

DEVELOPMENT OF KAJA-KELOD AGRO-TOURISM ON AN ECO-FRIENDLY BASE IN BULELENG REGENCY



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Abstract

Bali often ought to face difficult choices, whether developing tourism at the expense of agriculture and the environment or maintaining agriculture and the environment on the limited tourism development. To the goals of SDGs 2030, development must always be oriented towards a balance between economic development, social improvement, and environmental preservation, the best resolution is rather developing the tourism sector without degrading agriculture and the environment. One of these efforts is the kaja-kelod agro-tourism path in the Buleleng Regency. The concept was an integrating route of agricultural tourism destinations with cultivation characteristics in mountain areas (kaja), continuing cultivation in moderate plains, and continuing cultivation in lowlands, until ending in coastal and marine cultivation areas (kelod). The aims of this study: (1) to map the agricultural potential of the farming community in each kaja-kelod agro-tourism destination; (2) to analyze biophysical and socioeconomic characteristics to support farming enhancement in each destination; and (3) to formulate the development model for kaja-kelod agro-tourism. The methods were used surveys and FGD. Tabulation of data, descriptive statistical analysis, and narration were used in generating the findings. Kaja-kelod agro-tourism included four destinations, those were Pancasari village for the object of eco-friendly cultivation of strawberries and upland vegetables, and ecotourism Buyan & Tamblingan Lake; Sawan-Sudaji villages for the object of Organic-based Balinese rice farming, Tropical fruits, Metaphysical agriculture, and Traditional music; the object of organic Black Wine agribusiness in the Tangguwisia village; and Gerokgak district for the object of integrated marine culture tourism, grouper-snapper-milkfish hatcheries and rearing fishes in sea cages. Applied Kaja-Kelod agro-tourism is for good association among agricultural activities, environmental concerns, and human interests through practical cultivation and ranching as well as Subak, Desa Adat, and coastal communities involvement. Organic resources amalgamation (natural or artificial) should be applied in the cultivation, due to enriching biodiversity and eco-friendly agriculture. Implementation to achieve rationality in utilizing land, coastal, and marine resources should be harmonious with the values in tradition, religion, aspiration, and culture of the local communities. The setting up of kaja-kelod agro-tourism management should follow community-based tourism.

Keywords: Kaja-Kelod Agro-Tourism, Eco-Friendly, Marine Culture, Subak, Coastal Community

INTRODUCTION

The concepts of mountains and sea are two things that form the background of *kaja-kelod* in Balinese culture. *Kaja* is towards the mountains, and *kelod* is towards the sea. *Kaja-kelod* in the Balinese cultural view contains philosophy (*tattwa*) which refers to mountains as *purusha* or spiritual elements, and the sea as *pradhana* or material elements. The meeting of mountains and the sea will support human life. The analysis is based on the concept that the mountain is the *luan* (head) and the sea is the *tebén* which is likened to the feet. So *kaja* and *kelod* contain *tattwa*, morals, and ceremonies that educate humans to respect each other, protect nature, and nurture each other in the power of God Himself (Lestawi, 2020). Balinese local wisdom promotes the integrated cultivation of sea, and terrestrial ecosystems which prioritizes harmony.

Bali is a favorite tourist destination not only for domestic people of Indonesia but also for foreigners from throughout the world. As a tourist destination, Bali consistently places the tourism sector as the mainstay sector. The development of the tourism industry in Bali generally applies the concept of Cultural Tourism, which implicitly includes the mission to refine Balinese culture in every development activity.

Bali is an Indonesian province that uses rustic regions as a gateway to the agricultural sector, which supports the tourism industry (Widhianthini, 2022). This is supported by the performance of Bali's gross regional domestic product (GDRP). In 2023, Bali's GDRP was 274.355,72 billion rupiahs, and the contribution of the agricultural sector (agriculture, forestry & fishery) was 37.677,68 billion rupiahs or 13,73%, meanwhile, the tourism sector (accommodation & food service activities) contributed 54.683,17 billion rupiahs or 19,93% (Statistik, 1985).

