

The Study of Development of Urban Farming Agrotourism Subak-Irrigation- Based in Sanur Tourism Area, Denpasar City, Bali

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Abstract

This study aims to study the development of urban farming agrotourism planning in Sanur Tourism area. The approach used the Participatory Rural Appraisal (PRA), which is an approach that combines knowledge and opinions of rural communities in the planning and management of development programs. Data obtained through field observation, Focus Group Discussion (FGD) and in-depth interviews involving all stakeholders in the development of agro-tourism Sanur. The study shows that the development of agrotourism aimed at two central points of development, namely: Subak Sanur in Sanur Kaja, with wide appeal in the form of farmers markets, urban farming field schools, and layout biocircle farming; and Subak Intaran kauh and Intaran Kangin in Village of Sanur Kauh and Sanur Kaja, with wide appeal among others cycling in paddy fields, education agrarian culture and irrigation systems Subak, attractions farming, social-religion activities, recreational fishing and bird watching. Development of facilities including the construction of gates and parking areas, information service facilities, toilets and bicycle parking, and a viewing post/gazebo, as well as cycling paths. Accessibility and circulation path aimed at structuring the Subak as cycling paths and setting its utilization by residents of Subak. Institutional development is directed to revitalization and empowerment of existing traditional institutions, through improvement of managerial capacity, prepare *awig awig* (written rules), and increasing the knowledge and skills of people in the process of adding value agricultural commodities

Keywords: agrotourism, development, Subak-irrigation based, urban farming.

INTRODUCTION

Agricultural land, especially for rice fields, has its own attraction for the landscape of Sanur tourism area. Paddy fields and paddy-farming activities have given the identity of Sanur as a rural tourism area. The traditional institution of the farmers that still exists is a great potential of supporting capacity for the sustainability of farming in Sanur. The area of agricultural land in Sanur Tourism Area is 189 ha.

Land conversion and low interest of younger generation to work in agricultural sector due to the low income become serious problems for the conservation of Subakland in this area. The data showed that, in the last decade, the conversion of agricultural land into residential or other lands was increasing very rapidly to 23.74% in the period of 2002-2011 or by 401.5 ha from the rice field area in Sanur [1]. Considering the rate of land conversion, there will no longer paddy fields remain in the next five years in Sanur Tourism Area, if there is no significant effort was made.

One of the strategies that can be taken is through the integration between tourism businesses and agricultural activities [2]. In this regard, agriculture can be served as a tourist attraction (agrotourism), agricultural products can be oriented to meet the needs of hotels and restaurants, revitalize the traditional institutional function of farmers (*Subak*) as the managers of agrotourism attraction and the adoption of organic-based horticultural agriculture technology [3,4]. The development of organic-based urban farming is the answer to the efforts of agricultural conservation in Sanur area. For this purpose, there must be an understanding between the stakeholders, i.e. farmers as the agricultural entrepreneurs, custom village as waste management to be the source of fertilizer for agricultural products, and business actors that play a role in absorbing agricultural products and users of agrotourism package [5,6]. The local government may act as a facilitator and provider of development funds to support the partnership. The suitable agrotourism pattern to develop is the organic-based urban farming.

Urban agriculture means an agriculture activity which can be in the form of farming, raising, fishing, forestry, located within an urban or a rural area, by processing, producing and

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selling and distributing various food and non-food products using human and natural resources (soil, water, nutrients, air and sunlight) and aims to provide and meet the consumption of food products for people who live in the urban areas [7,8].

In addition, the characteristics of urban agriculture include its proximity to markets, high competition for land, very limited land, using city resources such as organic waste and wastewater, relying on biodegradable products, and having a high degree of specialization [9]. The development of urban farming agrotourism has already been pioneered in Sanur tourism area. People of Sanur Kauh Village has pioneered the bike path along the border of Subak Intaran and Subak Intaran Timur as an access for tourists who are interested in enjoying the scenery of paddy fields. Similarly, in Subak Sanur, precisely at *Matahari Terbit* beach, a field school of horticultural crops has been developed on the land area of 2 ha, a cooperation between the Government of Denpasar City and the owner of Santrian group as the land owner. Therefore, we aim to study the development of urban farming agrotourism planning in Sanur Tourism area.

