Proceedings of International Conference : Problem, Solution and Development of Coastal and Delta Areas
Semarang, Indonesia – September 26th, 2017
Paper No. C-58

Public Infrastructure Problem For Developing Tourism Destinations In Coastal And Small Islands Areas Case Study In Karimunjawa Archipelago

Jamilla Kautsary
Sultan Agung Islamic University, Department of Urban and Regional Planning
Jl. Raya Kaligawe Km.04, Semarang, Jawa Tengah, Indonesia
j_kautsary@hotmail.com; jkautsary@gmail.com

Abstract - Karimunjawa is one of the archipelago in the north of Java island. It has uniqueness of nature. In these archipelago, five forms of ecosystems can be found. One of the exciting ecosystems and the main attraction of tourists who come to Karimunjawa is Coral Reef. The number of tourists who visit to Karimunjawa is increase along with the ease of transportation and the many choices of modes to Karimun although in the west monson This condition would bring both positive and negative impacts. The increase number of tourists who visit to Karimunjawa has not been followed by the readiness to provide adequate infrastructure.It is causing the emergence of various problems in Karimunjawa. The aims of this study is to reveal the problems of public infrastructure in developing tourist destinations in coastal areas and small islands. This research uses rationalistic deductive method, with empirical description analysis technique. The findings obtained from this research are the emergence of environmental issues such as water supply, electricity and telecommunication and waste management problems.

Keywords: *public infrastructure, tourism , Karimunjawa*

1. Introduction

1.1. Background

Karimunjawa archipelago is a group of islands (22 islands) and it is located in the Java Sea with an area of 111,625 Ha. Karimunjawa archipelago (111,625 Hectare) based on Minister of Forestry and Plantation Law No.78 / KPTS-II / 1999 designated as National Park with the name of Taman Nasional Karimunjawa. In 2001, part of Karimunjawa area of 110,117.30 Hectare was designated as Nature Conservation Area with Minister of Forestry Law No.74 / Kpts-II / 2001 (Doc. Zonasi TN Karimunjawa, 2012).

Karimunjawa National Park and its surroundings, according to Government Regulation No. 50/2011 about the National Tourism Development Master Plan (RIPPARNAS 2010 - 2025) was desided as the one of the National Tourism Strategic Area (Kawasan Strategis Pariwisata Nasional or KSPN) in Indonesia. Achievements to the location of KSPN Karimunjawa and surrounding areas are now becoming easier. The number of tourists, who visit the National Park, is increasing. Data from PBS Jepara District (2016) shows the number of tourists who come is 92,115 tourists and 91.99% of them are local tourists.

The number of tourists would need the support of facilities and public infrastructure such as electricity, drinking water, waste menegement and telecommunications. As a small islands cluster that its separate from mainland, Karimunjawa has limitations in providing this infrastructure. Electricity, water, garbage, and telecomunication system are often become major issues in the development effort of this area, as one of the national tourist destinations. The factual condition regarding public infrastructure through this research is expected to be explored more deeply, so that can be found alternative problem solving.

1.2. Aims of Study

The aims of this study is to reveal the problems of public infrastructure in developing tourist destinations in coastal areas and small islands.

1.3. Ruang Lingkup Kawasan

The scope of the study is limited to Karimunjawa National Park (Figur 1)