On one hand, tourism has become one of the industries that have a major impact on Bali's economic growth. On the other hand, the rapid development of tourism in Bali has brought tremendous breaking energy which has caused degradation of the natural/agricultural/aquatic environment quality and affected structural changes to Balinese society and culture significantly (Kardi et al., 2021). Moreover, the development of the tourism sector a lot sacrificed the agricultural sector, such as the conversion of agricultural land, competition in water use between the need for hotels and restaurants and the need for

agricultural irrigation, the rapid movement of agricultural human resources from villages to cities and to locations of capital-based tourism development, and so on that increasingly threaten the agrarian culture and *subak* in Bali to become insolvent, and just a memory.

Bali often ought to face difficult choices, whether developing tourism at the expense of agriculture and the environment or maintaining agriculture and the environment on the limited tourism development. (Singh et al., 2021) explained that governance and decision-making to promote sustainable development for the land-sea interface must be integrative across diverse dimensions of social-ecological systems. Therefore, to the goals of SDGs 2030, development must always be oriented towards a balance between economic development, social improvement, and environmental preservation, the best resolution is rather developing the tourism sector without degrading agriculture and the environment.

One alternative that is in this combination is agro-tourism which means travelling to agricultural areas. Agriculture here means in a broad sense which includes people's agriculture, plantations, forestry, animal husbandry, and fisheries. Not only seen from the results of economic expansion but related more broadly to the ecosystem and even the environment in general.

Aside from agricultural products, Bali Gubernurial Regulation No. 99/2018 stipulates the compulsory use of local fishery and industry products. Agricultural, livestock, and fishery products used by hotels, restaurants, and catering services must comprise local products (Erviani, 2019). Lately, there has been an investment opportunity in Bali of Sustainable Venture, which is investing in The Island's Future. Bali is actively embracing sustainability, making it a fertile ground for investments that align with environmental and social responsibility. They promote Eco-friendly Agriculture, which supports local farmers by investing in organic farming initiatives, sustainable aquaculture projects, and innovative agroforestry solutions. This Eco-friendly Agriculture program should collaborate with restaurants and resorts to create a closed-loop system that promotes fresh, local produce and minimizes food waste (Deente, 2023).

To increase the quantity of Balinese agricultural products that met the quality standards of international chain hotels and restaurants, it was necessary to take incentive measures through the physical revitalization of agriculture (organic-based product cultivation

and processing) as well as its metaphysical side (tradition-religion-aspiration-culture) farming community and its *subak* institution (Kardi, 2012). The implication of these, it was necessary to build an integrated agricultural revitalization with the aim of tourism development. The intended integration was that the practice and output of agricultural activities became inputs for tourism activities, while the outcomes of tourism could trickle down to farmers and became capital strengthening for farmers and their *subak* institution. One of these integrations was the construction of *kaja-keod* agro-tourism path along with a clear maintenance and development program.

The development of agro-tourism in Bali is believed to be able to build an integrated and coordinated system of activities to develop the tourism sector as well as the agricultural sector while maintaining environmental sustainability and improving the welfare of farmers. Attempt to develop Bali's natural resources that have potential in the field of plant cultivation in paddy fields with various unique tradition-religion-aspiration-culture (TRAC) which attach to its *subak* institutions. The same is applied to activities in the people's livestock and fishery sectors. The contained potential must be seen in terms of the natural environment, geographical location, types of agricultural products or commodities produced, as well as facilities and infrastructure (Sumarwoto, 1990). The integration of all these potentials will be able to create a very attractive agro-tourism area (lane) which can be sold in the form of tour packages to foreign countries.

The strong and unique potential of several destinations for agricultural activities in northern Bali, especially in the western part of Buleleng Regency, could be integrated with high opportunities for tourism development into a *kaja-keod* agro-tourism package. The concept was an integrating route of agricultural tourism destinations with cultivation characteristics in mountain areas (*kaja*), continuing cultivation in moderate plains, and continuing cultivation in lowlands, until ending in coastal and marine cultivation areas (*keod*). In the development of this agro-tourism, not only agricultural tourism objects were prepared, but also the revitalization of physical and metaphysical activities in the agrarian culture of rural communities to be able to capture the added value provided by these agro-tourism activities.

