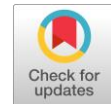


# Canopy garden model for synergy of land and sea area on Papan Island in Tojo Una Una Regency, Central Sulawesi



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## ABSTRACT

Pulau Papan is one part of the Togeian archipelago, Kabupaten Tojo Una Una. Initially, the Pulau Papan area was part of Tiga Pulau Village, Walea Islands District and Malenge Village, Talatako District, because the people who lived in this area came from these two villages. However, in 2011 Pulau Papan was expanded along with the increase in the number of family heads by 638 people and became part of the Kadoda Village area, Talatako District. The aim of this research is to build synergy in destination development between sea space and land/island space by creating regional nodes that are beautiful and function for the public. The public function that is formed can be utilized by the community both as a public space and a functional area that is beneficial for the residents of Pulau Papan, for example a green area containing vegetables for the residents. This vegetable green area is needed because of the limited vegetables on Pulau Papan. The solution proposed in this research is to design a canopy garden model that can become a green structure in the Pulau Papan area. The canopy garden will function to synergize the arrangement of land and sea areas on Pulau Papan. This canopy garden modeling was obtained through a survey process of the Pulau Papan area, then determining the meeting points for the mobility of residents on Pulau Papan. The public function that is formed can be utilized by the community both as a public space and a functional area that is beneficial for the residents of Pulau Papan, for example a green area containing vegetables for the residents.

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## 1. Introduction

Central Sulawesi Governor Regulation 35 of 2016 and the RIPPARDA of Tojo Una una Regency state that Pulau Papan in Kadoda Village in Talatako District, Togeian Islands will be made a Priority Tourism Destination (DPP) for 2016-2021. Pulau Papan is one of the 50 islands in the Togeian Islands which are National Tourism Destinations regulated in PP No. 50 of 2011 concerning RIPPARNAS 2010-2025. Therefore, the development of water tourism potential needs to be accompanied by the arrangement of land/island areas so that land tourism which is in direct contact with residential areas is able to synergize with the development of water tourism. In order to bridge the development of the area as a unified destination area, it is necessary to carry out research regarding regional planning that synergizes between water and land areas on Pulau Papan. It is hoped that the synergy between water and land areas will provide benefits to society.

Pulau Papan is one of the islands in the Togean archipelago with an exotic natural panorama, rich diversity of marine life and diverse social life. The people of Pulau Papan consist of various tribes such as Bajo, Togean, Gorontalo, Kaili and Bugis with the occupation of the majority of the people there being fishermen and farmers. Pulau Papan is one of the many islands in Togean National Park, Pulau Papan is precisely 1 of 3 hamlets on Pulau Papan and is one of the mainstay tourist destinations in Tojo Una Una district and even Central Sulawesi. The problem on Pulau Papan is that the beauty of the landscape of Pulau Papan is in fact not in line with the arrangement of the regional infrastructure where the people who inhabit the island depend on fishing for their livelihood. The biggest challenge in planning the land area of Pulau Papan is the narrow land area and barren coral reefs. Apart from that, the limited area on the island causes a lack of public areas for people to interact socially. The development of the area into a tourist destination should have a positive impact on the arrangement of the area's infrastructure as a tourist destination.

The aim of this research is to create a model for planning the Pulau Papan area to create synergy between sea space and land/island space through structuring regional node points that are beautiful and have public functions. At public meeting points, canopy gardens will be built which can function as a green area that can be utilized by the people of Pulau Papan, for example an area for growing vegetables for residents to meet the limited vegetables on Pulau Papan. The feasibility study that was carried out was to carry out pre-research to obtain an initial picture of the condition of the Pulau Papan area in Tojo Una Una Regency. The condition of the Pulau Papan area is characterized by arid land with limited land. The arrangement of infrastructure on Pulau Papan also needs to be improved. This can be seen from several areas in the Pulau Papan area that can be arranged so that they add value to the social interests of the community on Pulau Papan. The scheme proposed in this research is a maritime scheme to implement technology for 3T areas (frontier, remote, underdeveloped) in this case Pulau Papan as a small island that has marine tourism potential that can be developed even better. The development of technology and management of Pulau Papan in this research was implemented by proposing a model for structuring the land area of Pulau Papan which could have multifunctions. This arrangement model will form a synergy of land and sea infrastructure on Pulau Papan. Marine spatial planning is still homework for Indonesia, especially in organizing and planning coastal areas and small islands. Planning and development are important steps, so that marine spatial planning (RTTL) does not go wrong. The challenge in regional planning is to develop and manage the resources on the island in a sustainable manner, which includes the economic, environmental and social sectors. In practice, these three pillars often conflict and are unbalanced. Pulau Papan in Tojo Una-Una Regency, Central Sulawesi has a charm that is no less beautiful than the islands of Bali or Lombok. Pulau Papan is a very beautiful and unique island that is worth visiting, where most of the residents' houses are not on land, but houses on stilts above the sea. Usually, islands inhabited by humans will have their beauty destroyed. But this is not found on the island. The sea around Pulau Papan is still very well preserved. There are lots of coral reefs, lots of fish, and the water is clear [1].