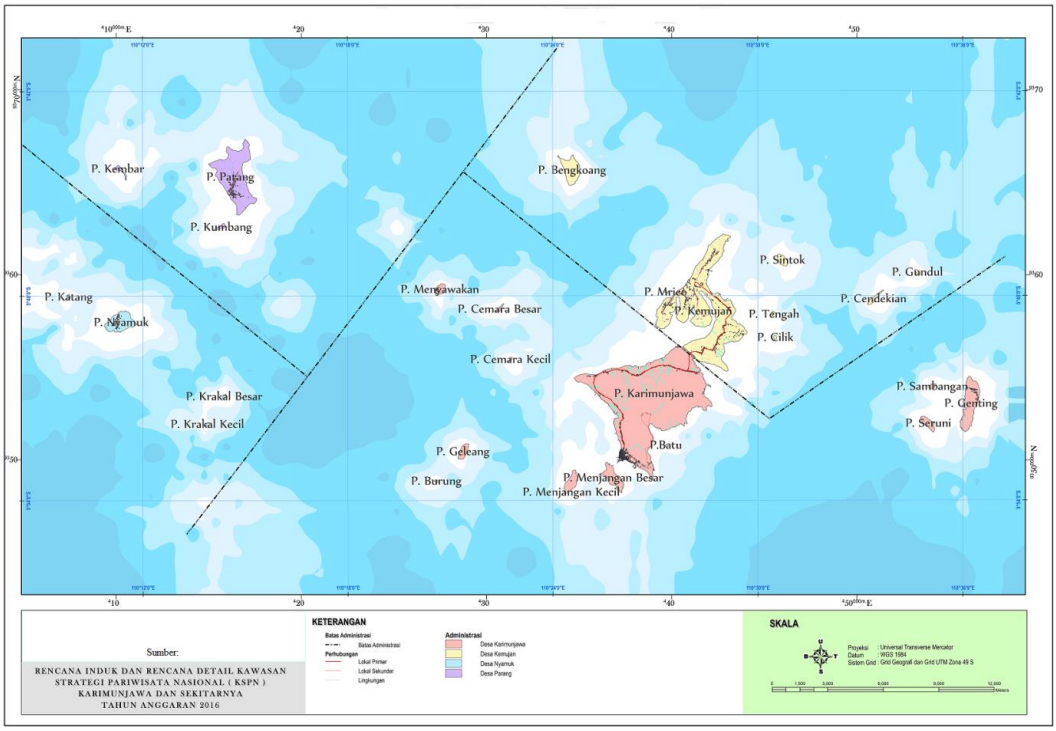

Figure 1: Study Area
(Source: Doc. Of National Tourism Development Master Plan (RIPPARNAS 2010 - 2025)

2. Theoritical Review

2.1. Development of Pariwsata Destination

Tourist attraction according to Pitana, I Gde and Surya Diarta, I Ketut (2009) is a place where visited with a significant transit time by someone when compared to other places traversed during the travel period. While the development of tourism destinations according to Swarbrooke, John (1996) is a series of efforts to realize the integration in the use of various tourism resources through the integration of all forms of aspects outside of tourism, whether directly related to or indirectly related to tourism development. The development of this tourist destination can be done with several components (RR, Dadang, 2016), are:

1) Tourism Destination Development, which includes:
   a. Diversification of tourism activities;
   b. Visitor Management;
   c. Aware of the tour.
2) Accessibility that includes:
   a. Facilities (modes of transportation of roads, rivers, lakes and crossings, sea and rail transport);
   b. Infrastructure (seaports, airports, stations); and
   c. Transportation system (route and schedule information, ICT, ease of reservation mode).

3) Amenitas which include:

a. Public utilities (Electricity, Water, Telecommunication, waste management);
b. General Facilities (security, banking finance, business, health, sanitation and hygiene, especially for people with physical disabilities, children and elderly, recreation, parking lot and worship);
c. Tourism facilities (accommodation, restaurant / restaurant, tourist information and services, immigration, TIC and e-tourism kiosk, tourism police and tourism task force, gift shop, tourist information board-tourist traffic signs, landscapes) ;
d. Standardization and Certification of Tourism Business.

2.2. Coastal Areas and Small Islands

Coastal area is a land area that borders the sea. Land boundaries include flooded and unlogged areas that are still affected by marine processes, such as tides, and seawater intrusion; while boundaries in the sea are areas that are affected by natural processes on land, such as sedimentation and the entry of fresh water into the sea, as well as those affected by human activities on land (Raharjo Adisasmita, 2006).

The island is a land of dead air. The concept of small islands and gusus small islands according to Sutrino Anggoro (2008):

a. Small Islan is an island which it size is less than or equal to 2000 km2 or its width is less than 10 km, with a population less or equal to 200,000 people. There are also an islands that is less than 1000 km2 wide and less than 3 km wide, the island is categorized as a very small island;
b. The Small Island Islands is a collection of islands that interact with each other in terms of ecological, economic, social and cultural;

Characteristics of small islands in Indonesia further according to Sutrisno Anggoro, 2008 are:

a. Apart from the Mainland so as to sharpen;
b. Freshwater resources are limited, where the catchment area is small;
c. Be sensitive and vulnerable to external influences;
d. It has a number of endemic species which, according to the ecologically high;
e. Water area > land area, isolated from the mainland;
f. Waves caused by 2 factors (wind and tidal season)
g. Waves on the surface of the ocean are dominated by wind-induced gravitational waves
h. Have 2 seasons (rain and dry) which is limited by the transition season
i. The socio-cultural characteristics of society differ from the larger islands as a consequence of the cultural and environmental evolutionary process;

3. Methodology

The research method used in this paper is rrationalistic deductive. This deductive method is more likely to test general theory into cases. The theory in this deductive method, according to Alexander, Ernest, R (1986), is a framework that must be used to create a good research structure. Data in this research more use primary data and analysis technique used is discrete of empiri.