MATERIALS AND METHOD

Study Area

The study was conducted in Sanur Tourism area covering three villages, namely Sanur Kaja Village, Sanur Kauh Village and Sanur Village, in August-December 2016. The research used participatory rural appraisal (PRA) approach, which involved the community in the study area throughout research stages, from potential and problem identification, needs analysis, as well as composing the concept of attraction development, circulation system, facility and infrastructure development.

Data Collection and Analysis

Data collection techniques consisted of field observation, in-depth interviews, and focus group discussions (FGDs). The respondents were the stakeholders of agrotourism development in Sanur area, namely *Pekaseh* (Head of paddy-field farmers group), farmers' representatives, Sanur Development Foundation, head of village, youth organization and tourism entrepreneurs in Sanur area. The data analysis used was descriptive-qualitative.

RESULT AND DISCUSSION

Condition and Potential of Tourist Attraction

Sanur Tourism Area consists of three villages, namely Sanur Kaja, Sanur and Sanur Kauh Villages, which are administratively included to the South Denpasar Sub-District, Denpasar City, with a total area of 1,057 ha. There are three subak irrigations found in Sanur area which are still preserved and maintained for their sustainability, and become one of the remaining rice fields in the middle of Denpasar City: Subak Intaran Barat, Subak Intaran Timur and Subak Sanur, as the data of subak are shown in the following table 1.

Table 1. Name of Subak, Village, Area and Number of Farmers in Sanur Area

Village	Subak	Area (ha)			Farmers
		1943	2002	2012	
Sanur kauh	Intaran Barat	195.68	120.80	120	102
	Intaran Timur	161.15	19.42	12	58
Sanur Kaja	Sanur	234.67	72.52	57	23
Sanur		0	0	0	0
Total		590.50	212.74	189	183

Sources: Statistic Center Denpasar [1]

In general, the cropping pattern and schedule systems applied to Subak Intaran are in the form of paddy-paddy-CGPRT (coarse grains, pulses, roots and tubers) croppings in the odd year and CGPRT-CGPRT-paddy croppings in the even year. It is due to the split of water supply with Subak Sanur Kauh in rotation, by using the reverse cropping pattern from Subak Intaran in which there are paddy-paddy-CGPRT in the even year, and CGPRT-CGPRT-paddy croppings in the odd year [10].

The yields sold along the village roads or along the Ngurah Rai bypass allow consumers to buy fresh and cheaper products directly from the farmers. The street trading activity is definitely against the regulation because it can cause traffic jams and endanger the sellers or buyers. The sellers should make decent and safe stalls for buyers. Any tourists who want to buy crops as souvenirs, can buy through the stalls without having to pick the crops in advance.

In Subak irrigations around Sanur Tourism Area, there are some subak infrastructures that have tourism potential, including Pura Subak and Balai Subak, *Jineng* (a place in which the farmers store their yields), *Bale Timbang* (a place in which the farmers hold discussion), *Bangun Bagi* (a building for water distribution per paddy field),

Kubu (a building in which the farmers can take a rest), and cattle pens. The potential development of Subak Intaran in order to support agrotourism can be conducted by utilizing the existing facilities and infrastructures, as follows:

- 1) To see the landscape view of paddy fields and also various conducted farming activities.
- 2) To see birds, cattles and other animals outside the paddy fields.
- 3) To see the rituals performed by Subak members.
- 4) Tourists can participate in farming activities, such as; plowing, paddy cropping, eel catching, and other activities.
- 5) Fruit picking for watermelon, melon, cucumber, tomato and other fruits and enjoying the fruits on site immediately
- 6) Conducting exercise by tracking the riverbank which has been developed to have jogging track on it.

The Problems and Needs of Agricultural Attractions Development

Based on the results of focus group discussions (FGD) which involved stakeholder representatives in the Sanur area, there were some issues found that became the concerns of the stakeholders related to the development of agrotourism, as follows:

- 1) The variety of agricultural attractiveness has not been developed and packed into agrotourism package yet.
- 2) There has not been horticultural crops market available yet on the location
- 3) Bicycle and trekking tracks in the middle of paddy fields of Subak Intaran Barat and Subak Intaran Timur have not been arranged and packed according to the standard
- 4) The agribusiness-related insight among the farmers is still very low.
- 5) The farmers have not adopted organic system cultivation technology yet.
- 6) Subak institutions do not have competence in agrotourism package management yet.

The development of tourist attraction in Sanur Tourism area can be summarized as follows:

- 1) The development of horticultural crops and organic system of urban farming

based on agrotourism are integrated with household waste management.

