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TOURISM-BASED URBAN AGRICULTURAL INTEGRATED FOOD MARKET (CASE STUDY: SINDU MARKET, SANUR, BALI)

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ABSTRACT

The market is a place where basic needs such as food can be purchased. The high demand for food in Denpasar is dominated by the needs of the tourism sector and the community. The fulfillment of the need for food is highly dependent on the agricultural sector. The increasing need for food is inversely proportional to the aspect of supporting the fulfillment of needs because the condition of agricultural land in Denpasar City is decreasing every year, so it must depend on outside areas such as Tabanan Regency, Bangli and the largest imported from Java. The ability of a region to produce food that can guarantee sufficient food needs by utilizing the existing potential can achieve food independence. The application of agricultural systems to produce food in urban areas really needs to be developed to provide access to adequate food to meet food needs. This article aims to explore the potential of urban urban areas that are integrated with traditional markets in urban areas at Sindu Market. Located in the Sanur tourism sector area, Sindu Market has potential that can be directed to become a tourism-based market. Furthermore, this article aims to determine the condition of food self-sufficiency in Denpasar City and the areas that supply food needs for Denpasar City by implementing the Urban Farming system. The implementation of the Urban Farming system will shorten the carbon chain in terms of distributing food ingredients from outside Denpasar City. The research method used is qualitative with a descriptive approach. Data was collected by observation and interviews. The results showed that the food needs of the city of Denpasar were still not independent of their own food needs so that an innovative idea was born in the form of implementing the Urban Farming system at the Sindu Market, which was expected to be a solution to the problem of food needs in Denpasar City.

Keywords: food needs; food market; urban farming.

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INTRODUCTION

Literally the word market means gathering to exchange goods between buying and selling (Ariyani, 2019; Ichsan et al., 2020). The presence of a market in an area has always been the main place that functions as a center for the exchange of goods and services in strategic locations (Pramudyo, 2014; Nurjanah, 2020). The market when viewed from its characteristics is divided based on traditional markets and modern markets (Nugroho & Nurcahyanto, 2016; Lutfi & Syaifullah, 2020), broadly speaking, the differences between traditional and modern markets are different from the buying and selling system, for traditional markets the buying and selling process can be done by the bargaining process, unlike the modern market which does not allow the bargaining system, but in terms of its function, traditional and modern markets both have the same function as a place to sell and buy goods to meet one's food needs. Food is the main human need that must be met (Sopandi & Wardah, 2014; Sartika, 2020). In realizing food security, the condition of food availability in an area must be sufficient (Fauzi et al., 2019; Saliem & Ariani, 2016). Food availability is an issue that is often heard in national development, especially for developing countries like Indonesia. According to the Law of the Republic of Indonesia Number 18 of 2012 concerning Food, it is stated that, Food Security is a condition for the fulfillment of food for a country to individuals, which can be seen from the availability of sufficient food, in terms of quantity and quality, diverse, safe, equitable, nutritious, and affordable to be able to live healthy, active and productive sustainably. Adequate availability of sustainable food is obtained from agricultural production.

Agriculture is an activity that uses natural resources by humans to produce food needs, and participates in managing the environment (Mayrowani, 2016; Purwantini & Sunarsih, 2020). The

results of foodstuffs originating from within the city can shorten the food distribution process thereby reducing the use of excess fuel, in addition to the price of food sold so as to increase people's purchasing power (Kullu et al., 2020; Puspitasari, 2020). One of the solutions is the application of Urban Faming, by utilizing improvised land conditions but still being able to produce quality fresh food items more quickly to consumers. Urban Farming is able to improve food security even though urban areas are minimal with open space for agriculture, but this urban farming system is able to utilize narrow land as a farming area by implementing a vertical farming system, this will be able to contribute to supporting food needs for urban areas.