The development of the *kaja-keled* agro-tourism path was expected to provide more equitable benefits to all stakeholders: farmers with *subak* institutions and local traditional villages, surrounding communities, investors, and travel agencies. The development of the *kaja-keled* agro-tourism path would improve environmental conservation. Conservation values that were emphasized were on the balance of the ecosystem. The problem then is how to develop the *kaja-keled* agro-tourism in the western part of the Buleleng regency. Therefore, the aims of this study were:

- to map the agricultural potential of the farming community in each *kaja-keled* agro-tourism destination in the western part of Buleleng Regency;
- to analyze biophysical and socioeconomic characteristics to support farming enhancement in each destination; and
- to formulate the development model for *kaja-keled* agro-tourism in the western part of Buleleng Regency.

RESEARCH METHOD





This research was conducted from April to October 2023. The research locations were purposively determined in Pancasari village (mountain and upland areas), Sawan-Sudaji villages (moderate plains), Tangguwisia village (lowlands), and Gerokgak district (coastal and marine areas) to create a *kaja-keled* agro-tourism path in the west part of Buleleng Regency. In addition, to collect data and information on various matters supporting the research objectives, it was carried out at the relevant agencies. Surveys and focus group discussions (FGD) were carried out and to obtain: a mapping of agricultural potential, an explanation of socioeconomic support of the communities, and biophysical characteristics of the development area in the destinations of the *kaja-keled* agro-tourism path. Tabulation of data, descriptive statistical analysis, and narration were used in generating the findings.

RESULTS AND DISCUSSION

A description of each of the four destinations in *kaja-keled* agro-tourism can be seen in Figure 1. The distance: from Denpasar city to Pancasari is 60 km, from Pancasari to Sawan-

Sudaji is 40 km, from Sawan-Sudaji to Tangguwisia is 36 km, and from Tangguwisia to Gerokgak is 25 km.

Table 1.
The Location of Four Destinations in *Kaja-Kelod* Agro-Tourism in the Western Part of Buleleng Regency Along with a Description of Each Destination

Destination	Agro-Climate Area	Produces and Objects
A. Pancasari village	Mountain 	Strawberry, upland vegetables, and amazing eco-tourism of Buyan-Tamblingan Lake.
B. Sawan-Sudaji villages	Moderate Plains 	Organic-based Balinese rice, Tropical fruits, Metaphysical agriculture activities in <i>subak</i> , and traditional music.
C. Tangguwisia village	Lowlands 	Balinese winery (<i>Alponso lavale</i>) with organic treatments.
D. Gerokgak district	Coastal and Marine 	Integrated marine culture; grouper, snapper, milkfish hatcheries, and sea cages.

The vision of *kaja-kelod* agro-tourism was to be the most popular and beneficial agro-tourism in the world which was able to complete the visitor experience, comfort & delight and to build a brilliant future for the lives and livelihoods of people in *subak* and coastal communities. The mission was to strengthen sustainable terrestrial-marine cultivation and

entrepreneurship, as well as encourage its downstream sector towards a peaceful and prosperous *kaja-kelod* agro-tourism village. By revitalizing the dignified values of our ancestral traditions, beliefs, aspirations, and cultures in every agribusiness activity (to implicate both eco-no-technology and eco-edu-entrepreneurship), we will return the earth to a point before damage and disharmony threaten our *kaja-kelod* existence.

Marine Culture Potential of Gerokgak District for *Kaja-Kelod* Agro-Tourism

The main products of marine culture in the Gerokgak district are grouper and snapper. Grouper cultivation includes three stages, namely: (1) hatchery that produces juveniles of grouper with a size of 3.0 - 5.0 cm; (2) nursery that produces grouper *yuwana* fishes with a size of 6.0-10.0 cm; and (3) ranching fishes in floating net cages in the sea that produces grouper consumption size. Each of the three stages of production can be turned into an independent business (industry), but the most potential hatchery and nursery activities and technology can be utilized by the coastal communities in the Gerokgak district to increase household income. Hatchery and fish breeding are carried out en masse along coastal waters in the villages of Gerokgak, Sanggalangit, Musi, Penyabangan, and Banyu Poh, while fish ranching activities in *keramba jarring apung* (KJA) or sea cages are concentrated in the waters of Sumberkima Bay.