Research related to island area planning has been carried out in various regions in Indonesia [2]–[11]. The arrangement of land areas on small islands is an important area of research considering the need for land areas on islands to be arranged for the sustainability of life on the island [12]–[14]. Due to the differences in land and sea areas on the Island, it is necessary to create synergy between land and sea areas on the Island so that a unified area is created that is interrelated to support the lives of the people on the Island. It is hoped that this arrangement will add to the social values of the island's diverse communities. Green areas on the island need to be reorganized to balance the greenness of the sea area due to its marine biota. The green area approach on Pulau Papan needs to be done because the island

consists of coral and rocks so it feels barren, this can be overcome by building green areas [13]–[19]. Details of green areas that can be developed on the island are the placement of canopies which can function as green areas [13], [16], [19]–[25]. The existence of a canopy in the arrangement of an island area can have various functions, both as a green area that can be used as a place to grow vegetables and as a place for interacting with public spaces.

## 2. Method

### 2.1. Data Collection

The research method will begin with data collection. Data collection was carried out by means of surveys and field observations in the Pulau Papan area. This activity was carried out to determine facts in architecture including site, context and users (Pulau Papan community). Next, a literature study was carried out regarding the arrangement of land areas on the island and the canopy model that will be proposed in this research. Based on the results of surveys, observations and literature studies, facts were identified in the Pulau Papan area, Kab. Tojo Unauna. The facts obtained became a reference for identifying public meeting points on Pulau Papan. The identification results were analyzed to be able to identify public meeting points in Tojo Unauna and identify facts in the Pulau Papan area, Kab. Tojo Unauna. After the identification process, a sketch of the area and proposed canopy was carried out in the Pulau Papan area, Kab. Tojo Unauna. Research method show as Fig. 1.

