard, (6) Encouraging semi-urban (urban) communities to have sustainable businesses, (7) Encouraging sustainable, productive business patterns.

Organic agriculture that is applied in urban farming empowerment activities for peri-urban communities is a cultivation system that relies on natural ingredients, without chemicals. The choices of commodities planted include vegetables and horticulture. Organic farming is based on the principles of health, ecology, justice, and protection. In terms of health, agriculture must pay attention to sustainability, the health of the land, plants, animals, and humans. In addition, it must consider the ecological cycle of life and pay attention to justice between humans and living creatures in their environment to pay attention to the sustainability of human health and welfare in the context of sustainable development [16].

2 Method

This qualitative study uses a participatory action research method by placing the field researcher who lived in the village during the research period. Data collection applies cybernetic triangulation, in-depth interviews with 11 key figures/informants, consisting of two village heads, one empowering facilitator, four community leaders, two civil servant extension workers, four leading farmer leaders as empowerment participants, and focused discussion activities. (FGD). The informant selection technique was carried out by the snowballing method. Research participants are individuals who apply organic urban farming innovations in Sumberjaya, Majalengka. This study is supported by quantitative analysis of the results census of the empowerment participants as many as 30 families.

Quantitative data analysis was carried out using the index of community empowerment aspect (CEA), with the formula:

$$\textbf{CEA Index} = \frac{(Sum\ Score\ -Min\ Score)}{Max\ Score-Min\ Score}\text{x}100 \quad (1)$$

Community Empowerment Aspect index categorized by four. (as Table 1).

Table 1. CEA index base on Community Satisfaction Index

No	Indeks community empowerment	Category
1	25,00-43,75	Not good
2	43,75-62,50	Less
3	62,51-81,25	Good
4	81,26-100,00	Very good

Community empowerment uses a participatory rural appraisal method, which begins with social mapping, program preparation and implementation, and utilization activity results. Cidenok Villages and Bongas Wetan Villages, Sumberjaya Sub-district, were chosen deliberately considering that the locations were peri-urban communities that received assistance from large national CSR companies.

Community empowerment is pursued by developing creative social energy [5], namely participatory social engineering carried out by the community as the subject of urban farming empowerment. This creative socio-cultural energy includes three main elements, namely: (1) ideals, (2) ideas, and (3) friendship. The ideal is a condition that society wants to be realized. Ideas are ways that are formulated by the community to realize these ideas. At the same time, friendship is a synergistic cooperative effort that is in line with ideas that the community has creatively determined. Elements one and two are a form of strengthening human capital, and a third element is a form of strengthening social capital.

3 Results and Discussions

3.1 The Condition of the Peri-Urban Society

The research locations are two villages that are directly affected by the construction of the Cipali toll road, and indirectly the construction of the Kertajati International Airport. This has an impact on the conversion of land functions in some communities from rice farming to settlements and industry. Here, the community which was originally characterized as rural was "forced" by circumstances to become a transitional society, from rural to urban, which is here called a peri-urban society.

> “Some of the people here have to sell their land and switch their livelihoods from agriculture to non-agriculture. Some of them bought land elsewhere and some were accepted to work in factories and industries around our village. But there are also things that are not both, especially women are required to adapt to these conditions” (Mm, formal figure, 55 years)

The transition from rural to urban characteristics turns out to impact a shift in strategic environmental conditions and functions from agriculture to non-agriculture. People who are experiencing the transition are faced with problems in meeting the needs of life. This transitional society faces the risk of unpreparedness to be threatened by poverty and difficulties in meeting daily needs. This description aligns with semi-urban or sub-urban, or peri-urban communities [17].

The two villages where this research is located are in the ring-1 area of the impact of PT Pertamina EP, a national company. Realizing this, the company established the two villages as

part of several villages that became the company's corporate social responsibility empowerment program in collaboration with CARE LPPM IPB as partners in the empowerment process.

In the peri-urban empowerment program, participatory efforts are applied to strengthen solidarity (social capital) among the community to be more empowered. For this reason, efforts have been made for strengthening human capital in meeting the needs of life in the face of transition as a result of the development of economic infrastructure and changes in land function that occur in the environment.

This is intended to make the peri-urban transition more empowered to face the risks of poverty and powerlessness. With the presence of empowerment efforts through participatory social mapping, the community seems to have found an effective strengthening of human capital towards solidarity between them in meeting the needs of living together, as seen from the opinions of community leaders.