- 2) The development of farmers market.
- 3) The arrangement of trekking track in the middle of paddy fields (Subak).
- 4) The agricultural products processing into typical food (*brem*/traditional fermented food or beverages and wine).
- 5) The Subak-based institutional development of agrotourism management.

Meanwhile, based on the analysis of the problems obtained from the inventory, there was also another problem found that also required some treatment/management. It was the preservation of Subak land through the reduction of land conversion rate.

The Synthesis and Concepts of Development

Based on the conditions, potentials and problems that have been inventoried and analyzed above, there were various planned efforts needed to realize Sanur area as a high-quality tourist attraction. The efforts made were in order to maximize the existing potentials and to overcome a number of obstacles/problems to keep having a tourist attraction with a high competitiveness (Table 2).

There were various alternative actions taken to exploit the potentials and to overcome the problems/obstacles. Based on these alternatives, there were some best and most feasible actions obtained to be implemented.

The basic concept of planning in this study was an agricultural area as a high-quality tourism attraction. As a nature-based tourist attraction, the quality of agricultural tourist attraction was focused on creating the integrity of agricultural ecosystems concerning the preservation of the physical environment, biodiversity, social and cultural values, and awareness of the people in the conservation movement [11]. The components of accessibility, circulation system and supporting facilities for tourist attraction became a single entity in the planning. The concept of agricultural tourism attraction development in this planning consisted of the development of organic based urban farming, agricultural land zoning system, circulation system, facilities and infrastructures.

The Concept of Zoning

The spatial concept was developed based on the agricultural potentials of the region, by having principle on the method of a tourism

destination development [12]. It also considered the needs of tourism spaces as well as the supporting factors of tourism as a whole.

The agrotourism zone is divided into agrotourism attraction zone and agrotourism supporting zone. Attraction zone is the core area that becomes the center of agrotourism activities. There will be an intensive utilization of natural resources potentials, namely agriculture commodity and Bali traditional agrarian cultural activity (Subak). In addition, there will be an attraction zone developed in which the tourists can participate directly in agricultural activities. Agrotourism Supporting Zone includes Receiving zone, Service Community zone, Linkage Corridors, and Community zone.

The Concept of Circulation

Circulation system is the movement from one to another space. The developed concept of tourism path was basically intended to link the spaces on the site to facilitate the movement of visitors. The circulation concept in Sanur agrotourism area was planned by utilizing the existing path, however, there is a need of more portion for the visitors. Agrotourism has more emphasis on the sustainability of tourism without disturbing community activities, however, it does not mean negating the contact between the tourists and the community and their daily activities.

Table 2. The Analysis and Synthesis of the Tourist Attraction in Sanur Tourism Area

Elements of Agriculture	Analysis	Synthesis	
		The Utilization of Potentials and Solutions	Alternatives
Agricultural Landscape	Subak/paddy fields, which provide rural atmosphere, are threatened for the sustainability	Requires preservation and added-value increase for the agricultural fields	<ol style="list-style-type: none"> 1) Integrating the agriculture and tourism 2) Landscape zoning for agrotourism development
Attraction	The attraction of rural, endemic floral and animal nature, and Subak activities have not been packed into a tourism package as the paddy and CGPRT cropping do not provide satisfying results for the farmers	<ol style="list-style-type: none"> 1) Requires a package of natural-based tourism attraction of the tourism village and agricultural activities into an agrotourism package 2) Requires agricultural intensification by cropping the market-oriented commodities 	<ol style="list-style-type: none"> 1) Packaging the village tourism attraction and agricultural activities into an agrotourism package 2) Purchasing agricultural products for tourism industry needs 3) Converting to horticultural farming technology for lowlands
Accessibility and Circulation	The public access to the agrotourism location is adequate but not well-arranged, as the circulation is still limited using the Subak path	The arrangement of Subak path for the circulation of visitors	<ol style="list-style-type: none"> 1) Improving the access path quality and establishing parking areas 2) Arranging Subak path for circulation routes
Agrotourism activities	The attraction and agrotourism-supporting facilities are still inadequate	Requires addition on the agrotourism-supporting facilities	<ol style="list-style-type: none"> 1) Developing farmers market for product marketing, verticulture installation, pot farming exhibition layout etc. 2) Arranging the trekking tracks to enjoy the paddy fields scenery 3) Providing fields for paddy cropping attraction, horticultural cropping, and installation
Institution and Community	There is no management established and the low competence of the people in managing the agrotourism package	Requires the establishment of management institution and training of urban farming technology for the farmers	<ol style="list-style-type: none"> 1) Revitalizing Subak into agrotourism package management 2) Developing the managerial competence for agrotourism 3) Improving farmers' skills in applying the urban farming technology 4) Agricultural products processing into Bali-specific traditional snacks, such as <i>brem Bali</i>, and taro-made wine