The increasing need for food in Bali is motivated by the fact that every year tourism visits to Bali continue to increase (Kusumaningsih et al., 2021). Meanwhile, agricultural land continues to decrease, especially in urban areas and tourism (I Dewa Gede Agung Diasana Putra, 2020). This condition occurred before the Covid 19 Pandemic that entered Indonesia at the end of 2019. Statistically, tourists reported in the Statistics of Foreign Tourists to Bali in 2018 by the Bali Province Central Statistics Agency, foreign tourist visits to Bali Province during the last 4 years experienced quite a rapid increase. During that period, the average number of increases was 689,546 foreign tourists per year. According to the Central Statistics Agency for the Province of Bali, the largest increase reached 23.14%, namely around 926,102 tourists, which occurred from 2015 to 2016. The soaring number of foreign tourists to Bali led to an increase in the need for housing and tourism supporting facilities, due to the need for This causes the conversion of agricultural land in urban areas on a large scale (Hastuty, 2017; Putra et al., 2017). In 2020 the land designation of Denpasar City is used for rice fields of about 2,409 hectares (18.85%), for non-agricultural land 510 hectares (3.99%) and non-agricultural land 98,856 hectares (77.16%). In 2018, agricultural land in Denpasar City was 2,444 hectares and decreased in 2020 to 2,409 hectares.

The reduction in the area of agricultural land will have a significant effect on the productivity of agricultural products (Djoni et al., 2018; Vintarno et al., 2019) which is a source of food. Currently, to meet the food needs of Denpasar City, it must be imported from the surrounding regencies, even outside Bali such as Java and Nusa Tenggara. This is evident from the results of observations and interviews conducted at traditional markets in Denpasar which are represented by each sub-district in Denpasar City to be observed, for markets in North Denpasar that were observed, namely Pasar Agung Peninjoan, West Denpasar, namely Pasar Badung and Pasar Kumba Sari, South Denpasar is the Sindu Market and East Denpasar is the Ketapian Market. From the results of observations and interviews conducted, Java Island occupies the top position as a food supply area for Denpasar City with 23%, then Tabanan Regency with 20%, then Bangli Regency with 15%.

One of the observed markets that is unique because the location of this market is adjacent to Sanur Beach tourism as a tourist destination, namely the Sindu Market so that visitors who come to Sindu Market are very diverse, ranging from local residents and also foreign tourists who are on vacation. From the observation results, almost all of the food needs in Sindu Market are imported from outside Denpasar City, so it can be said that Denpasar City's food needs, especially the Sindu Market, are still not independent of their food needs. The negative impact that will be felt in the future due to the distribution of these foodstuffs is from the spread of the carbon distribution chain which is getting longer which requires more fuel to distribute these foodstuffs (Rusdiana & Maesya, 2017).

Based on the phenomenon that occurs, that the need for tourism supporting accommodation and housing needs is contrary to the availability of food in Denpasar City. An idea emerged to create food access in the form of an integrated food market with urban agriculture that focuses on increasing agricultural output in Denpasar City. These ideas can be applied in the Sindu Market because this market is a supplier of food needs in the Sanur area. By directing the agricultural system that is integrated with the market. Seeing the potential location of the Sindu Market in the tourism area, it is possible to direct this market into a tourist market with the image of this Sindu Market not only as a place to sell, but can be used as an educational tourism place to learn to grow crops, so indirectly tourists who visit Sindu Market can also learn in the process of farming, picking and the process of returning food. With the market that is integrated with urban agriculture, it is also hoped that the Denpasar Gardening community can contribute to become partners in future development.

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So far the research conducted at the Sindu Market in Sanur Bali from the architectural context and from tourism has not been carried out further, therefore this research becomes very interesting if examined more deeply, because there are new ideas and ideas because of the market. integrated with urban agriculture directly in Denpasar. The advantages that can be felt are in the process of faster food distribution and the quality of the food being marketed is fresher to consumers and the most positive impact on the environment from the application of urban agriculture or urban farming is that it can reduce the carbon chain using excess energy in the food distribution process. The research method used is qualitative with a descriptive approach with observation and interview techniques in order to find a value and meaning how the problem of increasing food needs is not matched by the condition of land area for farming, will give birth to an innovation, namely a food market that is integrated with urban agriculture or urban farming in Sindu Market.