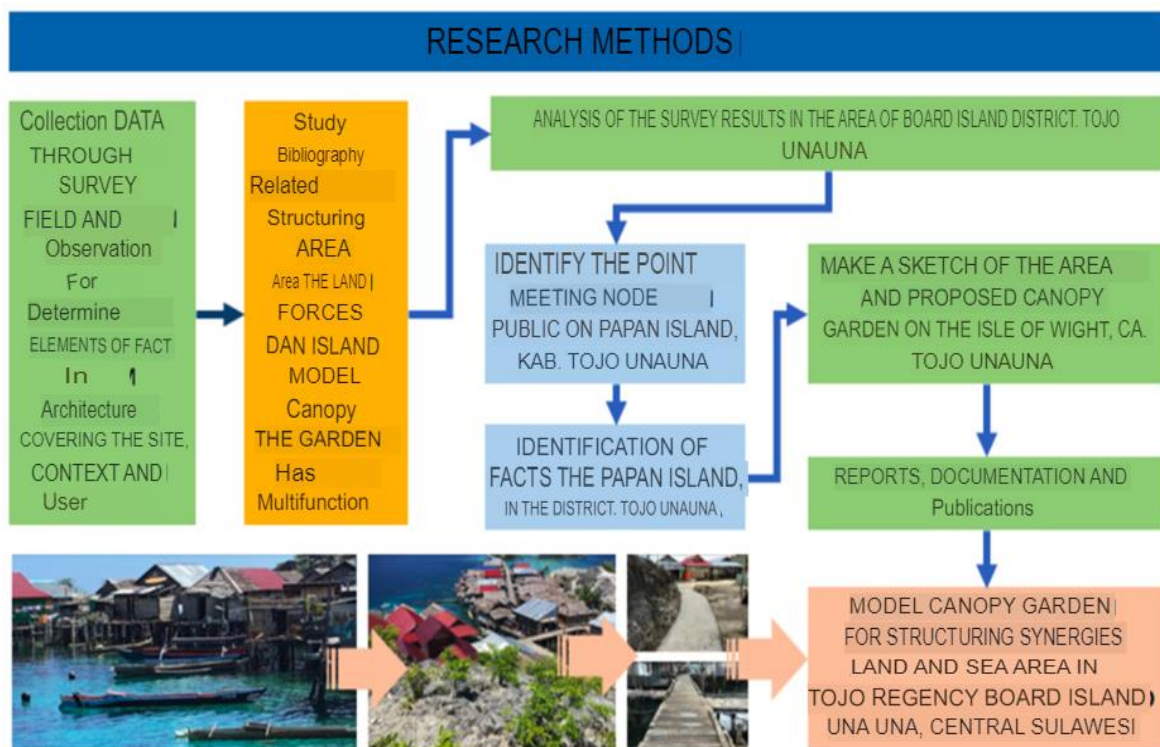


Fig. 1. Research Method

The method for sketching areas is done by examining the results of identification, concept development involving humans, activities and interaction platforms in the Pulau Papan area to obtain a space/area program that will become a spatial pattern in the Pulau Papan area, Kab. Tojo Unauna. The spatial pattern will be a reference in planning the canopy placement plan in the Pulau Papan area. The

initial design forms will be evaluated to obtain modifications to other canopy shapes. Stages of sketching the area and proposed canopy on Pulau Papan, Kab. Tojo Unauna can be seen in Fig. 2.

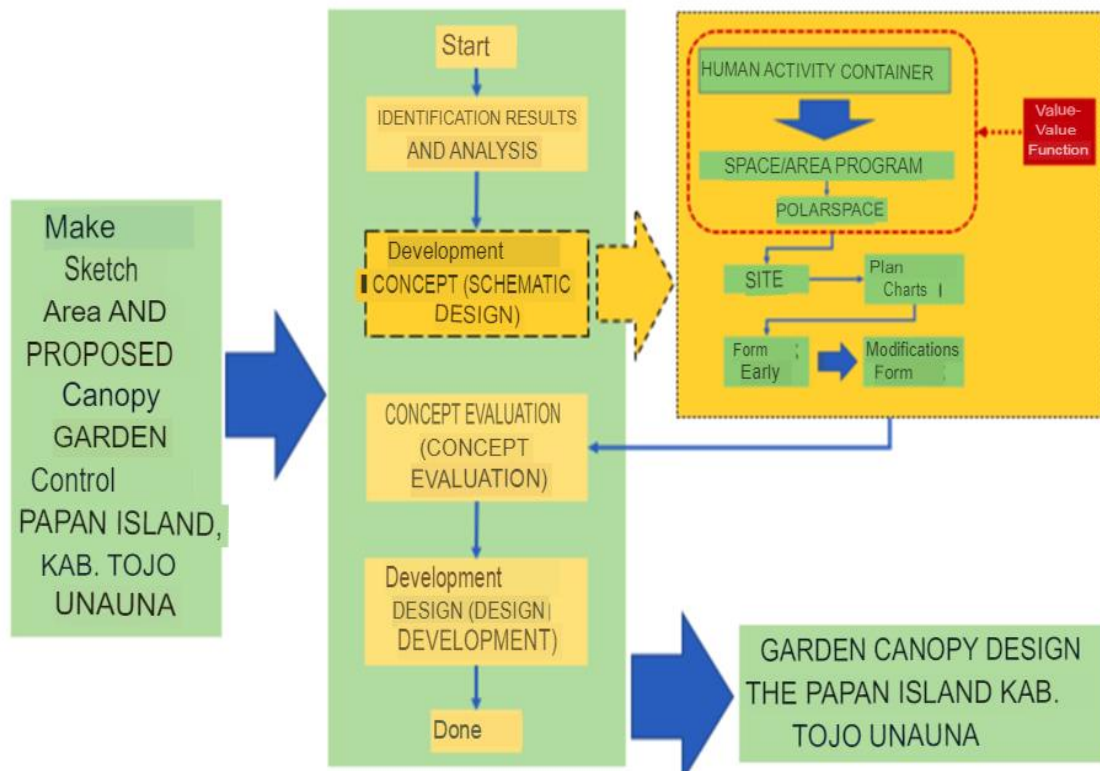


Fig. 2. Proposed Method

This research will be carried out for 10 months, starting with a location survey of the area on Pulau Papan, Tojo Unauna Regency. The survey was carried out to obtain an overview of the location and condition of the community on Pulau Papan, Kab. Tojo Unauna. The survey results obtained will be used as material for mapping analysis of the Pulau Papan Area, Kab. Tojo Unauna. The mapping produced using survey data will be analyzed in more detail to produce an analysis of regional potential in the form of areas that can be used as public meeting nodes. The node areas obtained become areas for the embodiment of the canopy design. The areas of the canopy embodiment nodes are determined and observed for suitability of the design and the area where the canopy will be placed.