The Cluster analysis at the site level is used to determine the five main types of coral communities that are related to wave level, current-upwelling, substrate type, and geographic location. The coastal area of Gerokgak district is included in the relatively sheltered coral community where the waves are smashed, currents-upwelling, substrate type, and geographic location are ideal for aquaculture or marine culture activities.

The potential area of the coast in Gerokgak district for sea fish hatchery cultivation is 120 hectares, but only 40 hectares have been utilized. This hatchery area has an altitude of 0-10 m above sea level, the beach is not too plane with no muddy seabed condition. The coastal waters are clean and not muddy, with sea water salinity of 32-34 ppt. Seawater can be pumped for a minimum of 20 hours per day. Freshwater sources are available with a maximum salinity of 5 ppt through the Gerokgak regional consumption water company. All hatchery business locations have easy accessibility and are affordable by car. The location

designation is by the regional spatial planning (RUTRW). All of these natural resource characteristics are ideal for developing marine fish hatchery

There are 78 grouper hatchery firms along the coast of the Gerokgak district with a total area of 1280 larval fishponds (size 6x4 m). Besides larval fishpond, a grouper hatchery also needs plankton ponds and rotifer ponds for producing natural food to grow up grouper larvae. However, at certain times drought can decrease the quality of seawater in the area around the inlet and outlet which results in the death of natural foods (plankton, rotifer) larvae and fishes en masse. Therefore, it is very important to check the quality of the physical, chemical, and biological of the seawater around the inlet and outlet of the hatcheries. The overall grouper hatchery firms absorb a labor force of about 520 people remaining and 800 seasonal workers.

Some species of grouper fish that have been successful and commonly produced by the local farmers in Gerokgak, namely: Tiger grouper (*Epinephelus fuscoguttatus*), Rat grouper (*Cromileptes altivelis*). In line with development in spawning and grouper hatchery technology, the backyard hatchery community in Gerokgak district was able to produce Cantang hybrid grouper seeds, the crossing product between Tiger grouper (*Ephinepelus fuscoguttatus*, Forsskal 1775) and Naga/Kertang grouper (*Ephinepelus lanceolatus*, Bloch, 1790). The hybrid grouper fish were more popular with farmers because they grow much faster than natural grouper fish. The hybrid grouper has a faster growth rate than natural grouper. Within 8 months of cultivation from larvae, the hybrid grouper has reached the size of consumption (approximately 0.5 kg), while the cultivation of the natural grouper takes 16 months. The supporting geographical environmental factors as well as natural and human factors in cultivating grouper in the coast and sea of Gerokgak district, which is a single entity, have been inducing the quality or characteristics of the Cantang hybrid grouper produced.

The potential sea waters of Sumberkima Bay for ranching groupers in floating net cage/KJA is 800 ha, but yet there are only 27 KJA firms. Their total fishponds (3x3 m) are 3864 units and apply only about 120 ha of waters of Sumberkima Bay (15%). On average running 100 fishponds employs 10 workers, so the whole sea cage farms in Sumberkima Bay

absorb about 400 workers. The maximum production for the whole grouper KJA in Sumberkima Bay is about 490 tons per cycle production.

The integration of all marine aquaculture business activities in Gerokgak district (fish broodstock management, hatcheries, nurseries, and fish rearing in cages) which were eco-friendly, along with the marine aquaculture landscape was very beautiful and attractive to become a destination of *kaja-kelod* agro-tourism, with unique attractions, namely: edu-tourism, leisure tourism, and coastal diversity tourism. In a focus group discussion with the coastal communities in Gerokgak district, it was found that socioeconomic support from the coastal community of Gerokgak was as follows. The community was very open to the development of marine aquaculture for *kaja-kelod* agro-tourism, but it must be for the welfare of the smallholders. So local community participation was accommodated in the concept of KJA cultivation tourism so that it could bring benefits to smallholders (fishermen). To turn on the KJA belonging to the local group should be provided the necessary production facilities so that it could be used as a "display" and model for tourists. To build a simple dock facility as soon as possible and a security guard post to improve accessibility and security in the KJA cultivation area in Sumberkima Bay.