RESEARCH METHODS

East Denpasar. This Sindu market is a traditional market in Denpasar. This Sindu market can be classified as a traditional market that sells house needs and traditional ceremony needs of the Sanur community. Sindu Market has an area of 5,200 m2 with a building area of 3,700 m2 and a parking area of 1500 m2. This market starts operating at 04.00-14.00 and 16.00-22.00 for kiosks and stalls inside the market, while for traders who sell at night it is usually open from 17.00-03.00

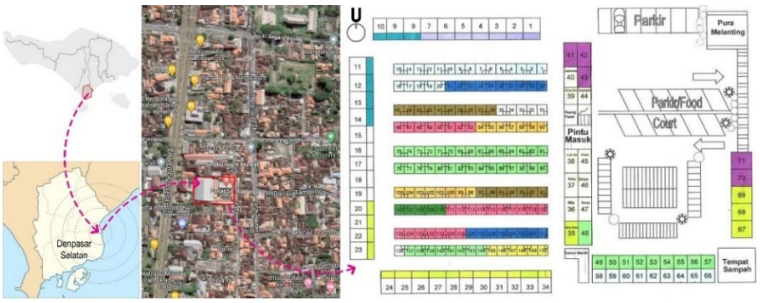

Figure 1. Sindu Market Location Map and Floor Plan

This study uses a qualitative method with a descriptive approach. Descriptive qualitative research is research using a case study approach (Rudyshyn et al., 2021; Yin, 2013). Research with a case study approach according to (Sudarwan, 2002; Nawawi, 2013) explains that a study that studies the background conditions of a phenomenon that is happening in the field. Qualitative descriptive research according to (Syaodih, 2011; Alpi and Evans, 2019) aims at phenomena that occur directly or engineered man-made events.

This research is divided into three stages starting from the pre-field stage, namely determining the design of research observations in which there are questions that will be used during interviews. Next is the field stage, namely conducting observations and interviews with visitors, traders, market administrators, for traditional markets in Denpasar which are represented by each sub-district in Denpasar City to be observed, for markets in North Denpasar namely Agung Peninjoan Market, West Denpasar Badung Market and Kumba Sari Market, South Denpasar, namely Sindu Market and East Denpasar, namely Ketapian Market, and related to the research location, interviews were conducted with the Head of the Traditional Village of the Sanur Region and the Denpasar Gardening Community. The last stage is the post-field stage, which includes analyzing data from observations and interviews, making reports, and publishing journals.

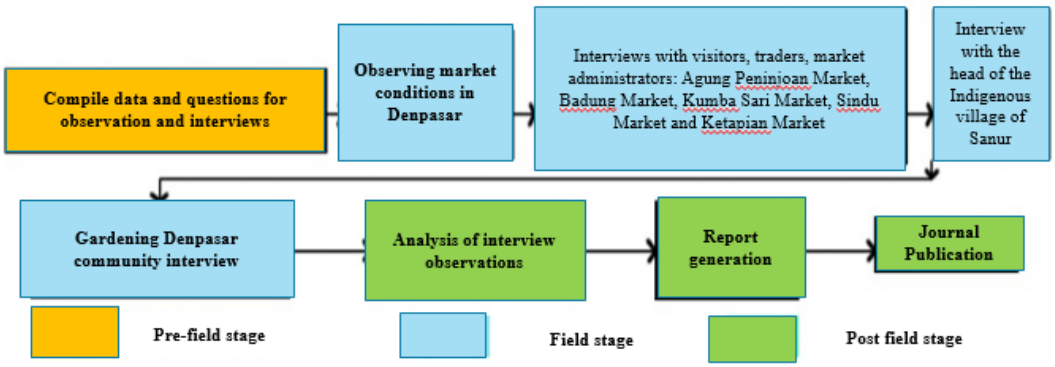

Figure 2. Research Stage

The types of data used in this study are primary and secondary data. The primary data collection process was carried out by means of observation and interviews. This process is carried out on holidays and weekdays in the morning and evening. The observation process is aimed at knowing the conditions of the selected markets in each sub-district in Denpasar which has been described above and observing the existing conditions of the research location, namely the Sindu Market. Interviews were conducted using the snowball sampling technique, namely the technique of placing samples which were initially small in number, then enlarged according to the wishes of the answers to be obtained (Naderifar et al., 2017; Setiawan, 2018). The questions asked during the interview were about the operating hours of opening and closing markets, areas of food supply suppliers and the conditions expected by traders and market users who have been selected in each sub-district in Denpasar, which have been described above, so as to find out which areas provide the most needs. food for Denpasar City.

