IDENTIFICATION OF PHYSICAL CHANGES OF PRE AND POST-RECLAMATION LAND IN SERANGAN ISLAND

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ABSTRACT

Serangan Island is an island that has strong distinctive features, because of reclamation in 1995-1998 has changed the physical conditions of Serangan Island. Before 1995, it had 111 hectares of land, after 1998 it had 481 hectare. Land use zone and ownerships are also discussed in this research. In pre-reclamation time, there is only local people ownership, while in post reclamation, it has been divided into two ownerships that is separated by a canal. The land on the left side of the canal is belong to local inhabitant, while on the right side of the canal is belong to PT. Bali Turtle Development Island (PT. BTID), who has done the reclamation project. Based on that phenomena, researchers will identify the land physical changes in pre and post-reclamation by using the descriptive qualitative research method. The type of the data used is observation and survey research technique. The instruments used are camera, recorder mobile phone, mapping tools that is totally stationed, interview guidance that take the sample by purposive sampling method. The results of this research are mapping comparison of land changes in pre and post-reclamation of the area, dimension, location and land use. The conclusion of this research is to get the existing models of physical land change of pre and post-reclamation that is presented in thematic maps

Keywords:* *Physical Change; Landuse; Pre and Post-reclamation

A. INTRODUCTION

The implementation of this research is based by an exciting phenomenon about the expansion of the land with reclamation at the south part of Denpasar, in the Serangan Island to be exact. The reclamation is done with a purpose for the development of tourism in Serangan Island. The reason why Serangan Island is chosen for the reclamation and tourism development because Serangan has potential of near to the NgurahRai International Airport, Benoa Bay, NgurahRai Bypass, Mangrove Forest potential, fishery, seaweed cultivation, and as the habitat for turtles to lay their eggs so that's why Serangan is also called Turtle Island. Based on the governmental permit of Bali Province, the developer PT. Bali Turtle Island Development (BTID) have done the reclamation of Serangan Island by hoarding the sea areas so the land area is risen up with a purpose to build tourism facilities, such as: golf course, lagoon, resort; for the water recreation park are yacht club, beach club house; to construct super lot like villas; tourism supporting facilities, also marina ferry. But, the project is stopped in 1998 because of monetary crisis factor, politic, cultures, and other factors. (Woinarski. L., 20002 : 09)

Based on the description above, there are facts that the reclamation from PT. BTID has changed all the aspects of life of Serangan Island community marked with the physical change of Serangan Island. The physical change happened in macro and micro of detailed landuse change pre and post-reclamation. The change is divided into 3 types, such as: area and size changes, land position changes, and also land use changes.

The expected result from this research is the comparison and the mapping of the land physical change of pre and post-reclamation whether it is the change of area, size, the land use type, and the location. The area change comparison will be described by Micro and Macro. By Macro, will be described the reclamation reconstruction of pre to post-reclamation. Menawhile, by Micro, will be described per case of the detailed physical condition change. So, as the result the existing model of physical condition change between pre and post-reclamation in Serangan Island will be obtained.

B. LITERATURE STUDY

Land is a physical environment that covers soil, climate, relief, hydrology, and vegetation, in which those factors affect the use potential. It includes the effect of humans' activities, whether it from the past or current time, like the beach area reclamation, deforestation, and all the harming effects like erosion and salt accumulation (Hardjowigeno et al., 2001 : 3).

According to Mochtara (in Ina, 2001), land has some characterisctic, such as:

1. Permanent, it means it does not change (stationery) and not renewable.
2. The land supply is limited and rare
3. Becomes the foundations and hope for many benefits of stakeholders

The use system of land is classified into two big groups, such as: (Arsyad, 1989 : 67)

1. Agricultural and non-agricultural land use. The agricultural land use such as: moor, fields, fields, gardens, pastures, production forests, protected forests, and many more.
2. Non-agricultural land use, such as: urban and rural land use, industry, recreation, mining, and many more.

Winoto et al. (1996) defined the change of land use as the change process from the previous land use to the other land use that could be permanent or temporary, and as the logical consequence of the development and transformation of the developing community social and economic change. If the land use for rice field changed to housing or industry, the change of this land use is permanent and irreversible, but if it is shifted to farm, this is usually temporary. The agricultural change of land uses is really connected with the change of economic, social, culture, and community politic orientation.

C. METHODOLOGY

The research is using descriptive qualitative method because the location of the case has high value of locality. The change of land use case might happened only in Serangan Island. In this qualitative approach, the research sample is obtained with non-random sampling technique with the purposive sampling way, which is obtaining the sample with certain consideration that is considered relevant or can represent the object being researched and it has the most useful information for the researchers. For example, obtaining BendesaAdat as the representation of SeranganPekraman Village, Chief of Banjar is the leader of each Banjar in the SeranganPekraman Village, business owners which represent the land use subject and the community figures that considered know the problems regarding the research. The obtaining and analyzing data is using observation, survey, and documents technique.

