

POTENTIAL STUDY OF PANYAWEUYAN TERRACE SYSTEM IN INDONESIA TO BE NATIONAL IMPORTANT AGRICULTURAL HERITAGE SYSTEM: A QUALITATIVE APPROACH

Jaka Sulaksana^{1*}, Dadang Sudirno¹, Acep Atma Wijaya¹, Sri Umyati²

¹*Agribusiness Department, Faculty of Agriculture, Universitas Majalengka*

²*Economic Faculty, Universitas Majalengka*

Jl. Raya K H Abdul Halim No. 103 Majalengka Kulon, Majalengka, Indonesia

**Email : jsulaksana@gmail.com*

Naskah diterima: 16/09/2024, direvisi : 21/11/2024 disetujui: 29/11/2024

ABSTRACT

The objectives of this research are as follows: To accurately analyze the development potential of the *Panyaweuyan* terracing area as a national agricultural and food heritage (NIAHS); provide complete and integrated advice or recommendations in the development of the *Panyaweuyan* terracing area as a national agricultural and food heritage (NIAHS). The research location is the *Panyaweuyan* terracing area as a national agricultural and food heritage (NIAHS), namely in the *Panyaweuyan* Agrotourism Area, Argapura District, Majalengka Regency. The implementation time is August-September 2021. Agricultural activities carried out on *Panyaweuyan* terraced land can provide ecosystem services related to global warming and global climate change at least prevent erosion, through the terracing system. These ecosystem services are in the form of water resource management, conservation of agricultural diversity, low carbon society, zero waste agricultural systems, and renewable energy practices. The need for the development of a tourism promotion cooperation network, the need for the implementation of *Panyaweuyan* tourism promotion at home and abroad, the need for an increase in supporting infrastructure for tourist areas, the need for an increase in adequate road access to the *Panyaweuyan* area.

Key words: Potential Study, Terracing of *Panyaweuyan*, National Heritage

INTRODUCTION

Agriculture is one of the cultures of the humans that has been passed down from generation to generation based on nearby wisdom. Normally, the farming way of life achieved in each place may be extraordinary from other regions. This nearby information has turn out to be a cultural background and the character of

a place to be persisted from era to generation, as an essential basis for the development of Indonesian humans. Groups want to have recognition to understand, love, maintain and utilize these cultural background values which have the capability to be inherited from agricultural and meals systems in the dynamics of normal existence, so that the achievement of food sovereignty may be aligned with out relying on a uniform agricultural gadget.

Inheritance of agricultural and food systems for food security or *Nationally Important Agricultural Heritage Systems* (NIAHS) is a method for developing an area by taking into account local cultural wisdom (especially farming) in increasing food sovereignty and self-sufficiency (Nagata & Yiu, 2021). The inheritance of the agricultural and food system for food security is expected to meet criteria that include public interest, be inventoried, documented, disseminate data and information systematically, and collaborate holistically. In developing the agricultural and food system heritage model for food security, it must have the values of food security and livelihood functions, the function of biodiversity and ecosystems, knowledge systems and technological adaptation, agricultural cultural value systems and social organizations, and pay attention to landscapes that have ecological and social values. high beauty. By paying attention to these values, the development of an area as a cultural heritage value is a life cycle that is not only aimed at the short term but pays attention to the environmental sustainability of the area (Sabrina & Rauter, Romana & Baumgartner, 2015).

The panyaweuyan terraced vicinity of majalengka district is one of the cultural heritages that wishes to be advanced and preserved. There are nearby understanding values from farming within the location that want to be preserved. One of the cultural wisdoms of farming in this vicinity is the creation of terraces to shape terraces to prevent erosion and maintain water in hilly situations. The improvement of this area needs to be carried out to enhance the standard of dwelling of the encircling network without converting the traditional customs of the community. So, it's miles necessary to perform strategies for the development of the vicinity without eliminating the lifestyle that has been jogging inside the panyaweuyan terracing area, argapura sub-district.

Agricultural development in general has and will continue to contribute to regional development, both directly in increasing the Gross Regional Domestic Product (GDP), employment, increasing people's incomes, and indirectly contributing through creating conducive conditions for the implementation of development and synergy with other sectors (Ansar & Fathurrahman, 2018). Agricultural development is an effort to enhance the pleasant of existence of farming communities, which is completed via technological innovation, improvement of hard work productivity, development of financial centers and infrastructure, as well as structuring and development of agricultural establishments. Human sources together with natural sources, generation and establishments are the primary factors that synergistically drive agricultural

development to gain expanded agricultural production and enhance the exceptional of human assets. Agricultural development and the legacy of the agricultural and food system for national food security (NIAHS) have the same basic values and the same goals so that agricultural development using the NIAHS approach can be carried out in harmony in an effort to achieve food sovereignty and self-sufficiency (FAOSTAT, 2016).

The modern-day paradigm is the conversion of agricultural land into business land, infrastructure development, and settlements. This is a critical hassle in efforts to boom the meals needs of the network. Land conversion for commercial, infrastructure and home development will immediately affect agricultural production because of the shortage of to be had agricultural land. Zoning or division of regions based at the capability of each region desires to be accomplished to keep away from more lack of land because of development influences (Oudshoorn et al., 2012).