The number of respondents obtained during the interview was 164 obtained from traders, visitors, market administrators, and the Head of Traditional Villages in the Sanur area with data collected for 24 days. Research respondents who were taken during the interview were people who had visited the markets that had been selected in each of the sub-districts in Denpasar above, including the Sindu Market at least once. The secondary data collection process was carried out by observing the Head of the Sanur Traditional Village to obtain data and floor plans for the Sindu Market and Denpasar Gardening Community to ask for opinions regarding this idea and invite contributions to this idea to create a food market that is integrated with urban agriculture, as well as reviewing the literature. from journals, books and the internet.

RESULTS AND DISCUSSION

The food needs in Denpasar from the results of observations and interviews conducted by researchers with traders and market administrators that have been selected in every sub-district in Denpasar, the food needs in the markets that were observed and interviewed were almost all imported from outside the city of Denpasar. which can be explained in Figures 3.1 and 3.2, where the island of Java occupies the first position in the distribution chain of food needs, followed by Tabanan and Bangli.

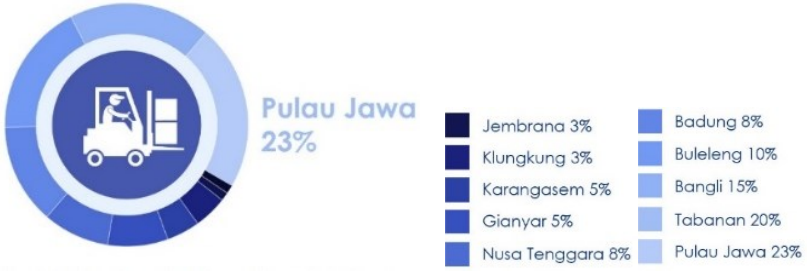

Figure 3. Food Supply Areas for Denpasar City

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The distribution of food needs in the Sindu Market can be explained in Figure 3, the islands of Java and Nusa Tengga contribute to the supply of food needs in the Sindu Market.

Figure 4. Food Supply Areas

Along with the development of the era of technology and ideas began to develop, an idea emerged, where initially food agriculture was mostly only on the outskirts of the city, now food agriculture can be brought to urban areas by directing this agriculture in a modern way or Urban Farming (Rutt, 2020; Huang, 2021). Urban Farming is an agricultural cultivation activity carried out in urban areas with minimal land conditions but can still be productive in producing quality food (Md Ibharim & Salim, 2020; Muhammad et al., 2020) which can be carried out on land in residential areas with various media. such as hydroponics, wall gardens or in pots (I. Dewa Gede Agung Diasana Putra, 2020). The purpose of planning urban agriculture as a means to increase the availability of food and as a recreational activity (Anggrayni et al., 2015; Ratnawati, 2018). Urban Farming can also shorten the chain of carbon distance between producers and consumers so that less fuel is used in its distribution, so that the quality of food is also fresher which will be sold by the market. At the beginning of its growth, the market was in the form of fields without permanent buildings (Sutami, 2012; Nurjanah, 2020). Traditional markets developed in the city were initially located in open spaces and were located not far from settlements. The function of the market according to Aliyah (2017) is as a place to sell and buy goods with the aim of meeting the needs of life.

The existing condition of the one-story Sindu Market building, in the application of urban farming will be more directed towards four-story buildings, including one basement, three floors above which there is a market whose function is combined with a gardening area and there is a roof top area. Specifically, floors one to three are used for sales kiosks that will coexist with farming activities, so indirectly the process of farming and selling is made vertically so that the circulation of visitors remains comfortable in shopping. Especially for the roof top area, it will be utilized as much as possible with the application of outdoor agriculture.