4. Data and Analysis

Karimunjawa National Park has geographically located at coordinates 5 ° 40'39 "- 5 ° 55'00" LS and 110 ° 05 '57 "- 110 ° 31' 15" BT. This area is located in District Karimunjawa, Jepara Regency, Central Java Province. Karimunjawa National Park has a total area of 111,625 hectares which consisting of terrestrial area (1,285.50 Ha), and

waters area (110,117.30 Ha) and consists of the 22 islands. In Karimunjawa archipelago there are four inhabited islands (Karimun, Kemojang, Parang and Pulau Nyamuk). Totol the number of residents in four inhabited islands are 10.745 people (Source: Central Bureau of Statistics Karimunjawa District, 2016

Table 1. Total Population Each Village in Kecamatan Karimunjawa Year 2015

No.	Village	2015
1	Karimunjawa	5.395
2	Kemojan	3.413
3	Parang	1.289
4	Nyamuk	648
	Total	**10.745**

Source: Central Bureau of Statistics Karimunjawa District, 2016

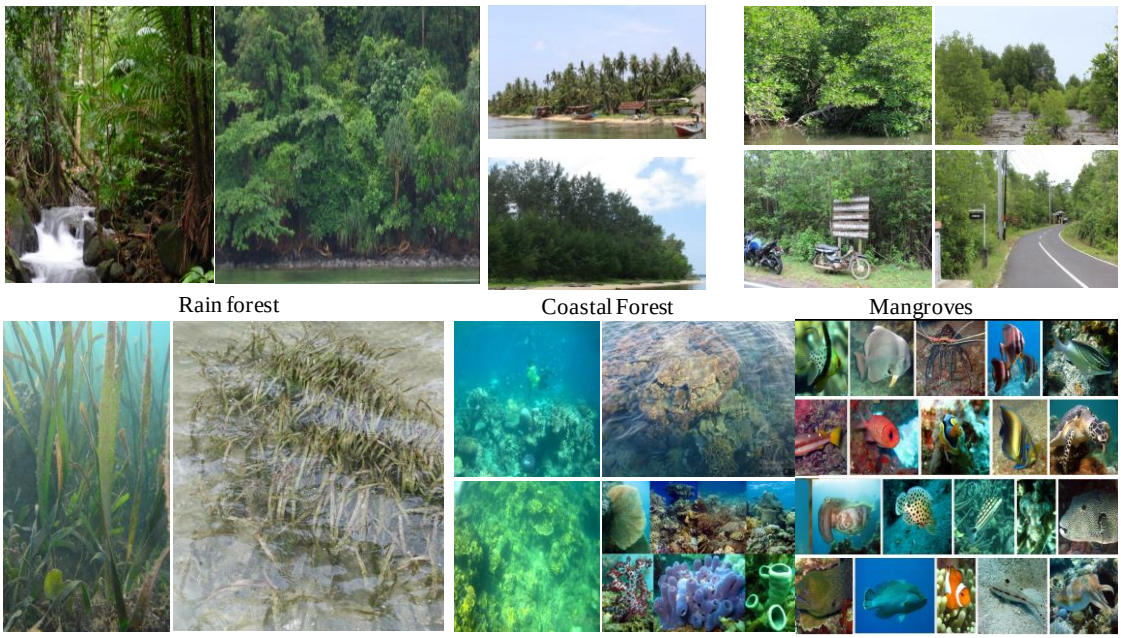

Figure 2: Five Ecosystems at Karimunjawa Island
Source: Mangaraja Gunung, etc (2010) and field survey, 2016

In addition to keeping the uniqueness of the above, Karimunjawa archipelago is separated from the mainland as far as 80 km, has many limitations. The 80 km distance separating the Karimun Jawa Islands from Java Island has such an impact as the difficulty of public service infrastructure networks such as electricity, water, garbage and telecommunications were developed to reach the islands.

4.1. Electictcity

The fulfillment of electricity demand for Karimunjawa archipelago is fully supplied by non State Electricity Company (PLN). Electrical energy for Karimun islands is service by Diesel Power Center (PLTD) managed by Jepara regency government. This PLTD serve Kemojang, Karimunjawa, Nyamuk and Parang Island. In 2016 from 3.199 Houselold in Karimunjawa, which has been served by PLTD network 2.153 household, so there are still more than 1000 households who have not got electricity service. Households who have received electricity service on the main island

(Kemojan and Karimunjawa) are not able to enjoy electricity for 24 hours due to various problems, such as technical and operational of the diesel. Especially for Parang and Nyamuk Islands for each household still get 160 watt capacity. Electric capacity for households after being added with solar power in is 250 watt. This limited supply of electricity causes social and economic activities of people and tourists to become very limited in the evenings. The community to serve the needs of tourists at night, especially for the needs of culinary tour at night evolved in the plaza Karimunjawa, using electricity supply from a small generator.