The terracing area is an area for agricultural development in Majalengka Regency. In addition to meeting the food needs of the community (especially vegetables), the *Panyaweuyan* terracing area is also being developed as a tourist area with the main attraction being agriculture (agro-tourism). There are two main functions of the *Panyaweuyan* terracing area. The two functions are: as a provider of people's food needs (especially vegetables), and as agro-tourism. Based on this function, the development of the *Panyaweuyan* terracing area must pay attention to two aspects, namely food security and the beauty of the agro-tourism in it. To support this, an in-depth study is needed to serve as a guideline in the development of the *Panyaweuyan* terracing area as a national agricultural and food heritage (NIAHS). The objectives of this activity are as follows: To accurately analyze the development potential of the *Panyaweuyan* terracing area as a national agricultural and food heritage (NIAHS); provide complete and integrated advice or recommendations in the development of the *Panyaweuyan* terracing area as a national agricultural and food heritage (NIAHS)

METHODOLOGY

The research location is the *Panyaweuyan* terracing area as a national agricultural and food heritage (NIAHS), namely in the *Panyaweuyan* Agrotourism Area, Argapura District, Majalengka Regency, Indonesia. The implementation time is August-September 2021. The activities carried out as an approach in this study are:

1. Describe each form of activity in the annual action plan to achieve indicators of success.
2. Inventory and identification of various factors; includes infrastructure and production facilities, production processes, post-harvest handling and product processing, marketing, farmer resources, advisory resources,

institutional resources, and other supports; needed for the continuation of a form of activity and determine the level of success of the development of commodity agribusiness systems.

3. Provide recommendations for the action plan program for the development of horticultural agriculture, annually for 5 years which at least contain the form of activity, volume of activity, location of activity, person in charge and executor of activity, and activity financing.

For the purposes of the above, various types of related data and/or information were collected from various sources such as official reports from related agencies/agencies, interviews with representatives of each stakeholder (government, companies, farmers and communities), and direct field observations. Data and/or information includes production facilities and infrastructure, production processes, postharvest and product processing, marketing, and supporting subsystems. Types of data and or information related to the development of various vegetables are presented in table 1.

Table 1. Kind of data and Source

No	Type of data	Source
1	Large of <i>Panyaweuyan</i> area	Agricultural office, interview and observation
2	Vegetable Commodities that potential to be developed	Agricultural office, interview and observation
3	Implementation of technology	Agricultural office, interview and observation
4	Production of vegetables	Agricultural office, interview and observation
7	Supply and demand of technologies	Agricultural office, interview and observation
8	Post-harvesting and industrial processing	Agricultural office, interview and observation
10	Extension institution	Agricultural office, interview and observation
11	Agrotourism infrastructure	Agricultural office, interview and observation

Development of agro-tourism potential based on the identification results of *Panyaweuyan* tourism potential. The method used in this study is more descriptive qualitative in that the data presented is mostly in the form of descriptions of the types and characteristics of potential tourist attractions (natural, cultural, artificial) obtained through observation, interviews, focus groups. discussion (focus group discussion), literature study, and document inspection. A SWOT analysis (Dwirayani, 2017; Kustiari et al., 2020) is then carried out to see or describe the potential of the *Panyaweuyan* Area.

RESULTS AND DISCUSSION

Description of *Panyaweuyan* Terracing

Terrace of panyaweuyan argapura - majalengka as strengthening meals protection thru environmental atmosphere management and management of cultural values to reap a sustainable agricultural system. Consequently, for the network participants who work on the panyaweuyan terrace argapura - majalengka, what is meant via the legacy of land use structures and landscapes with regards to meals security that can support the lives in their network individuals has been finished by way of their ancestors, and now they're simplest persevering with what has been initiated his ancestors. Their ancestors left them an agricultural machine, which continues to be maintained as an attempt to preserve commodity-based totally food protection consistent with the landscape of argapura majalengka.

This effort is a way to realize the sustainable life of the people in the *Panyaweuyan* Argapura area, by carrying out the practice of inheriting agricultural systems with land use and landscapes that tend not to change, even though they are exposed to strong influences, they still persist with what has been passed down by their ancestors. Likewise with the landscape where they carry out their daily farming activities in the *Panyaweuyan* Terrace, they still maintain the sustainability of their natural environment. With the agricultural practices that have been carried out so far, they can also enrich biodiversity in an evolved manner from adaptation with the community and the environment according to their needs and aspirations for sustainable development, as reflected in: (1) utilization of nature in synergy with local wisdom, as shown by the existence of conservation environment, and conservation actions through the utilization of local potential by strengthening the "local population management" system, for example the hereditary arrangement for limiting the "number of cultivators" of land in the *Panyaweuyan* terracing; (2) there is a sense of pride in being a farmer and gives stability to farming, and (3) the achievement of fulfilling food needs in a sustainable manner based on local wisdom that has been developed so far.

For further development, community members who live in Argapura District, Majalengka Regency, in carrying out and maintaining their lives in a natural environment with steep hills view the nature where they stand with great wisdom. Their wisdom utilizes and utilizes the environment to carry on life, a way like that which is now known as local wisdom in honoring the land. This way of glorifying the land where one lives is known as "mountain scavenging" which has been going on for a long time. *Ngais* in Sundanese comes from the word *ais*, which means ngais or in Indonesian means carrying beside the body with a long cloth. *Ngais* means tying a long cloth around the body to carry it, it can also be called a belt. The belt in this sense is a waist tie so that the clothes worn are tight and do not come off, sometimes a confirmation of body shape or accessories that complement the beauty of clothing. *Ngais gunung*, or *nyabuk gunung* means attaching a belt to the mountain so that the clothes or in this sense the soil does not sag or slide.