Figure 5. Urban Farming Market

The urban farming system at Sindu Market that will be applied is using a hydroponic system. Hydroponics is a planting technique that can be applied to urban agriculture despite limited land conditions by using water as a nutrient solvent and soil to support plants (Lestari et al., 2020; Nurifah & Fajarfika, 2020). The advantage of using this hydroponic system has proven to have advantages compared to conventional soil gardening systems, namely producing healthier organic agriculture and a 30-50% faster growth rate according to (Ratnawati, 2018). And in the use of the media, planting equipment can use inorganic waste such as paralon pipes and plastic bottles, while for seeding hydroponic seeds you can use rock wool because it can be used repeatedly after use.

Figure 6. Hydroponic Planting Techniques

Using a hydroponic system in Urban Farming can be combined with the use of an Aquaponic system. According to (Handayani et al., 2020; Marisda et al., 2020) Aquaponics is an agricultural system by cultivating fish and plants simultaneously. Diaman aquaponics is a marriage between aquaculture or aquaculture with hydroponic farming systems that use the principle of planting without soil. The advantage of the application of this system is that it is efficient in land use, because in its application it can be done vertically with the arrangement of plants above the fish catchment tank, besides that it can also be efficient in water use because water will be pumped up repeatedly, producing organic agricultural products due to fish waste. mixed with water will be pumped up so that it can be a natural fertilizer for the plants above it.

Figure 7. Aquaponics Techniques

The application of urban agriculture or Urban Farming at Sindu Market uses water as a solvent for nutrients in plants so that the sanitation system in buildings prioritizes the conservation of natural resources, in this case rainwater which can be processed and used sustainably to meet the water needs of buildings. Dirty water (toilet) and used water (zinc and agricultural irrigation) are filtered first and then can be reused for watering plants and hydroponic farming. The scheme for clean water, dirty & used water, and rain water can be seen in Figure 8.

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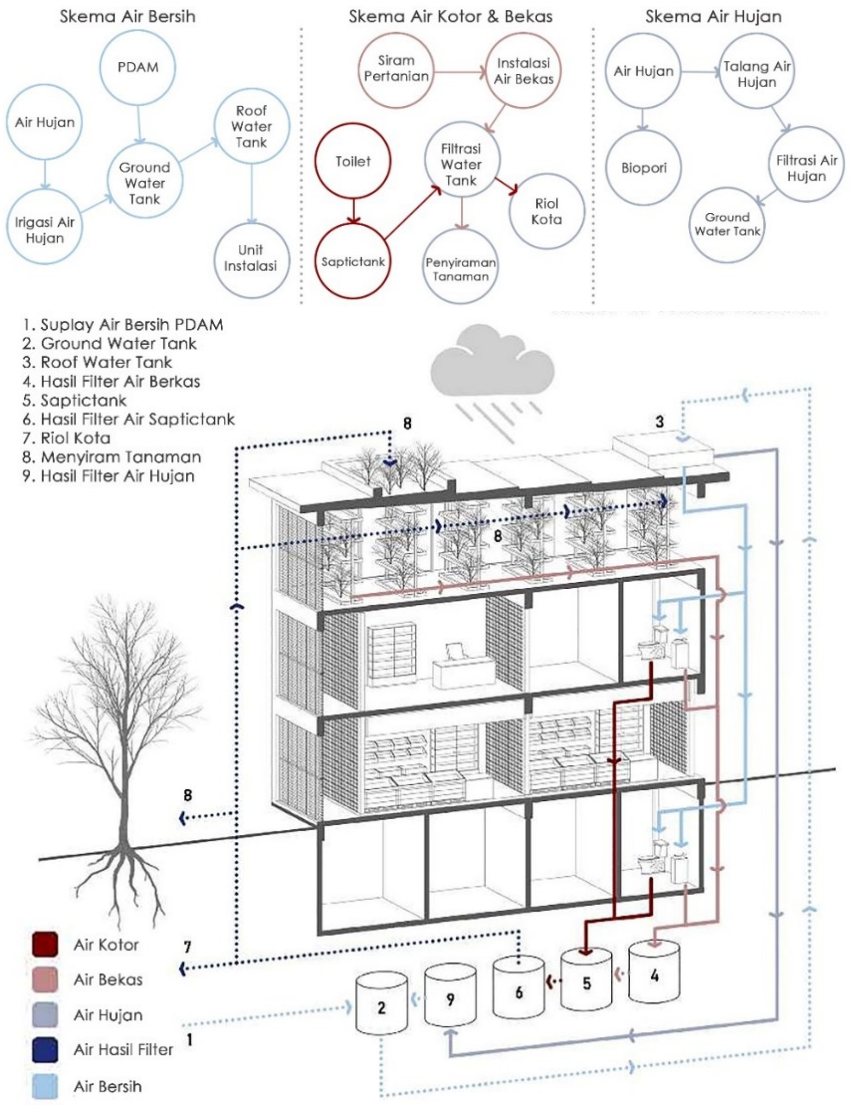