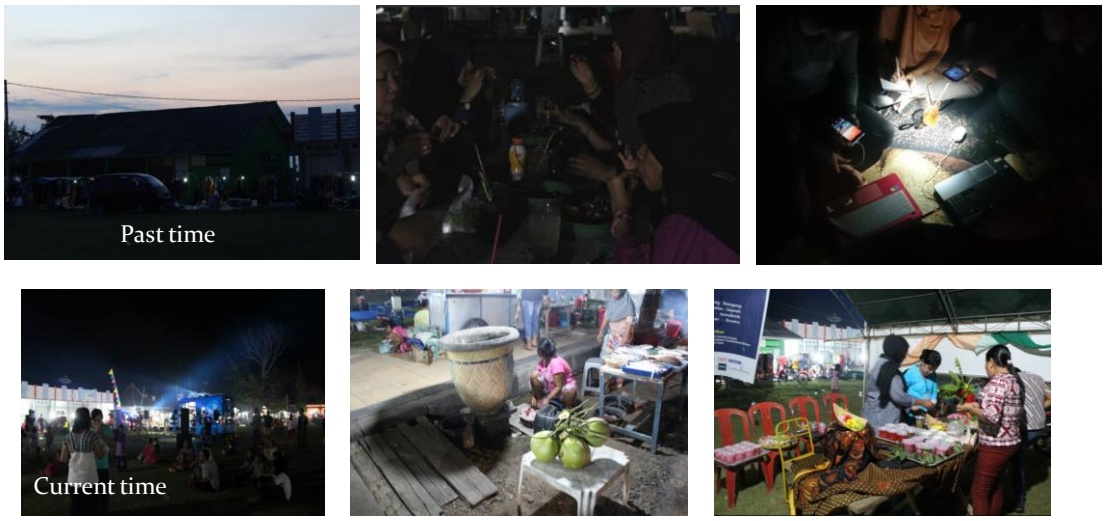

Figure 2: More Economic And Social Activities That Can Be Developed By Improvng Electricity Service
Source: Field Survey, 2016-2017

Table 2. Availability of Elictricity Facility in Karimunjawa, 2015

No.	Desa/Villages	State Electricity Company	Non State Electricity Company
1	Karimunjawa	-	1.378
2	Kemojan	-	704
3	Parang	-	397
4	Nyamuk	-	202
	Total	**-**	**2.681**

Source: Central Bureau of Statistics Karimunjawa District, 2016

4.2. Telecomunication

The telecommunication network at Karimunjawa is still very limited. Network telecommunication infrastructure only serves at Karimunjawa Island as a main island. Most communication devices are private telephones by utilizing wireless network (through telecommunication tower / BTS signal). However, this sophisticated means of communication has not reached other islands and public phone is also only 1 in Karimunjawa Village Office. Telecommunication network by utilizing satellite channel of BTS tower is still not all providers, only provider of Telkomsel and Indosat and they service only morning at 8 to 5 o'clock.

Table 3. Availability of Telecommunication Facility in Karimunjawa, 2015

No.	Desa/Villages	Jenis Sarana Komunikasi		
		Publict Tlp	Private Tlp	Internet Corner
1	Karimunjawa	1	-	-
2	Kemojan	-	-	-
3	Parang	-	-	-
4	Nyamuk	-	-	-
	Total	**1**	**-**	**0**

Source: Central Bureau of Statistics Karimunjawa District, 2016

4.3. Water

Clean water for small islands is one of the big problems. Small islands do not have a good water recharge area same mainland. Karimunjawa Island does not have ground water basin, so rain water can not be saved. As a result rainwater is only stored in the thin humus soil on the surface, and appears at some point and a small river in karimunjawa (Table 4.3). This water capacity certainly can not servise the needs of Karimunjawa community either. The increasing number of tourists also continues to be followed by an increase in the number of lodging infrastructure development and artificial tourist attraction that sometimes does not take into account the carrying capacity of the land. The water debit run off at the rain time becomes increased and causes flooding. While at drysesion the amount of water discharge becomes decreased. This condition would have a big impact if not calculated from the moment, while the number of wizards continues to rise. To meet the water needs of most large hotels in Karimunjawa start use deep groundwater retrieval. This condition will bring a negative effect for the environment of this archipelago in the future.