The use of the word *ngais* aims to strengthen, as a symbol of readiness to protect the natural environment. What happens if the bond in carrying it is loose without a strong bond, disaster could come. The sagging of the slings causes accidents, even the land which is usually a source of livelihood can collapse or slide so that the slopes can no longer be used for life. At least for the people in the Teras *Panyaweuyan* area, this method of planting is carried out in the context of respecting the soil and becoming environmentally sustainable.

The terracing system implemented by the community in Argapura District through the planting of *Panyaweuyan* Terraces, tends to be said to be a low-carbon community, Agroforestry practices using terracing systems that utilize plants, for example house gardens, mixed gardens and forest gardens on sloping land, are considered very effective for absorbing carbon (carbon sequestration), in addition to protecting soil and water. This system makes it possible to grow seasonal crops such as pulses, peanuts, vegetables and tubers, while carbon is still stored in perennial plants. Low carbon practices and renewable energy.

Characteristics of *Panyaweuyan* Terraced Area

The *Panyaweuyan* Terraced Area is a terracing agroecosystem of steep hills which can contribute to food availability through horticulture and secondary crops. Administratively the *Panyaweuyan* Terraced Area is located in Argapura District, Majalengka Regency and geographically it is located between the coordinates 6°55'8.82" South Latitude and 108°20'45.62" East Longitude, with a land area of > 300 Ha covering 9 (nine) villages in Argapura District, namely: Sagara Village, Tejamulya Village, Cibunut Village, Sukasari Kaler Village, Sukasari Kidul Village, Argamukti Village, Sukadana Village, Argalingga Village and Cikaracak Village.

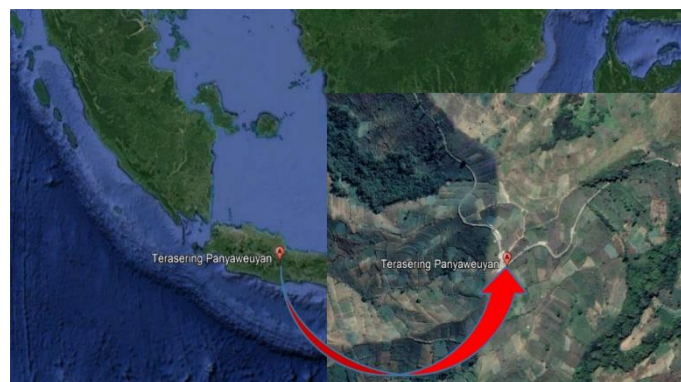


Figure 1. Location of *Panyaweuyan* Terraced Area

Panyaweuyan terracing focuses on horticulture and palawija crops as a substitute for types of plants every year. Teras *Panyaweuyan* Argapura -

Majalengka as strengthening food security through environmental ecosystem management and management of cultural values to achieve a sustainable agricultural system. Therefore, for the community members who work on the *Panyaweuyan* Terrace of Argapura –Majalengka, what is meant by the legacy of land use systems and landscapes in relation to food security that can support the lives of their community members has been done by their ancestors, and now they are only continuing what has been pioneered his ancestors. Their ancestors left them an agricultural system, which continues to be maintained as an effort to maintain commodity-based food security according to the Argapura Majalengka landscape.



Figure 2. The Beauty Of *Panyaweuyan* Terraced Area

This effort is a way to realize the sustainable life of the people in the *Panyaweuyan* Argapura area, by carrying out the practice of inheriting agricultural systems with land use and landscapes that tend not to change, even though they are exposed to strong influences, they still persist with what has been passed down by their ancestors. Likewise with the landscape where they carry out their daily farming activities in the *Panyaweuyan* Terrace, they still maintain the sustainability of their natural environment. With the agricultural practices that have been carried out so far, they can also enrich biodiversity in an evolved manner from adaptation with the community and the environment according to their needs and aspirations for sustainable development, as reflected in: (1) utilization of nature in synergy with local wisdom, as shown by the existence of conservation environment, and conservation actions through the utilization of local potential by strengthening the "local population management" system, for example the hereditary arrangement for limiting the "number of cultivators" of land in the *Panyaweuyan* terracing; (2) there is a sense of pride in being a farmer and gives stability to farming, and (3) the achievement of fulfilling food needs in a sustainable manner based on local wisdom that has been developed so far.

Community members in Argapura use similar methods in managing natural resources and the environment in a sustainable manner. Because of this, the spatial arrangement of the Teras *Panyaweuyan* area that is being carried out can no longer violate what has been outlined by its ancestors. The regional space that has been formed since this area has developed an agricultural system that can shape the character and attitude of self-sufficiency in food for all residents in this region.