Figure 8. Application of the Sanitation System

One of the traditional agricultural irrigation systems in Bali, namely Subak, can be used as an additional water supplier for the Sindu Market. Subak is a traditional organizational institution that regulates agricultural irrigation in Bali (Geria et al., 2019; Tamara et al., 2020). The Denpasar area has a subak that plays an important role in agricultural irrigation. Subak is a socio-religious institution that plays a role in the success of the program in the field of agriculture. In Denpasar, there are 41 subaks spread over four sub-districts in Denpasar, one of which is Subak in South Denpasar, which has 10 subaks, so that in the implementation of an integrated food market with agriculture at the Sindu market, the subak system can be used as an alternative to water needs in agriculture, so that the existing potential around can be used to the fullest. Subaks in South Denpasar that can be used are East Intaran Subak, and Sanur Subak because this subak is the closest to Sindu Market, approximately 1 km.

Figure 9. East Intaran Subak and Sanur Subak

The existence of an integrated food market with urban agriculture certainly cannot be separated from the accumulation of waste, so that the application of a waste utility system in buildings max imizes the process of recycling waste independently (recycle) so as to minimize the amount of waste generated and distributed to the final disposal site (TPA). The decomposed organic waste then produces compost which is used as nutrition for agricultural crops. Inorganic waste is compacted with a hydraulic press machine and produces plastic cubes before being distributed to the landfill for recycling. Meanwhile, B3 waste is sorted at the WWTP before being dumped into the city roll.