Next, canopy distribution was carried out based on area mapping on Pulau Papan, Kab. Tojo Unauna. This distribution is carried out to build synergy in the arrangement of land areas with sea areas so that narrow and barren land areas can balance the natural beauty of the sea. After determining the distribution of the canopy, continue with a sketch of the canopy model to be built. All activities will be documented, reported and published in an Indexed International Journal.

### 3. Results and Discussion

The research location is in the Togean Islands National Park, specifically located in Kadoda Village, Talatako District, Tojo Una Una Regency as show in Fig. 3. Kadoda Village is one of 6 sub-villages in Talatako District, Tojo Una Una Regency. Kadoda Village itself has a total of 3 hamlets, 2 of which are located on the coast of Malenge Island and the other hamlets are on a different island called Pulau Papan. The research location as show in Fig. 4.

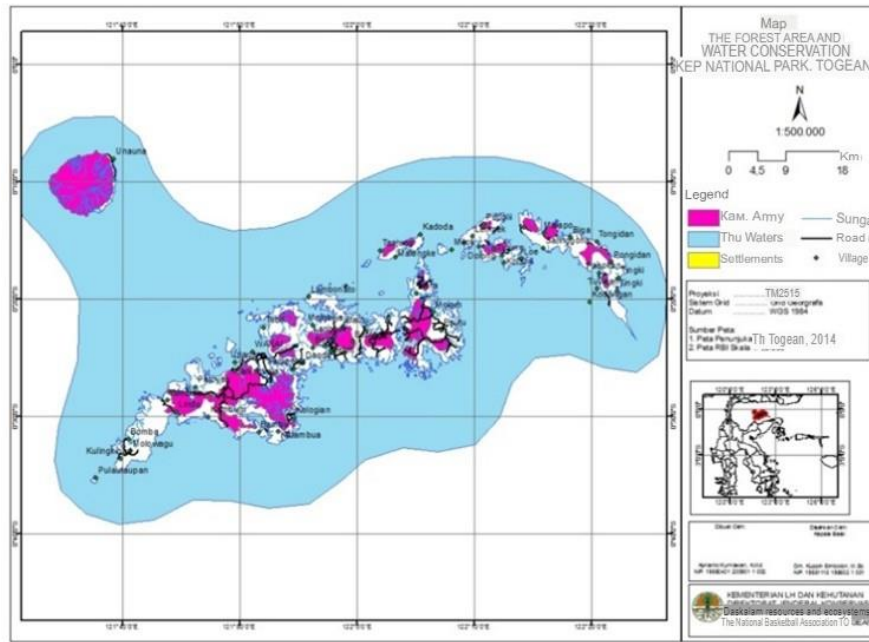
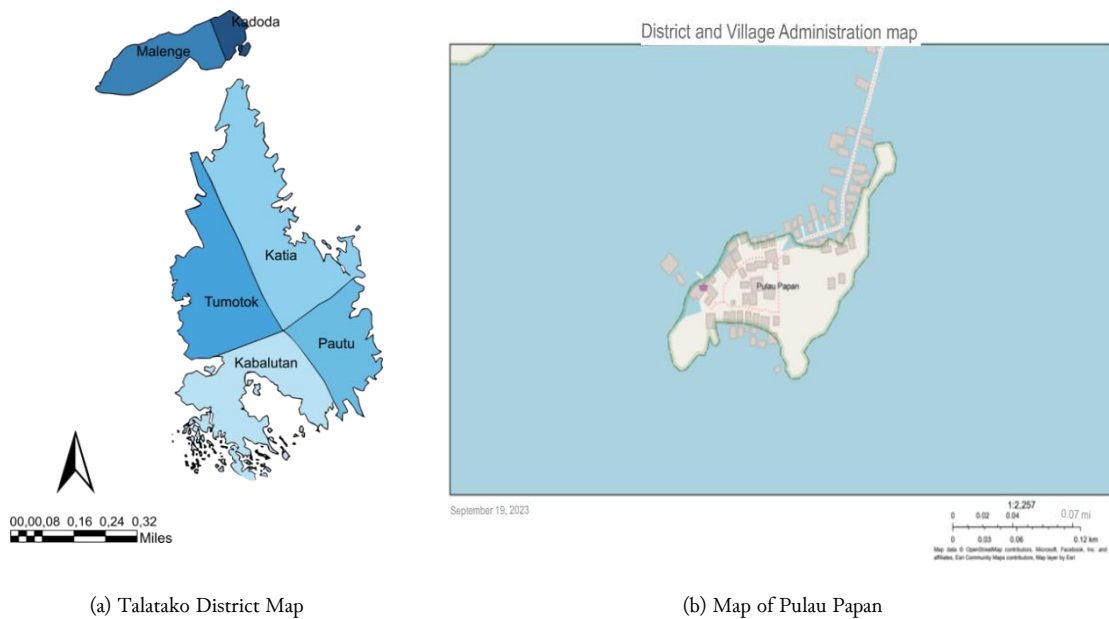