This independence for community members can be achieved through the following strategies: (a) guaranteeing the implementation of the distribution of land to residents and the distribution of land rights for residents in managing land; (b) spatial planning of areas that are closed and limited in their use, so that land cannot be developed in line with the increase in population; (c) Likewise to protect agricultural land, the function of the forest that has been jointly designated cannot be converted into productive land, but instead the forest becomes conservation land, and (d) these three methods, it seems to the people of the community in the *Panyaweuyan* terracing area to be a way to raise awareness community members in the use, management and conservation of natural resources and the environment in a balanced and sustainable way to realize food self-sufficiency (Nordin et al., 2014). However, in practice such a method faces extraordinary challenges in line with the development of tourism visits to the *Panyaweuyan* Argapura - Majalengka Terraces which have been intensively carried out in the last four to five years. The presence of tourism on the one hand does provide benefits for the community, but on the other hand the uncontrolled development of tourists also results in a reduction of the land that is cultivated as terraces for the development of tourist areas. For this reason, with the GIAHS designation opportunity, apparently inheriting a good land use system and passing it on to the next generation by declaring a commitment to efforts to conserve high-quality agricultural land, to develop value-added agriculture, including the development of cultural tourism and agro-tourism, and so on

Accessibility

The *Panyaweuyan* Terraced Area in Argapura District, Regency can be reached by the following accessibility routes:

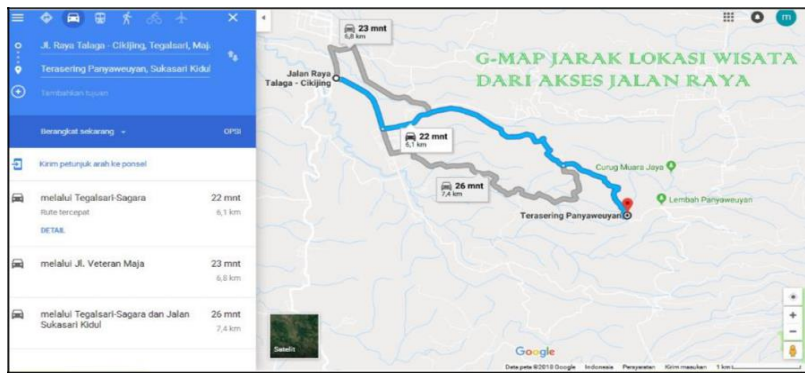


Figure 3. Route To *Panyaweyan* Terraced Area
(Source: Majalengka Agricultural Office)

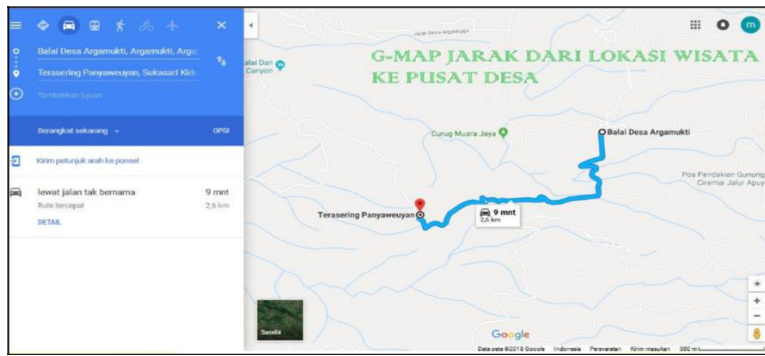


Figure 4. Distance of *Panyaweyan* Terraced Area to The Center of Village
(Source : Majalengka Agricultural Office)

Before entering the location of the *Panyaweyan* Terraced Area, there are directions that will direct visitors to the location of the *Panyaweyan* Terraced Area. The absence of a location signboard can make it difficult for visitors to reach that location.



Figure 5. The direction to *Panyaweyan* Terraced Area

Physical Conditions and Natural Resources

Location Teras Panyaweuyan Argapura - Majalengka, precisely located at an average height above 1,000 meters above sea level (m.dpl). The *Panyaweuyan* terrace is located at the foot of a still active volcano known as Gunung Ciremai, with the topography of a rugged hilly area with a slope ranging from 15%-40%. With the slope of the slope, some land is made in steps, so that it forms terraced agricultural land. The terraced agricultural land is used for horticultural crops such as onions, shallots, tomatoes, cabbage, potatoes, red pepper, mustard, and carrots. The stepped land is located on Bukit *Panyaweuyan*, which later became known as Teras *Panyaweuyan* Argapura - Majalengka. The *Panyaweuyan* terraces Argapura - Majalengka are highlands with cool air with an average temperature of 21.5 - 230 C. The rainy season is usually between September/October-February/March and the dry season between April/May-July/August, with rainfall reaches 217.92 mm/year. The highest rainfall is achieved in February, which is 522 mm.

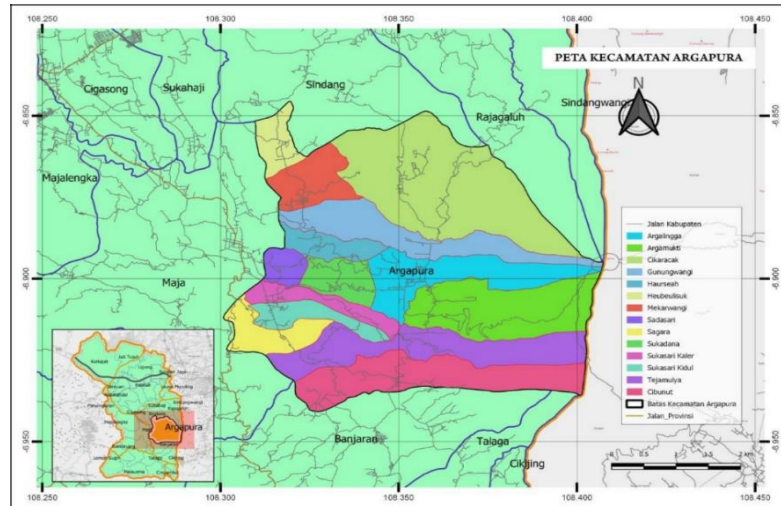
Population and Socio-Cultural

The total population in Argapura District in 2018 is 34,555 people spread across 14 villages. The highest population is in Sukasari Kaler Village with 3,575 inhabitants and the lowest is in Heubeulisuk Village with 1,200 inhabitants. While the population in the *Panyaweuyan* Terraced Area is 24,011 people spread over 9 (nine) villages in the Argapura District including: Sagara Village, Tejamulya Village, Cibunut Village, Sukasari Kaler Village, Sukasari Kidul Village, Argamukti Village, Sukadana Village, Argalingga Village and Cikaracak Village.