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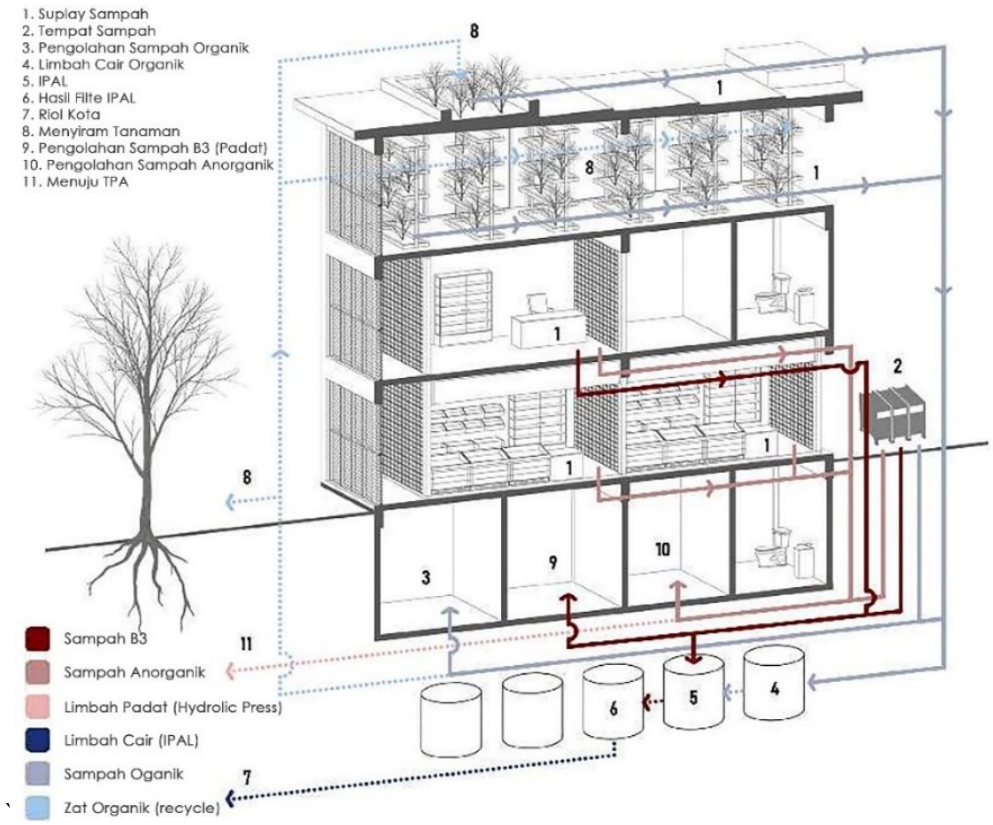
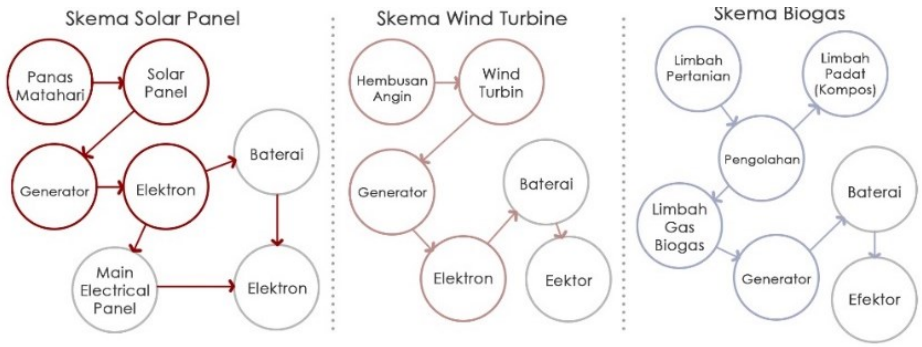


Figure 10. Application of the Waste and Waste System

The Sindu Market building must be able to apply the surrounding potential as an alternative energy source to meet building needs. The potential of the sun and wind is the most likely supporting component to be used as an alternative energy source due to climate factors, tropical weather and the condition of the Sindu Market which is located close to the coast so that the strength of the wind gusts can be used as potential. Coupled with methane gas from waste processing which can be used as alternative energy, it can help buildings have independent energy sources to meet their needs.