> "We welcome IPB's presence in social mapping involving us and the community potentially affected by the construction of the toll road. With this mapping, the community finds a picture for solutions to problems and the potential of existing resources. The community has also prepared plans and implemented these plans, among others, by utilizing unproductive yards and land, by planting vegetable commodities in their yards and fruit trees on unused land. According to the people's tastes, the vegetables grown are kale, eggplant, long beans, chilies, honey pumpkin and others. While in idle land, the commodities that the community chooses are mango, crystal guava, honey gourd and others, which are sold to the market." (, Farmer Figure, 51 years old)

This urban farming empowerment activity for peri-urban communities turned out to be applying a synthesis of the concepts of bio cyclo farming or integrated farming system applied to urban communities. Empowerment of urban farming is carried out by utilizing unproductive yards and land in peri-urban communities, which are increasingly densely populated. This urban farming yard model is the development of the 'Sustainable Food House Area (KRPL)' or 'Sustainable Food Court (P2L)' developed by the Ministry of Agriculture [3].

> "The activity of using yards and unproductive land in this village has attracted the interest of housewives, not only from those who have been evicted from their agricultural lands but also the youth of the mosque, as well as men in their spare time. At first it was not easy to attract their interest but after seeing the reality and benefits of this activity from 10 people to 30 people. What was originally production for own consumption after more and more participants began to discuss with marketing and the products were marketed within the village scope. In the future, participants in this activity can become cadres in each RT where the cadres live." (Mm, village official, 55 years old)

From the statement of the figure, it is known that the form of urban farming activities includes production, processing, and marketing as well as biofuels, especially to meet the daily needs of urban communities. This is in line with the concept of urban farming in urban areas [12], [4], but rural nuances are still found, especially in the process of diffusion of innovations among empowerment participants. In this activity, intensive agriculture is applied by utilizing the recycling of household waste and livestock and fish waste produced by the community to produce a variety of plants and livestock/fish, known as bio cyclo farming [13], [14].

> "This urban farming activity is beneficial for households because it utilizes kitchen (organic) waste and livestock waste into organic fertilizer, both solid fertilizer, and liquid fertilizer. Participants in the activity empowered their free time to process organic waste into fertilizer, and non-organic waste, such as plastic, was collected to be sold to reservoirs, and the money earned was used to buy plant seeds. (Mm Mm, female cadre, 49 years old).

Developing the urban farming are in line with SDGs achievement: (1) To fulfill daily needs, with commodities favored by the household concerned or to meet special needs, for example, the provision of family medicinal plants; and (2) For sustainable household productive businesses, commodities that are developed based on the needs of the community that are the target market.

Related to the achievement of the SDGs, the development of organic agriculture is in line with the increasing public awareness to fulfill functional food. Functional food is food that functions to prevent or treat non-communicable diseases [18]. The diseases in question are diabetes, hypertension, gout, heart problems, etc., which are becoming more and more common in the community. Thus, it turns out that organic farming in urban farming is not only an effort to achieve the SDGs on alleviating poverty and hunger, it also encourages peri-urban communities to have sustainable businesses.

3.2 Behavior Change as an Entry Point for Sustainability Empowerment

In particular, the main cadres of empowerment undergo a behavioral change process that is deliberately designed to become independent cadres. The independence in question is that cadres have filterability, competitiveness, competitiveness, and adaptability [5]. It turns out that the success of this approach is the keyword for the diffusion of organic urban farming innovations in the community. In detail, the level of independence of the participants can be seen in Table 2.

The ultimate goal of community empowerment is forming independent, prosperous, and dignified individuals and communities, and independence is the pinnacle of empowerment [11]. In line with this opinion, the final results in this study are seen from the aspects of independence, productivity, sustainability, and the benefits of organic farming-based empowerment programs. From these aspects, it can be seen that the average value of the final result shows a performance index of 63.68% (scale 0-100%); this indicates that the final result shows a good performance category.

Table 2. Performance index of the final result aspect in the community empowerment program based on organic yard farming in Sumberjaya in 2021

Community Empowerment Aspect	Rating (%)				Performance Index		
	Very High	High	Medium	Low	Score	%	Category
Autonomy	3,3	46,7	30,0	20,0	2,33	58,33	Good
Productivity	6,7	41,7	51,1	0,6	2,46	61,39	Good
Sustainability	0,0	46,7	50,0	3,3	2,43	60,83	Good
Benefits	15,6	66,1	17,8	0,6	2,97	74,17	Good
Average					2,55	63,68	Good

One of the main goals of community empowerment is to change people's behavior behavior, both in terms of knowledge, attitudes, skills, and aspirations of the community or called KASA (knowledge, attitude, skill, and aspiration). Based on the study results, it turned out to show very good changes in KASA, which means this program has succeeded in improving these aspects. The average performance score of the KASA aspect of this program is 87.9% (scale 0-100%), which means the performance is very good. In Table 3, the detailed results of each KASA indicator are presented.