Agricultural and Subak Potential of Sawan-Sudaji Villages for Kaja-Kelod Agro-tourism

Buleleng Regency is one area in Bali that has a high potential for paddy farming with a well-known product of rice, which is called *Cicih Gondrong* rice. This Rice has a unique taste with a bright white color and a very high demand at a high price (15.000-18.000 rupiahs/kg). Unfortunately, the Green Revolution encouraged farmers to use chemical intake intensively which resulted in low-quality rice (Vipriyanti & Kardi, 2015). On the other hand, tourists are more interested in organic products. So, it needs many efforts to restore the image of *Cicih Gondrong* rice e.g. reintroducing the application of organic-based rice farming technologies.

The location of Sawan-Sudaji villages is 17 km from the Capital regency (Singaraja); and 88 km from the capital city of Bali (Denpasar). These Villages have a hilly topography with an altitude of around 350-560 meters above the sea. The level of rainfall is 2200

mm/year, with temperatures between 25-28° C. The characteristic of agricultural land in these villages is very fertile with abundant irrigation water, it is very supportive both for the development of rice crops and tropical fruits.

The agricultural activities in Sawan-Sudaji are not only in physical study but also in metaphysical. The embodiment of metaphysical agriculture is as follows. Agricultural rituals and customary ceremonies. There are two biggest rituals: *Nyapah* which takes place in the center village temple (*Bale Agung temple*) once every year; and *Usaba* in a hill temple of *subak* (*Bedugul temple*). These two rituals are very facilitated by *desa adat* (*customary village*). Various medium and small rituals are arranged by members (*krama*) of *subak* in each of their farm fields. Metaphysical activities are inspired by local wisdom such as *Ahimsa*, *Tatwamasi*, and *Tri Hitha Karana*. Philosophical teachings are required to always maintain balance and fertility *Rwa Bhineda* (two things that seem contradictory that make life happen). In this case, the pests & natural enemies in agroecosystems are one manifestation of the *Rwa Bhineda* should always be kept in balance. The approach is through the renewal of organic-based farming.

Products and Objects in Sawan-Sudaji villages for *kaja-kelod* agro-tourism are health rice (Bali cultivar rice of *Cicih Gondrong* & excellent new variety rice); Tropical fruits; Bull contest; Traditional livestock; Traditional ceremonies to traditional craftsmen in action; Physical & Metaphysical agriculture activities in *subak*; Sekumpul waterfall adventure; Traditional music (bamboo & metal), and Eco-tracking.

The Wine Potential in Tanguwisia Village for Kaja-Kelod Agro-tourism

The location of Tanguwisia village is 22 km from the regency capital (Singaraja); and 99 km from the capital city of Bali (Denpasar). The topography of the village is lowland with an altitude of 0-17 m above sea level. This area has a rather dry climate with 1650 mm/year of rainfall, and temperatures between 28-30° C. The area of Wine plantations in Tanguwisia village is 86 hectares, with average productivity of 15000 kg/ha (sugar content 13,22% w/w). The price of Wine production is Rp 7.000 – 9.500 per kg. The Wine processing industry already exists. The potential for Black Wine farming, and *subak abian* (*subak with garden field*) institutions in Tanguwisia village is still very good, however, improvements

in production techniques (progressive treatment) with organic methods with a touch of micro-bio-farming technology are required to increase the production and quality of the wine (high sugar content and eco-labeling).