Table 2. Population, Large Of Village And Density Of Argapura Sub District

No.	Village	Population	Large of Village	Density	Percentage (%)
1	Sagara	1,550	4.35	356	4.49
2	Cibunut	1,835	4.81	381	5.31
3	Teja Mulya	2,073	4.39	472	6.00
4	Sukasari Kidul	2,997	4.34	691	8.67
5	Sukasari Kaler	3,575	3.05	1,172	10.35
6	Sadasari	3,477	3.35	1,038	10.06
7	Sukadana	3,116	8.15	382	9.02
8	Argamukti	2,596	7.66	339	7.51
9	Argalingga	3,271	3.37	971	9.47
10	Haurseah	2,171	2.19	991	6.28
11	Gunung Wangi	1,945	3.25	598	5.63
12	Mekar Wangi	1,751	3.22	544	5.07
13	Heubeulisuk	1,200	3.22	373	3.47
14	Cikaracak	2,998	6.21	483	8.68
	Kec. Argapura	34,555	61.56	561	100

The average population density in *Panyaweuyan* Terraced Area in 2018 is 518 people/km². The highest density is in Sukasari Kaler Village, namely 1,172 people/km², while the lowest population density was in Sagara Village, namely 356 people/km². The people in the *Panyaweuyan* Terraced Area come from the Sundanese tribe.



**Figure 6. Map Of Argapura Sub District
(Source : Majalengka Agricultural Office)**

Environment

The beauty of the *Panyaweuyan* Terraces and the abundance of natural resources are an attraction for the community. As time goes by, the number of people living in the *Panyaweuyan* Terraced Areas is increasing, thus the utilization and types of natural resource utilization are increasing and varied. Some of the uses of the *Panyaweuyan* Terraces for community needs include:

1. Agriculture

In addition to functioning to maintain and increase the stability of the slopes, the surrounding community utilizes this terracing by cultivating horticultural crops such as spring onions, shallots, tomatoes, cabbage, potatoes, red peppers, mustard greens and carrots so that the majority of the workforce in the *Panyaweuyan* Terraced Area is farming.

2. Natural tourism

Because the natural beauty of the *Panyaweuyan* terracing is so enchanting, it encourages the community to better manage the location so that it can also be enjoyed by broad tourists. Mini-style tourist attractions are now on the rise thanks to the documentation spread on social media. Many tourists come just to capture the moment by taking selfies



**Figure 7. Condition of Tourism at *Panyaweuyan* Terraced Area
(Source : Majalengka Agricultural Office)**

Exploitation of areas that do not take natural conditions into account has resulted in various environmental problems. In general, these problems can be described as follows:

3. Threats to the Cultural Heritage of Agriculture

The agricultural cultural heritage of the *Panyaweuyan* Terraced Area has experienced a threat, namely the narrowing of the terraced area due to the construction of road widening.



Figure 8. Documentation Of Road Widening

4. Environmental pollution

The impact of the increasing number of tourists visiting is environmental pollution.

Economy

Based on the data from the Regional Office of Statistics, the economic growth of the Panyaweuyan Terraced Area in 2019 was 7.16% and in 2020 was 7.16%.

Regional Gross Regional Domestic Product (GRDP) can be seen in the table

Table 4. Total Production in 2018

Kind	Production (Ton)
Padi Sawah	15.713
Jagung	8.662
Ubi Kayu	311
Ubi Jalar	3.629

Source : Village monograph, 2018.

Infrastructure

The condition of road infrastructure in the *Panyaweuyan* Terraced Area is still quite good, with an asphalt road surface and an average road width of 2 meters, this road is still feasible for 2-wheeled and 4-wheeled vehicles to pass.



Figure 9. Infrastructure of *Panyaweuyan* Terraced Area

Philosophy and Origins of *Ngais Gunung*

Agricultural activities as the main source of life for the community members in *Panyaweuyan* terracing area. They align life in the village with agricultural activities, both of which are agricultural activities that cannot be separated from the traditions that have been determined by their ancestors. The agricultural activities carried out are not to meet the need for food, but in practice they carry out activities as part of their obedience and service to their ancestors (Maretya & Sudrajat, 2017).

That means, the philosophy behind the agriculture and food system is farming which is the foundation of the community in the *Panyaweuyan* terracing area, as contained in an ancient Sundanese text called Sanghyang Siksa Kanda Ng Karésian, Year 1518, translated by Atja and Saleh Danasasmita (1981), stated that: "The measure of a person's welfare can be seen in his household life: cleanliness around the house, having rice fields, fields or fertile gardens so that there is enough food and enough clothing". In order to achieve this prosperity, he continued, "The house is filled, the barn is filled, the stables are filled, the fields

are cultivated, the taps are maintained, and fellow villagers are taken care of for their lives and always physically and spiritually healthy."