Table 3. Performance indicators for the aspects of knowledge, attitudes, skills, and aspirations in the community empowerment program in Sumberjaya, Majalengka, in 2021

Rated Thing	Rating (%)				Performance Index	
	Very High	High	Medium	Low	Score	Category
Knowledge	83	17	0	0	95,83	Very Good
Attitude	87	12	1	0	96,58	Very Good
Skills	43	57	0	0	85,83	Very Good
Aspiration	17	63	17	3	73,33	Good
Average					87,90	Very Good

Note: n = 30

The level of adoption or application of knowledge and skills in this study is how beneficiaries apply the knowledge and skills they have acquired in this program in their daily lives. The

knowledge and skills are the use of compost, the use of liquid organic fertilizer, the use of local micro-organisms, the application of biopore infiltration holes, the use of the internet/social media to find sources of information, and marketing, hydroponic and viticulture applications in their respective yards. Respectively. Based on the analysis, it is known that 43% are categorized as high and medium. The calculation of the performance index shows the number 67.5% (scale 0-100%), which means it is categorized as a good performance index.

3.3 Participation in Community Empowerment

The planning process is seen from knowledge about program plans, involvement/participation in planning and contributing ideas/thoughts in planning. The implementation aspect is seen from the knowledge of the program realization schedule, the suitability between the schedule and realization, and participation in the implementation. Moreover, in the M&E aspect, it can be seen from the side of the consistency of monitoring implementation and community participation in M&E. The average program performance index in these aspects is 79.7% (from a scale of 0-100%), which means that the performance is categorized as very good. Table 4 presented the results of the performance index calculation on aspects of planning, implementation, and monitoring and evaluation.

Participation as community involvement starting from decision making, decision implementation, enjoyment of results and evaluation [19]. The four stages of participation are described as follows. The decision-making stage is realized by the participation of the community in joint deliberation. The implementation stage is the most important stage in development because the core of development is its implementation. The stage of enjoying the results can be used to indicate the success of community participation at the planning stage and project implementation stage. The evaluation stage is considered important because community participation at this stage is considered as feedback that can provide input for improving the implementation of the next project.

Table 4. Performance index of participation aspects on planning, implementation, monitoring and evaluation in Sumberjaya, 2021

Participation Aspect	Rating (%)				Performance Index	
	Very Good	Good Enough	Not too Good	Bad	Score	Category
Planning						
Knowledge of program plans	33	57	7	3	80,0	Very Good
Community involvement in planning	30	63	7	0	80,8	Very Good
Contribution to program planning	37	17	47	0	72,5	Good
Implementation						

Knowledge of program implementation schedule	87	13	0	0	96,7	Very Good
Match between schedule and realization	33	63	3	0	82,5	Very Good
Participation in program implementation	33	67	0	0	83,3	Very Good
Monitoring and evaluation						
Consistency of program monitoring and evaluation?	17	40	43	0	68,3	Good
Community participation in monev	13	30	53	3	63,3	Good
Average					**79,7**	**Very Good**

Note: n=30

3.4 Energy socio creative

Community educators who act as extension agents apply convergent communication to empower urban farming in peri-urban communities. The target group for the empowerment program has agreed to realize the ideal, namely, being able to seize market opportunities for farming products to increase income. This is to be achieved with ideas, strengthening internal cooperation among group members, thereby strengthening the bargaining position in synergistic cooperation with external partners (friendship) in the downstream agribusiness sub-system (processing and marketing).

This approach is known as strengthening creative social energy, which is self-social engineering among empowerment participants. Creative social energy is applied in a participatory setting of ideals, ideas, and friendships from and for society. Empowering participants act as the main actors so that there is no domination in the empowerment process. Conditions like this are a picture of creative socio-cultural energy arranged in a participatory manner [5].

Participatory empowerment is conducive to strengthening creative social energy and independence of empowerment participants in the bargaining position of the organic urban farming product agribusiness system in peri-urban communities. The application of participatory methods with a convergent communication approach effectively develops creative socio-cultural energy as a form of self-social engineering [11], [20]. Applying the concept of social capital is very important in participatory community empowerment, namely, a value of the mutual trust between community members towards their leaders and other communities [21], [22]. Social capital becomes a social institution, the functioning of networks, norms, and social trust that encourage a social collaboration to achieve synergies between urban farming participants and partners. Strengthening social capital in this empowerment is pursued by strengthening social capital through strengthening human capital. Strengthening of human capital occurs through an outreach approach in community empowerment.