Table 4. Water Springs in Karimunjawa

No.	Name of water springs	Location	Zona	Infrastructur	Benefit Recipients (head of family)
1.	Cikmas	Cikmas, Karimunjawa	Zona Rimba	Small pond, ± 2 m3 on the community land	21 household connections
2.	Nyamplungan 1	Behind Musholla, Nyamplungan, Karimunjawa	Individual site (local community)	Small pound ± 3 m3 (PNPM Program Karimunjawa)	11 household connections
3.	Nyamplungan 2	Behind Mrs. Nur/Almi's House (Nyamplungan, Karimunjawa)	Individual site (local community), water come from river at Rimba Zone	4 distribusion pipes	10 household connections
4.	Nyamplungan 3	Behind Mrs. Nur/Almi's House (Nyamplungan, Karimunjawa)	Rimba zone	-	-

No.	Name of water springs	Location	Zona	Infrastructur	Benefit Recipients (head of family)
5.	Makam Nyamplungan	Nyamplungan, Karimunjawa	Zona Religi, Budaya dan Sejarah	Small pond with the size 1,5 x 3 x 1,5 m, and distribution pipes	24 household connections
6.	Jung Gunung, Alang-Alang	Jung Gung, Alang-alang, Karimunjawa	Individual site (local community), water come from river at Rimba Zone	Small pond	4 household connections
7.	Legon Goprak Atas	Legon Goprak, Karimunjawa	Individual site (local community), water come from river at Rimba Zone	Dam and small pond	50 household connections
8.	Legon Goprak Bawah	Legon Goprak, Karimunjawa	Individual site (local community), water come from river at Rimba Zone	Pipe	77 household connections
9.	Legon Boyo	Jatikerep	Individual site	-	4 household connections
10.	Legon Goprak Atas	Legon Goprak, Karimunjawa	Individual site (local community), water come from river at Rimba Zone	-	
11.	Legon Goprak Atas	Legon Goprak Alang-alang	Rimba zone	Terdapat 1 selang peralon ukuran ¾ inchi	3 households, (Asri, Mujiono, Hardi Hotel)
12.	Legon Lele	Legon Lele Karimunjawa	Pemanfaatan Darat (up land) Zona	Terdapat bak penampung/reservoir dengan ukuran panjang 330 cm, lebar 325 cm, dan kedalaman air 170 cm, tebal beton bak 23 cm.	900 households
13.	Alang-Alang	Alang-alang	Rimba zone	Pipes	

Source: National Park of Karimunjawa, 2016.

4.4. Waste Manegement.

Garbage and waste, is the big problem in Karimunjawa Archepelago. The amount of garbages that carried by the wave and stops on the island is getting more and more, as

well as the amount of waste generated from the tourist activities. Garbage management and recycling of garbage have not existed yet. Garbage processing facilities also have not been built despite the existing land area of 1 hectare. Can be imagined if the waste treatment facilities are not immediately built, then the beauty of Karimunjawa nature will be covered by mountains of untreated waste. This condition will certainly bring damage of coral reefs, because most of the waste will go into the sea. This waste collecting is mostly found on the Main Island (Karimunjawa), Kemojang and two small islands Menjangan Besar dan Menjangan Kecil, because these four islands are most visited by tourists.

Coral reefs are the main purpose of tourists to come to karimunjawa. The conditions of coral reefs are many that are broken, die or bleached. From the results of research Fakhrizal Setiawan (2016), hard coral reef coveredcondition 2016 decreased compared to 2013. The decrease of hard coral cover was due to coral reefs caused by coral bleaching occurring in the period 2015 – 2016. This condition also coused byy global warming and tourirm activities that make broken during they were diving.

Figure 4: Wastewater, Garbage Specialy Plastic And This Become The Big Problem When The Waste Inputs From Land Into The Ocean

5. Conclusions and Suggestions

The conclusion can be drawn from the analysis about the condition of public infratruktur service are: the public infrastructures are very important role for the development of tourism in Karimun, and condition is still very minimal (infrastructures can't suport local comunity based need and tourism activitie that are developing in Karimunjawa archipelago). This condition causes environmental problems in Karimunjawa increase. Karimunjawa Archipelago needs a series of attention to continue its life. Construction of garbage treatment plants and reservoirs for water reservoirs should be done immediately; increasing human resources to manage renewable energy networks is also urgently needed.

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