One thing that is required to be observed and a solution to the problem is the increasing trend of conversion of *subak* rice fields in the northern coastal area of Buleleng regency (including in Tangguwisia village). In the past before the era of 1980 *subaks* had total autonomy. All decisions were made by consensus with the testimony of the Lord *Ida Sang Hyang Widi Wasa*. Therefore *sangkepan* (customary members gathering) is always done in *Subak*'s temple. *Sangkepan* was always preceded by prayers together using *banten*/offerings and incense, so *sangkepan* was always magical. It was important to make the best decisions and avoid internal conflicts (Sutjipta, 2006). Every decision of *sangkepan* was binding on all farmers. Including the sale and purchase of land through *sangkepan* decision in *Subak*. It was very hard for the rice fields of farmers could be transferable to outsiders of *subak*. *Subak* autonomy in land sales to extinction since land certificates issued by the National Land Agency served as the legal status for the most powerful land ownership, which further was made worse by booming land demand for various building developments. Therefore, various efforts must be made to strengthen the factors in *subak*, namely: *awig-awig* (customary rules), *sangkepan* (customary gathering), leadership/*kelian*, *subak* economic institutional units, and *subak* authorities to strengthen *subak* as a guard in preserving culture and the environment in Buleleng. These efforts can be promoted by *kaja-kelod* agro-tourism development.

The Up Land Potential in Pancasari Village for Kaja-Kelod Agro-Tourism

The location of Pancasari village is 24 km from the regency capital (Singaraja); and 60 km from the capital city of Bali (Denpasar). The topography of the village is mountainous with an altitude of 1000 – 1100 m above sea level. This area has a cool/wet climate with rainfall of 2500 mm/year, and temperatures between 23-25° C. Agricultural potential: Strawberries and highland vegetables.

Pancasari village area consisted of 366 ha of agricultural area and 866 ha of state forest. Agricultural land is almost entirely planted with upland vegetables and other

horticultures. The area of planting and production of Strawberries, Cabbage, Carrots, and Petsai dominated horticultural commodities in Pancasari village.

The horticultural cultivation techniques were still semi-organic, where manure was the main fertilizer in cultivation activities. Pests and disease control were carried out in an integrated and controlled manner. Currently, there was no need for the horticultural product processing industry because all strawberry and other vegetable production was absorbed into the market at a fairly profitable price (Strawberries were priced at Rp 25.000 – 30.000 per kg). Production marketing: local, Denpasar, Badung, and Buleleng.

Formulation Model for Kaja-Kelod Agrotourism

The model for the development of *kaja-kelod* agro-tourism can be seen in Figure 2. The basic premise of eco-friendly agro-tourism is simple, and its potential extends well beyond tropical systems. Tourists pay to experience nature in a manner that respects the local culture and environment. The outcomes of local economy and culture benefit, are generated by creating an enduring incentive for the locals to maintain the supply of tourists via natural resource conservation (Honey, 1999). Therefore, the *kaja-kelod* agro-tourism development should adhere to three basic principles of sustainable development: (i) eco-friendly cultivating of natural areas, (ii) educating visitors, and (iii) benefiting the local population.

The setting up *kaja-kelod* agro-tourism management should follow community-based tourism. As was explained by (Hamzah & Khalifah, 2009) community-based tourism is a community development tool that strengthens the ability of rural communities to manage tourism resources while ensuring the local community's participation. Community-based tourism can help the local community generate income, diversify the local economy, preserve culture, conserve the environment, and provide educational opportunities.