3.5 SDGs Achievements

The impact of participatory organic urban farming empowerment on peri-urban communities on the contribution of SDGs achievement can be seen in Table 4. namely points 2, 11, 13, and 15. The presence of the facilitator is more of a catalyst than a social worker. With proper participation, synergistic forms of cooperation are formed that meet the needs of the empowerment participants.

Table 5. The form of empowerment activities and changes that occur related to the SDGs

Before	Forms of Empowerment Activities	Transformation	SDGs
Yard land has not been used optimally	Training and mentoring on urban farming and waste processing in the yard	The development of the use of the yard through urban farming There are already people who sell vegetable products even in limited circles	2
No use of kitchen organic waste	Training on making compost, POC and planting media	Increased activity of using waste, especially kitchen waste	13
A small part of the community knows about waste management Structuring the yard and village land that is less productive	Introduction/dissemination of waste management technology (composting, maggot cultivation, MOL and POC manufacture, biopori and waste crafts) Utilization of yards and vacant land is not productive with horticultural crops.	Implementation of the waste management model: (1) Making MOL & POC, (2) Composting, (3) Trash Craft, and (4) Biopore The arrangement of several residential areas, especially those participating in the yard competition. Increasing the amount of forage around the village and vacant land.	11 15

4 Conclusion

1. Development of urban farming in peri-urban communities by utilizing available yards, unused land, and other unproductive lands and implementing integrated farming system innovations that are effective in increasing community independence (Community Empowerment Aspects). This effectiveness is influenced by strengthening human capital and social capital in community empowerment by implementing participatory extension functions. The application of self-social energy in strengthening creative social energy with a participatory approach to empowerment is an essential factor in the effectiveness of developing organic urban farming innovations in peri-urban communities.
2. This research finding contributes significantly to the fact that the role of extension theory is important in community empowerment, especially in developing human capital and social capital in community development theory. From an ecological perspective, extension theory plays a real and effective role, especially in increasing the capacity of the community to manage natural capital, actually in the transition of rural to urban communities, through ecologically appropriate technological innovations.

3. Participatory community empowerment activities with organic urban farming innovations and integrated farming system innovations are effective in achieving sustainable development goals (SDGs) in points 2, 11, 13, and 15.
4. The application principles of extension in community empowerment place the community as the subject of development that effectively increases their adaptability in dealing with the dynamics of environmental change, especially the conversion of agricultural land. The extension development approach in community development has turned out to be conducive to achieving the SDGs, especially to managing agribusiness and integrated farming systems.
5. The peri-urban community empowerment approach with organic farming can lead to the achievement of the SDGs. This effectiveness is conditioned by a participatory empowerment approach and increasing farmer independence. Increasing the independence of farmers (human capital) is an essential factor in managing community capital through strengthening social capital.
6. Social innovation in the case of self social engineering has proven to generate community motivation, especially in realizing community development outputs (as stated in the SDGs aspects). Self social engineering referred to here is innovation about creative social energies in peri-urban community empowerment.
7. The interest to be raised in future research is how the role of information technology in strengthening social dynamics for the empowerment of peri-urban communities, especially the role of community leaders and the networks formed.

Acknowledgment. 1) Kementerian Pendidikan dan Kebudayaan , Riset dan Pendidikan Tinggi RI, which has funded this research activity, 2) LPPM and CARE LPPM who have facilitated and coordinated activities, 3) PT Pertamina EP, which has supported mentoring activities, and 4) Field assistants who mostly act as informants.