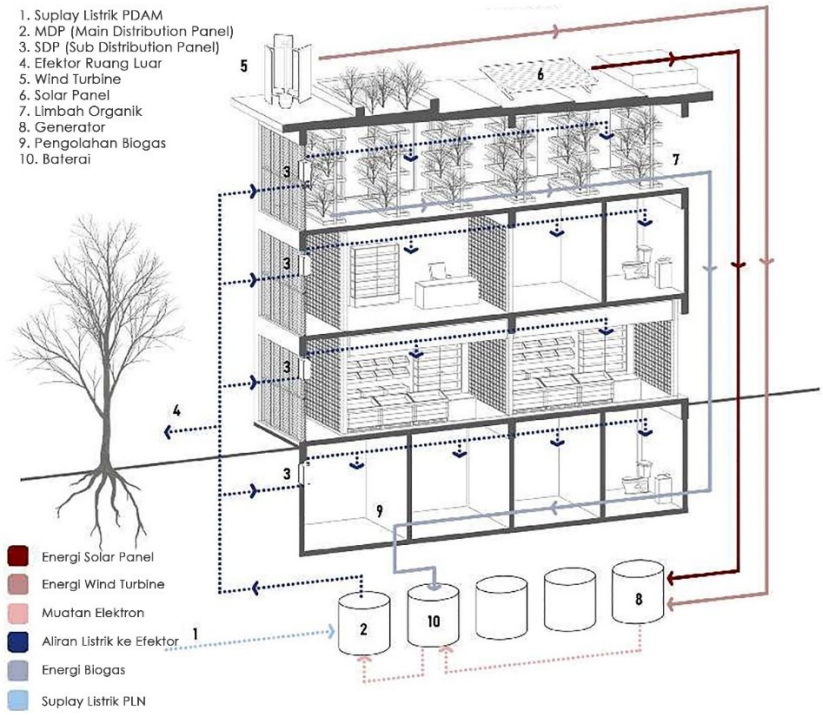


Figure 11. Application of Energy Application System

The readiness of tourism to be implemented at Sindu Market is reviewed using the concept of tourism product components 4A, namely attraction, accessibility, amenity, and ancillary.

Attraction

The existing attraction that can still be maintained at Sindu Market is the night market, where the night market at Sindu Market sells various kinds of culinary. In addition, for future development, it is used as an opportunity to grow tourism in Sindu Market, namely educational tourism by implementing urban farming (urban farming), at Sindu Market tourists are invited to be directed to educational tourism, by inviting market visitors who are not only shopping but can If they know how a process of food is grown or maintained until later it can be used as material for their consumption, indirectly they can learn more about appreciating the food they have purchased later.

Figure 12. Attraction Urban Farming

Accessibility

Sindu Market is located in the tourism area of Sanur Beach, so this Sindu Market is very strategic because it is a market that is located side by side with the tourism center. In terms of access to reach Sindu Market, it is fairly easy to be passed by two motorized vehicles such as cars and motorbikes. It is rare to find traffic jams on the main road to Sindu Market even though this road is used for

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access to beaches in Sanur. There is information on directions to Sindu Market to make it easier to find the location. For pedestrian access, it is necessary to think about going forward because the sidewalk to Sindu Market is often used for parking for two-wheeled vehicles and the lack of shade trees to reduce the heat during the day.

Figure 13. Sindu Market Accessibility

Amenities

As one of the tourist destinations in Bali, the Sanur Pati area has all the qualified tourism supporting facilities such as hotels, SPAs, villas, restaurants, and nightlife spots. Restaurants around Sanur can also be directed to cooperate in buying food products at Sindu Market, in addition to supporting agricultural facilities, this will also indirectly reduce the carbon chain from the distribution of food from outside Denpasar.

Figure 14. Supporting Facilities

Ancillary

Institutions in supporting the Sindu Market to become an integrated market with Urban Agriculture are the support from the Balinese government, especially in seeking the realization of these ideas, and also inviting the Denpasar Gardening community to garden on Urban Agriculture at the Sindu Market, so that their agricultural products can later be sold. directly at Sindu Market.

Figure 15. Denpasar Community Gardening

CONCLUSION

The condition of the food needs of Denpasar City which is still dependent on outside areas such as Tabanan, Bangli and Java Island makes Denpasar City still not independent of its own food needs, so there is a need for innovative ideas by making Sindu Market as a research locus into a Food Market that is integrated with Agriculture. Urban or Urban Farming system in Denpasar. So that the

results from agriculture can be marketed quickly so that the quality of food is fresher to the hands of consumers and the thing that has the most positive impact on the environment from the application of urban agriculture or urban farming is that it can reduce the carbon chain using excess energy in the food distribution process. In order to maximize agricultural yields, modern technology is applied in the agricultural system with the application of organic farming systems, namely hydroponic and aquaponic farming systems. The potential of the Sindu Market which is located in the tourist area of Sanur Beach makes this market can be directed to become a market based on educational tourism to learn to grow crops, so indirectly tourists visiting Sindu Market can participate in learning in the process of farming, picking and the process of buying food.. So that by implementing a n integrated food market with urban agriculture in Denpasar City, it becomes a solution in meeting food needs for Denpasar City in the future, so that it no longer depends on outside areas to meet food needs.

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