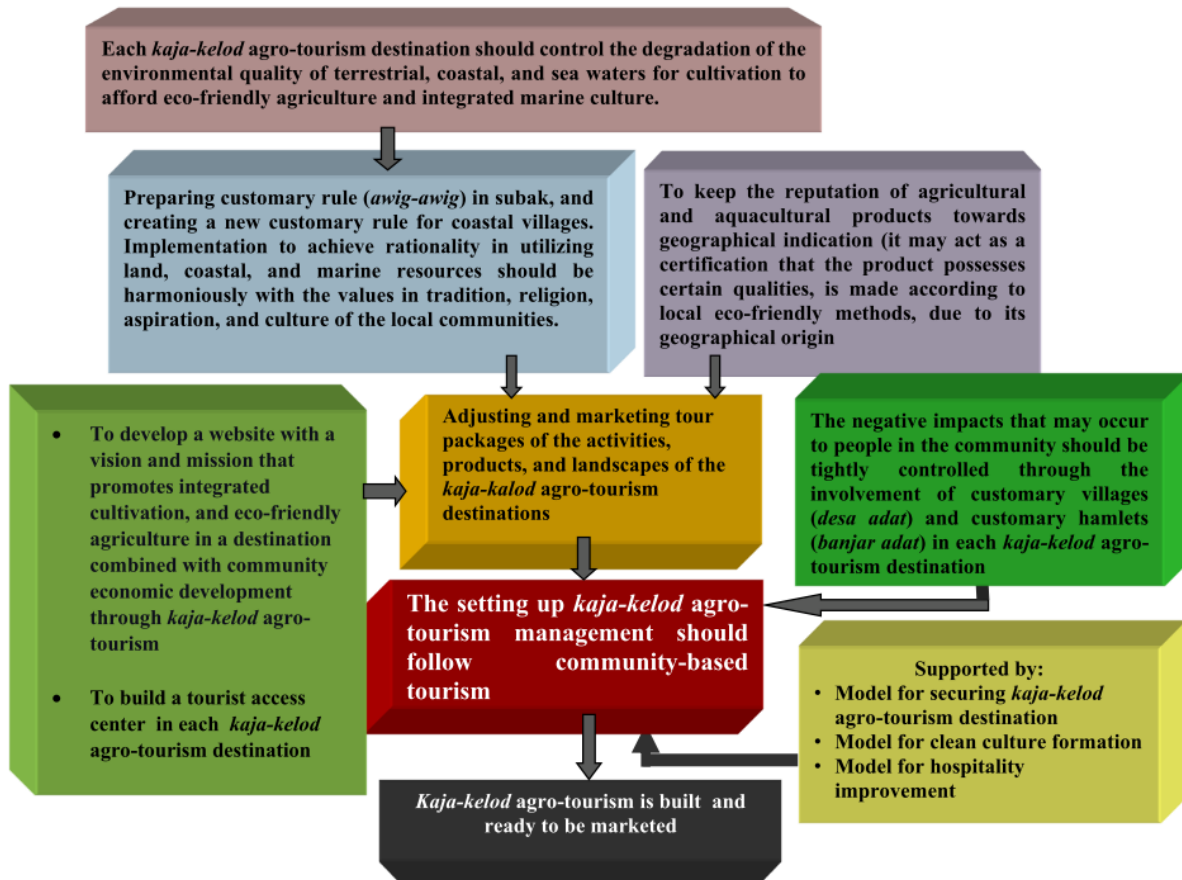


Figure 1.

The Model for the Development of *Kaja-Kelod* Agro-Tourism in the Western Part of Buleleng Regency

CONCLUSION

Kaja-kelod agro-tourism included four destinations, those were Pancasari village (upland area) for the object of eco-friendly cultivation of strawberries and upland vegetables, as well as ecotourism Buyan & Tamblingan Lake; Sawan-Sudaji villages for the object of Organic-based Balinese rice farming (Cicik Gondrong), Tropical fruits, Metaphysical agriculture activities in *subak*, and Traditional music; the object of organic Black Wine agribusiness in the lowland of Tangguwisia village; and Gerokgak district for the object of integrated marine culture tourism, grouper-snapper-milkfish hatcheries and rearing fishes in sea cages.

Applied kaja-kelod agro-tourism is for good association among agricultural activities, environmental concerns, and human interests through practical cultivation and ranching as well as *subak*, *desa adat*, and coastal communities involvement. Organic resources amalgamation (natural or artificial) should be applied in the cultivation, due to enriching biodiversity and eco-friendly agriculture. Implementation to achieve rationality in utilizing land, coastal, and marine resources should be harmonious with the values in tradition, religion, aspiration, and culture of the local communities.

Finally, kaja-kelod agro-tourism development must foster the three basic principles of sustainable development: (i) eco-friendly cultivating of natural areas, (ii) educating visitors, and (iii) benefiting the local population. The setting up of kaja-kelod agro-tourism management should follow community-based tourism.

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