References

[1] CNN Indonesia: BPS sebut luas lahan pertanian kian menurun. CNN Indonesia. pp. 1–6 (2018)
[2] Kusuma, H.: Luas Panen Padi Turun Jadi 10,66 Juta Hektare di 2020. detik.finance.com, pp. 4–7 (2020)
[3] [BKP KEMENTAN] Badan Ketahanan Pangan Kementerian Pertanian. Petunjuk Teknis Bantuan Pemerintah Kegiatan Pekarangan Pangan Lestari (P2L) Tahun 2020. Vol. 4 (2020)
[4] Sumardjo, S., Firmansyah, A., Manikharda: Organic medical plants urban farming based on family empowerment on Bekasi, West Java. J. Hunan Univ. Vol. 47, No. 12 (2020)
[5] Sumardjo, S., Firmansyah, A., Dharmawan, L.: The role of creative social energy in strengthening ecological adaptation capacity through community empowerment. J. Penyul. Vol. 16, No. 2, pp. 323–332 (2020) doi: 10.25015/16202028361
[6] Sumardjo, S., Firmansyah, A., Dharmawan, L.: Ecological adaptation of coastal communities based on social energy: a case of natural disasters potential on the north coast of West Java. IOP Conf. Ser. Earth Environ Sci. Vol. 399, pp. 012028 (2019) doi: 10.1088/1755-1315/399/1/012028
[7] Wahyuni, S., Sumardjo, Lubis, D. P., Sadono, D.: Faktor-faktor yang berpengaruh terhadap dinamika kelompok dan kapasitas petani dalam agribisnis padi organic. Sosiohumaniora. Vol. 19, No. 1, pp. 21–28 (2017)
[8] Listiana, I., Sadono, D., Tjiptopranoto, T.: Hubungan kapasitas penyuluh dengan kepuasan petani dalam kegiatan penyuluhan. J. Penyul. Vol. 14, No. 2, pp. 267507 (2018) doi: 10.25015/penyuluhan.v14i2.18673.

[9] Hentihu, I., Sumardjo, Sugihen, B. G., Susanto, D.: The potential for creative socio-cultural energy of coastal communities in the Maluku Islands. Asian Res. J. Arts Soc. Sci. (2020) doi: 10.9734/arjass/2020/v11i330173
[10] Sulistiani, I., Sumardjo, Purnaningsih, N., Sugihen, B. G.: Role of communication in the community social energy development in Papua. J. PIKOM. (2017)
[11] Sumardjo, S., Firmansyah, A., Dharmawan, L., Wulandari, Y. P.: Implementasi program pengembangan masyarakat. Vol. 1, No. 1 (2014)
[12] Bailke, M., Nasr, J.: From brownfields to greenfields: producing food in north american cities, community food security news. fall 1999. (2000)
[13] Dwikoranto, C. A., Agus, A., Suhartanto, B.: Pengembangan sistem pertanian siklus-bio terpadu untuk peningkatan produktivitas ternak sapi pada kelompok ternak Desa Margoagung, Sayegan, Sleman, Yogyakarta. J. Pengabdi. Kpd. Masy. (Indonesian J. Community Engag). Vol. 1, No. 1, pp. 96 (2015) doi: 10.22146/jpkm.16957
[14] Sholichah, H., Wahyuni, N.: pemanfaatan limbah organik berbasis bio cyclo farming (studi kasus di desa telaga murni) seperti yang kita ketahui menurut United States Environmental Protection Agency mensukseskan pembangunan dibidang berbasis Bio Cyclo Farming yang terfokus pada peng. Vol. 4, No. 1, pp. 21–27 (2019)
[15] Sumaedi, S., Sumardjo, S.: Factors influencing internet usage for health purposes. Int. J. Heal. Gov. Vol. 25, No. 3, pp. 205–221 (2020) doi: 10.1108/IJHG-01-2020-0002
[16] Alisjahbana, E., Murniningtyas, A. S.: Tujuan pembangunan berkelanjutan di Indonesia. Vol. 3, no. 2 (2018)
[17] Supriyatin, R., Pravitasari, A. E., Pribadi, D. O.: Pemetaan karakteristik wilayah urban dan rural di wilayah bandung raya dengan metode spatial clustering. J. Geogr. Vol. 12, No. 2 (2020) doi:10.24114/jg.v12i02.17647
[18] Sumaedi, S., Sumardjo, S., Saleh, A., Syukri, A. F.: A model of digital health communication media use during the Covid-19 pandemic. Health Educ. (2021) doi: 10.1108/HE-03-2021-0040.
[19] Cohen, J., Uphoff, N.: Participation's place in rural development: seeking clarity through specificity. World Dev. Vol. 8, pp. 213–235 (1980)
[20] Sulistiani, I., Sumardjo, S., Purnaningsih, N., Sugihen, B. G.: The determinate factors that affect to social energy development to Papua community empowerment in Indonesia. Vol. 12, No. 1, pp. 1–10 (2017)
[21] Putnam, R. D.: Social capital and public affairs. Bull. Am. Acad. Arts Sci. (1994) https://www.jstor.org/stable/3824796
[22] Coleman, J.: Social capital in the creation of human development. The American Journal of Sociology. Vol. 94, pp. 95–120 (1988)