Listening to what is stated in the ancient Sundanese text, it shows that for the Sundanese people, including members of the community in the most common area of *Panyaweuayan*, the measure of welfare is not only the achievement of the availability of food and clothing, but also physical and spiritual health. In that context, it seems that behavior in nature is complementary to actions, so as not to fail in life, so that the household is full of blessings, when planting rice fields or gardens [gardens in Sundanese], just to not be miserable; if we make a garden, simply not to take vegetables from someone else's small house or to another person's big house, because we won't ask for it; keeping livestock to simply not buy or exchange, owning tools to simply not borrow.

That is the foundation of society in navigating life. Meaningful life is always related to the presence of the village and activities in the agricultural system. The integrity of the village with all its contents is closely related to agricultural activities which are the basis of the life of the villagers. Because of that, changes that occur in the village can also mean changes in their agricultural activities, and vice versa changes in agricultural activities will mean changes in the village where they live (Alvena, 2019; Maretya & Sudrajat, 2017).

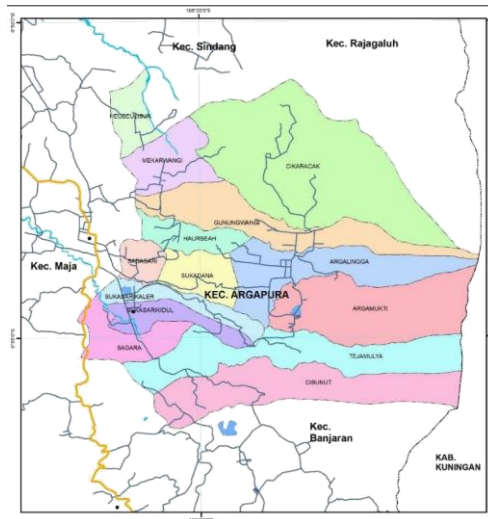
Thus, in order to maintain the integrity of village life and agricultural systems, they firmly maintain their ancestral traditions through inheritance from one generation to the next (Prosperous, 1993). According to Makmur, related to this inheritance, there are at least two ways of inheriting agricultural and food systems that are usually carried out by the community members who work on *Panyaweuayan* terracing, namely:

First, in agricultural practices obtaining knowledge about various aspects of the agricultural system passed down from their ancestors, then passed on from parents to their children, or from one generation to the next, this similar way is known as vertical cultural transmission. Inheritance of the agricultural system is carried out through direct practice, where parents invite their children to work on agricultural land together. On this occasion, parents taught their children directly various things related to working the land, from the first time they used a hoe or machete to harvesting, including behavior when processing and utilizing agricultural produce. Apart from that, they also taught about the procedures that must be obeyed for the various provisions for treating arable land, and the surrounding natural environment. Likewise, they are also taught how to treat and use food as agricultural products in an orderly manner.

Second, knowledge about agricultural practices obtained directly through peers or also known as horizontal cultural transmission. They did this together when cultivating the land, it is possible that this knowledge was also obtained from their parents. However, in practice they mix the knowledge obtained from

their parents with the knowledge explored with their peers, which of course this knowledge also does not violate the provisions they are used to knowing.

Observing this method of inheritance, in practice at Teras *Panyaweuyan* the two methods were carried out together as an effort to maintain the continuity of their agricultural and food activities. These two methods are not only carried out for agricultural practices with all aspects related to agricultural activities on arable land, but also various activities outside of arable land, such as how they treat yields, maintain seed sustainability, and most importantly how to manage crop yields. in the interest of maintaining the continuity of nature and their social and cultural life.



**Figure 10. Map Of Argapura Sub District
(Source : Majalengka Agricultural Office)**

In that context it seems that "land is not just a womb for the reproduction of biological life, but also reproduction for cultural and spiritual life" (Vandana Shiva Keraf (2005). Therefore, the term *ngais gunung* is the adoption of local culture in the field of environment which is also one of the actions soil conservation, namely farming by cutting slopes following contour lines (contour cropping), in the direction of the contour or elevation line so that from afar it appears to encircle the mountain like a belt. With this cultivation technique the velocity of groundwater runoff can be reduced, the rate of erosion is reduced and inhibited by the decline of the surface layer of the soil from the top slope down. Agricultural activities in mountain scavenging provide various benefits that are quite profitable for a community.

Mountain scavenging is carried out on sloping land to reduce erosion and surface runoff. Contour line, is an imaginary line that connects points of the same height and intersects perpendicular to the direction of the slope of the land. Buildings and plants are made along contour lines and adapted to the condition of the land surface. Planting on contour lines can also include making soil traps,

bench terraces or mound terraces, or arrangement of arrays. Tillage and planting following similar contours is an effort to develop sustainable agriculture. How to plant on mountain slopes like that, in a cultural context.

In that context it seems that "land is not just a womb for the reproduction of biological life, but also reproduction for cultural and spiritual life" (Vandana Shiva Keraf (2005). Thus, the symbolic meaning of *ngais gunung* is the human relationship with the mountain, which is manifested in the words *ais*, scavenging, or carrying which binds humans and mountains or land, this bond is a relationship of glorification of the land that can give life. Therefore, treating the land or mountains in this case the slopes are not arbitrary.