Fig. 3. Map of Togeian Islands National Park (TNKT)



(a) Talatako District Map

(b) Map of Pulau Papan

Fig. 4. The research location

The following are the administrative boundaries of Pulau Papan:

- To the north it borders 2 hamlets of Kadoda village.
- b. To the west it borders the sea.
- c. To the south it borders the sea.
- d. To the east it borders Malenge Island

The population of Kadoda Village in 2018 was 510 with 252 males and 258 females. Currently the main livelihood of the community is farming with a sub-sector livelihood as fishermen.



Pulau Papan is one of the places with interesting existing conditions, which is located in Tojo Una-una Regency, Talatako District, Kadoda village, Togeana Islands National Park. The site is adjacent to the Pulau Papan community settlement with a total area of 1.17 hectares. This island is a coral island surrounded by water and covered with coral reefs. Site area show as Fig. 5.



Fig. 5. Site area

Tapak is surrounded by other islands in the surrounding area. The boundary conditions on the site can be seen in the Fig. 6.

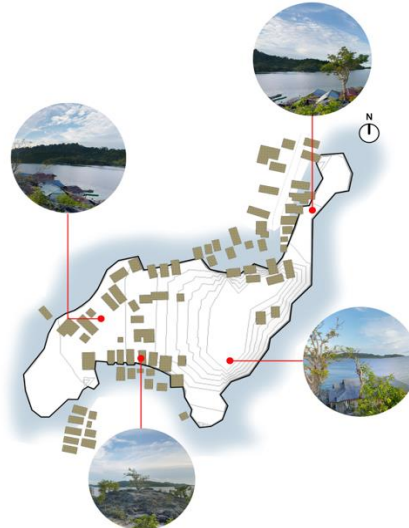


Fig. 6. Site boundary conditions

It is an island surrounded by water and there are several islands around it. The water conditions around Pulau Papan have clear blue water, and white sand with various types of marine life and coral reefs in it.

This analysis concerns the direction of view of users of the facility functions located on the site by considering wind and solar conditions, existing, circulation, reach, dimensions and potential so that the best viewing direction can be designed properly. View to the west and south of the site as show in Fig. 7.



Fig. 7. View to the west and south of the site

#### 4. Conclusion

The conclusions obtained in this research are; 1) The canopy garden will function to synergize the arrangement of land and sea areas on Pulau Papan. This canopy garden modeling was obtained through a survey process of the Pulau Papan area, then determining the meeting points for the mobility of residents on Pulau Papan. The public function that is formed can be utilized by the community both as a public space and a functional area that is beneficial for the residents of Pulau Papan, for example a green area containing vegetables for the residents; 2) Urban green open space is part of the open spaces of an urban area filled with plants and vegetation. The benefits generated by urban green open spaces are security, comfort, welfare and beauty of the urban area; 3) Synergy in destination development between sea space and land/island space by creating regional nodes that are beautiful and have public functions. The public function that is formed can be utilized by the community both as a public space and a functional area that is beneficial for the residents of Pulau Papan, for example a green area containing vegetables for the residents. This vegetable green area is needed because of the limited vegetables on Pulau Papan.

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#### Declarations

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