The Concept of Activities and Facilities

Activity is separated based on the level of tourist participation in agricultural activities, namely active and passive agrotourism activities. Active agrotourism activities require an active tourist participation directly in agricultural activities or processes, or interpret agricultural activities with the help of interpreter(s) in order to gain knowledge and understanding through direct experience and delivery. Otherwise, passive agrotourism activities emphasize recreational activities, as the educational value is obtained through the understanding and self-observation conducted by the tourists [13].

Results of Zone Planning

The zone planning is considering the characteristics of potentials, conditions, problem analysis and alternative synthesis of agrotourism development. It also consider directing the development of facilities and infrastructures. Therefore, management of agrotourism was divided into two categories:

1) Attraction Complex/Zone

It is a description of the attraction zone in the model of the tourism destination zone and is the core area that becomes the center of agrotourism activities. The intensive utilization of natural resources, such as agriculture and traditional agrarian agriculture (Subak), which can be enjoyed by the tourists. In addition, it developed into space of attractions where tourists can participate directly to conduct agricultural activities (Fig. 1 and 2).



Figure 1.The Attraction: the Process of Making Biogas and Organic Fertilizer (source: personal documentations)



Figure 2. Plowing Attraction Plowing the Rice Field (source: personal documentations)

This attraction complex consists of two points of agricultural area in Sanur Tourism Area. One as the center or core of attraction by presenting the agribusiness outlets or terminals and the attraction of introduction to *urban farming* technology. While the other point presents cycling attraction to enjoy the view of paddy fields combined with Subak activities, such as land cultivation, paddy cropping, eel catching and other activities.

2) Agrotourism Supporting/Welcoming Zone

A space that is prepared as a *welcoming area* that marks the agrotourism area. The activity exists in this area is the introduction to the area. The main function of welcoming zone is to create the *image* and identity for visitors.

Service Community Zone

This zone contains the fulfilling needs activities for the tourists. This zone provides services to the tourists related to the fulfillment of the needs of comfort, convenience and completeness in enjoying the activities of agrotourism. It includes information service, public facilities and service providers, such as bike rent and local guides. The service community zone is in an accessible area for the tourists, and is an integrated service center within the area.

Community Zone

It is a community living space with all its activities and patterns. The community zone embodies the life of indigenous people and separates it from the attraction zone. This zone is composed by a series of the surrounding neighborhoods and environment, including courtyards and gardens [14].