Aspects of Sustainability of *Panyaweuyan* Terraced Areas

Agricultural activities carried out on *Panyaweuyan* terraced land can provide ecosystem services related to global warming and global climate change, at least prevent erosion, through the terracing system. These ecosystem services are in the form of water resource management, conservation of agricultural diversity, low carbon society, zero waste agricultural systems, and renewable energy practices. Management of water resources, as terraced landscapes with agroforestry practices at the top of the terrace or the bottom of the terrace which plays a role in water management. Farmers both individually and collectively carried out a movement to plant shade trees in certain areas with very steep slopes. Conservation of agricultural diversity, agricultural practices that use terracing systems prioritize the maintenance of agricultural diversity. Land management by conserving agricultural diversity combined with perennials melinjo (*Gnetum gnemon* L.), jackfruit (*Artocarpus hetero-phylla* Lamk.), teak (*Tectona grandis* L.f), mahogany (*Swietenia mahagoni* Jacq), and tissue (*Hibiscus macrophyllus* Roxb.) , and persimmon (*Diospyros kaki*). This method of planting is an effort to conserve diversity which is considered important globally, because it can help overcome food problems and the energy crisis.

The terracing system implemented by the community in Argapura District through planting the *Panyaweuyan* Terraces, tends to be considered a low-carbon community, Agroforestry practices using a terracing system that utilizes plants, for example house gardens, mixed gardens and forest gardens on sloping land, are considered very effective for absorbing carbon (*Carbon sequestration*), in addition to protecting land and water. This system makes it possible to grow seasonal crops such as pulses, peanuts, vegetables and tubers, while carbon is still stored in perennial plants. Low carbon practices and renewable energy. For more details about the agricultural potential in the *Panyaweuyan* area, the SWOT matrix of the agricultural sector around the *Panyaweuyan* area is presented below :

Table 5. SWOT analysis of Agricultural Sector at *Panyaweuyan* Terraced Area

Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Condition of natural resources which support the area development 2. Good spirit of human resources 3. Marketing chance 4. There are some programs from government 5. The development of area 6. Area has competitive and comparative advantage 	<ol style="list-style-type: none"> 1. Quality of human resources 2. Low of technology handling 3. Motivation of farmer in developing area 4. Low of industrial Processing 5. Low of implementation of GAP 6. Low in Production plan 7. Capital depends on big trader 8. Limited in land ownership 9. Limited in market information
Opportunities	Threats
<ol style="list-style-type: none"> 1. Rise of demand of horticulture product 2. High commitment from society and government 3. Cooperation with University 	<ol style="list-style-type: none"> 1. Land conversion 2. Economic Crisis 3. Less of youth interest in agricultural work 4. Low cooperation between agricultural office with another institutions

Source : Primary data, (2021).

Needs analysis based on the SWOT matrix above, the *Panyaweuyan* area development program can be directed at optimizing agricultural potential programs in order to support the *Panyaweuyan* area as an area that has agro-ecotourism-based tourism potential, programs by leveraging strengths to get opportunities, separation of land for agro-tourism and land for farming planting, repair and arrangement of infrastructure, programs that take advantage of strengths to get opportunities, suppress or improve weaknesses to deal with threats and programs that take advantage of opportunities to deal with threats.

CONCLUSION

Agricultural activities carried out on *Panyaweuyan* terracing land can provide ecosystem services related to global warming and global climate change at least prevent erosion, through the terracing system. These ecosystem services are in the form of water resource management, conservation of agricultural diversity, low carbon society, zero waste agricultural systems, and renewable energy practices.

1. Management of water resources, as terraced landscapes with agroforestry practices at the top of the terrace or the bottom of the terrace which plays a role in water management. Farmers both individually and collectively carried out a movement to plant shade trees in certain areas with very steep slopes.
2. Conservation of agricultural diversity, agricultural practices that use terracing systems prioritize the maintenance of agricultural diversity. Land management by conserving agricultural diversity combined with melinjo perennials (*Gnetum gnemon* L.), jackfruit (*Artocarpus heterophylla* Lamk.), teak

- (*Tectona grandis* L.f), mahogany (*Sweetenia mahagoni* Jacq), and stick (*Hibiscus macrophyllus* Roxb.), and persimmon (*Diospyros kaki*). This method of planting is an effort to conserve diversity which is considered important globally, because it can help overcome food problems and the energy crisis.
3. The terracing system implemented by the community in Argapura District through planting the *Panyaweuyan* Terraces, tends to be considered a low-carbon community, Agroforestry practices using a terracing system that utilizes plants, for example house gardens, mixed gardens and forest gardens on sloping land, are considered very effective for absorbing carbon (*Carbon sequestration*), in addition to protecting land and water. This system makes it possible to grow seasonal crops such as pulses, peanuts, vegetables and tubers, while carbon is still stored in perennial plants. Low carbon practices and renewable energy.
 4. The *Panyaweuyan* area is based on agricultural resources, especially vegetables and a climate suitable for animal husbandry, especially cattle, so it would be appropriate if a zero-waste farming system was implemented (*zero waste agriculture*) and renewable energy. In the context of agriculture-based *zero waste* The cost in question is all the costs incurred for processing agricultural and livestock waste into something that has more benefits and has economic value. After going through the processing, it is hoped that this agricultural waste can become a source of animal feed, and the waste from these farms can be processed into compost which will be used for agriculture and plantations and can be processed into bio gas, which is a source of energy for farmer and household activities. Waste treatment is an important factor in renewable energy processes. The way to convert waste into energy can be through several technologies, among others *Biological conversation, chemical conversation, thermo chemical conversion, and physical conversion*. If managed, waste can be converted into electrical energy or a Waste Power Plant (PLTSa). *Panyaweuyan* as a center for vegetables and animal husbandry (including the area around Argapura and Maja) has the potential to become a center for renewable energy.

SUGGESTIONS

1. The Need for the Development of a Tourism Promotion Cooperation Network; can be indicated by the increasing number of tourism promotion cooperation facilitation carried out by related agencies or the implementation of tourism villages. If there is a tourist village in the *Panyaweuyan* area, services can be provided *homestay* for both domestic and foreign tourists.
2. The need for the Implementation of *Panyaweuyan* Tourism Promotion at home and abroad. It can be in the form of holding exhibitions, or the availability of promotional materials/materials about the *Panyaweuyan* tourist area such as booklets, and others.
3. The need to improve supporting infrastructure for tourist areas; such as providing adequate parking lots, providing adequate toilets, providing adequate lighting on access to and from *Panyaweuyan*, providing prayer rooms/places of worship at tourist sites, providing guardrails as a

protector for tourists due to the location around the road which is hilly, provision of sufficient and adequate trash bins so that the tourist area remains a beautiful and clean area, maintenance or planting of trees that protect the soil from geological movements, such as bamboo plants to strengthen the soil and prevent erosion or landslides; and avoiding the construction of heavy infrastructure or using heavy equipment which is feared to damage the natural or soil conditions in the *Panyaweuyan* tourist area which can cause disaster.

4. The need to increase adequate road access to the *Panyaweuyan* area. As the interest of visitors to the *Panyaweuyan* tourist area increases, increasing access to the tourist area is inevitable.

REFERENCES

- Alvena, I. K. (2019). *Sistem Bercocok Tanam Nyabuk Gunung Pada Masyarakat Jawa Tengah*. 2010.
- Ansar, M., & Fathurrahman. (2018). Sustainable integrated farming system: A solution for national food security and sovereignty. *IOP Conference Series: Earth and Environmental Science*, 157(1). <https://doi.org/10.1088/1755-1315/157/1/012061>
- Dwirayani, D. (2017). Analisis Strategi Pengembangan Lumbung Pangan Desa Untuk Ketahanan Pangan. *Syntax Literate ; Jurnal Ilmiah Indonesia*.
- Engert, Sabrina & Rauter, Romana & Baumgartner, R. (2015). Exploring The Integration Of Corporate Sustainability Into Strategic Management: A Literature Review. *Journal of Cleaner Production*, 112.
- FAOSTAT. (2016). *Food and Agriculture Organization of The United Nations Statistics*. <https://www.fao.org/faostat/en/#home>
- Kulsum, A. S., & Mardiana, M. I. (2023). *Wisata Alam Terasering Panyaweuyan Kota Majalengka , Jawa Barat dari sea , sun , sand and mainland yang memungkinkan untuk dijadikan sumber devisa negara , Majalengka tempat wisata ini mengalami peningkatan kunjungan wisatawan yang sangat baik*. 1(1).
- Kustiari, T., Afila, N., & Fillaili, U. S. (2020). Strategy Alternative in Developing Coffee Agribusiness: Study in Rengganis Mountain Slope Jember Regency in Indonesia. *Journal of Advances* <http://journal.iiesindependent.org/ijase/article/view/151>
- Maretya, D. A., & Sudrajat. (2017). Perilaku Petani Dalam Mengelola Lahan Terasering Di Desa Sukasari Kaler Kecamatan Argapura Kabupaten Majalengka. *Jurnal Bumi Indonesia*, 6(4), 1-10.
- Mujiarto, E., Bela, P. A., Deliyanto, B., & Wipranata, B. I. (2020). Studi Penataan Kawasan Wisata Bukit *Panyaweuyan* Dengan Konsep Agrowisata (Lokasi: Bukit *Panyaweuyan*, Desa Tejamulya, Kecamatan Argapura, Kabupaten Majalengka, Jawa Barat). *Jurnal Sains, Teknologi, Urban, Perancangan, Arsitektur (Stupa)*, 2(2), 2521. <https://doi.org/10.24912/stupa.v2i2.8846>
- Nagata, A., & Yiu, E. (2021). Ten Years of GIAHS Development in Japan. *Journal of Resources and Ecology*, 12(4), 567-577. <https://doi.org/10.5814/j.issn.1674-764x.2021.04.014>
- Nordin, S. M., Noor, S. M., Stamburi, M., & Saad, M. (2014). Innovation Diffusion of New Technologies in the Malaysian Paddy Fertilizer Industry. *Procedia -*

Social and Behavioral Sciences, 109, 768-778.
<https://doi.org/10.1016/j.sbspro.2013.12.542>

- Oudshoorn, F. W., Kristensen, T., van der Zijpp, A. J., & Boer, I. J. M. de. (2012). Sustainability Evaluation Of Automatic And Conventional Milking Systems On Organic Dairy Farms In Denmark. *NJAS - Wageningen Journal of Life Sciences*, 59(1), 25-33. <https://doi.org/10.1016/j.njas.2011.05.003>
- Pham, L. Van, & Smith, C. (n.d.). *Drivers of agricultural sustainability in developing countries: a review*. <https://doi.org/10.1007/s10669-014-9494-5>