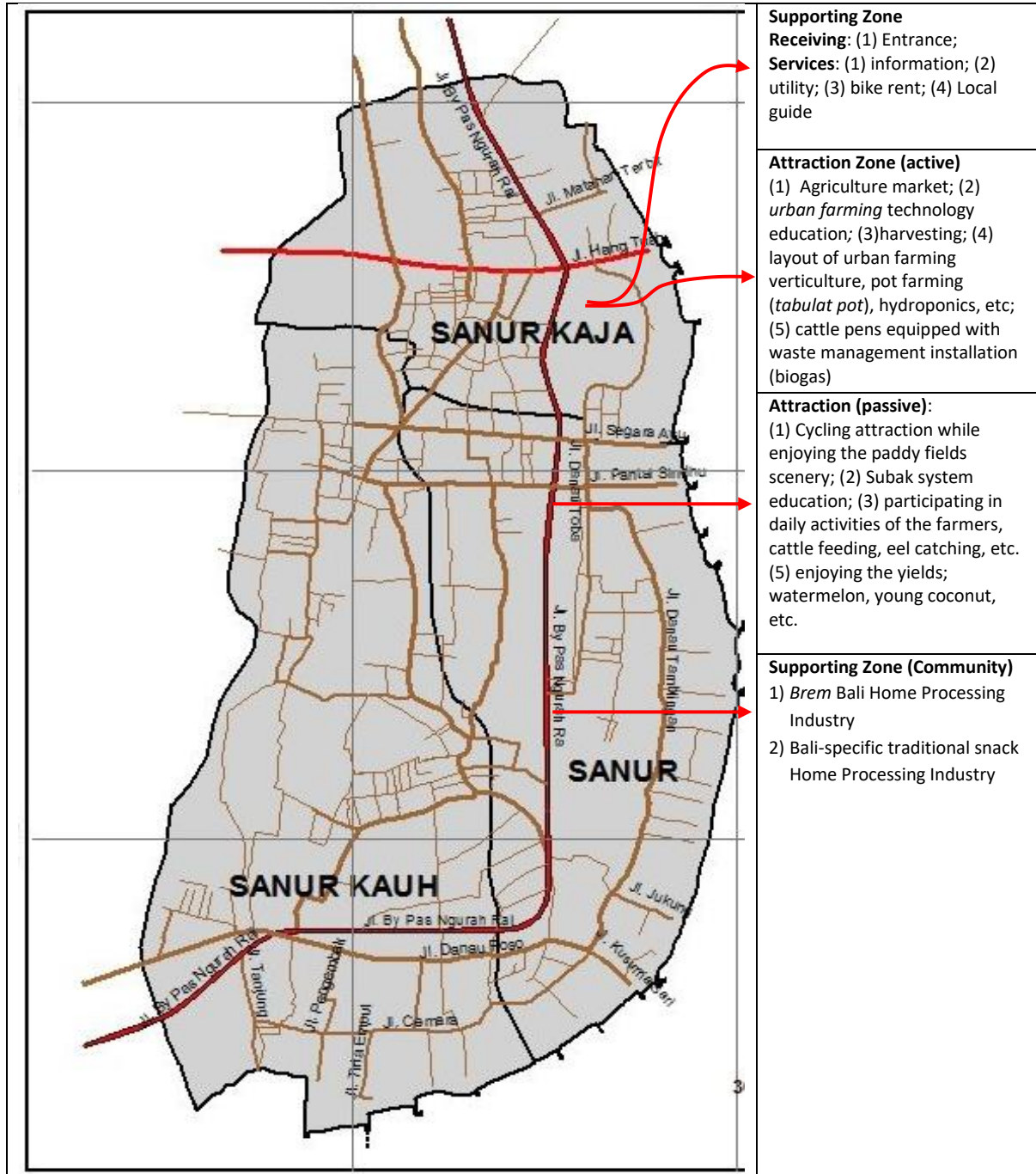


Figure 3. Agrotourism Zoning in Sanur Tourism Area (scale 1: 25.000)

There is a home industry in several houses of the local people in processing agricultural products. The products are *brem Bali*, the making and processing of *dodol* (sugar-palm based confection), and various Bali-typical traditional snacks [15].

The zone planning which consisted of attraction zone and supporting/welcoming zone, as previously mentioned, was described in following Figure 3. The developed concept of facilities was the concept of facilities suited to the needs of agrotourism activities. In general, the facilities to be developed are divide into active agrotourism facilities, passive agrotourism facilities, and supporting facilities.

CONCLUSION

The main attractions to be developed in Sanur agrotourism are the introduction to horticultural farming techniques and education of urban farming technology and enjoying the paddy fields scenery and livelihoods of farmers which organized in Subak. The development of agrotourism in Sanur is aimed at two centers of development, namely (1) SubakSanur in SanurKaja Village, with a variety of attractions developed in the form of farmers market, urban farming school, and biocircle farming layout; (2) Subak Intaran Barat and Subak Intaran Timur in Sanur Kauh and Sanur Kaja villages, with a variety of developed attractions, including cycling tours in rice fields, agrarian culture education (Subak) and Subak irrigation systems, cropping attraction, social-religious activities, fishing and bird watching.

The development of facilities including the construction of gates and parking areas, information service, public toilets and bicycle parking areas, installation and display of urban farming practices, cattle pens equipped with biogas processing installation, urban farming installation, gazebo/observation post, and bicycle track. The development of access/circulation is directed at Subak road arrangement as cycling path and the arrangement of its utilization with Subak community.

The Institutional Development and Community Empowerment is directed to the revitalization and empowerment of the existing traditional institutions, so that the program is designed to focus on capacity improvement, such as the development of managerial capability of agrotourism package, the preparation of *awig-awig* (written regulations), the preparation of various packages of activities in the agrotourism area, and agreement on the costs which have to be paid by the tourists. It also needs the improvement on knowledge and skills of the community in the process of increasing the added values of commodity, and in the management of agrotourism.

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