D. RESULTS AND DISCUSSION

In analysing the comparison of pre and post-reclamation physical condition, there are two ways to see the change in macro and micro. The change in macro is to see the land physical condition change from pre to post-reclamation globally (not detailed) and in planning context, it covers that the zonation of land area in Serangan Island dividied into two, such as: the settlements and PT. BTID area, and it's separated by tourism canal. The change in micro is to see the change in detail case per case, whether the one in the settelments zone or in PT BTID zone.

Land Physical Condition Change in Macro/Globally

The occurrence of the land physical condition change by macro/globally in Serangan Island started with reclamation in 1995-1998. This reclamation changed the physical shape of the land by its shape and size of the land, land area, land territory, and the occurrence of the land use change from pre to post-reclamation. In analysing that case, it will be analysed into three steps, which are: 1) Pre to post-relamation reconstruction (1995-1998); 2) Territory allocation from pre to post-reclamation; and 3) the land use in pre and post-reclamation

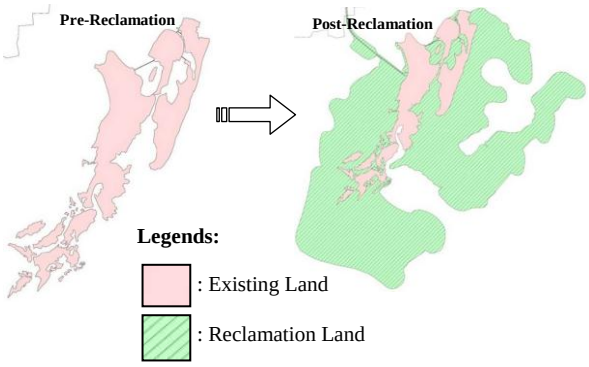

Figure 1. Reclamation Reconstruction from 1995-1998 (Source: Analysis From PT BTID Documents, 2017)

From the picture 1 above, it can be seen that most reclamated part is the east, south, and west part of Serangan Island, so the south part of

Serangan Island is getting closer to the TanjungBenoa, so the construction issue of crossing bridge came up. But, in the procees, this is cancelled because the reclamation of Serangan Island is stopped and the construction of the mega-tourism facility in Serangan Island that also cancelled, so it doesn't support the mutualsim symbiosis between two.

Even though the size of the Serangan Island has expanded four times than the size of pre-reclamation Serangan Island because of the reclamatiom, this does not make the territory of the land expands. Because of the reclamation, the community territory becomes smaller because PT. BTID allocate the territory into two parts, which are the settlements and PT. BTID are which separated by 10 meters wide tourism canal.

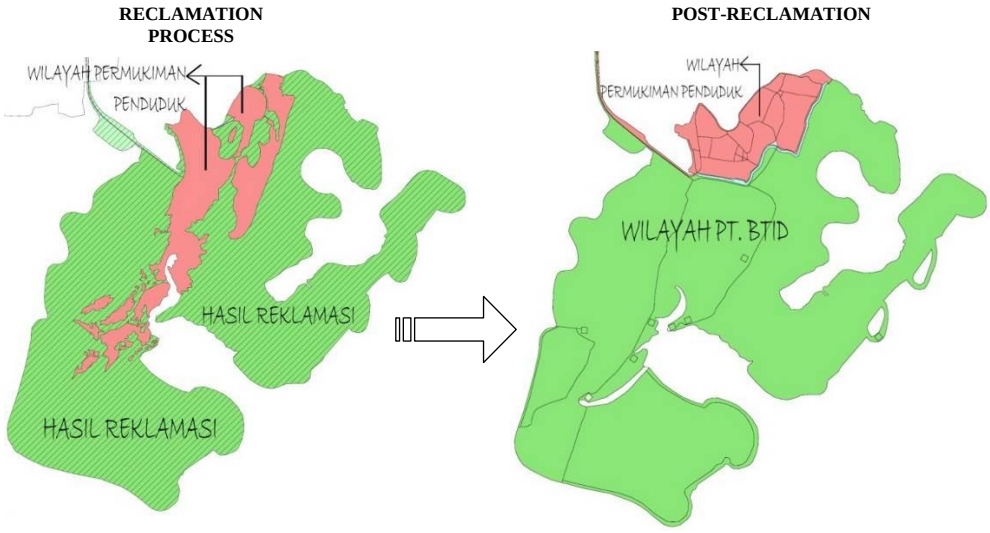

Figure 2. Territory Allocation of Pre and Post-Reclamation
(Source: Analysisi From PT. BTID Documents, 2017)

Based on the reconstruction of territory allocation that occure in Serngan Island, it can be seen that with the reclamation, it makes the settlements territory becomes smaller. In pre-reclamation, all the Serangan Island land is owned by the community which was 111 hectare. Meanwhile the post-reclamation, the settlement is getting smaller to 46.5 hectare, and the territory of PT. BTID is about 435 hectare.

In the other hand, the territory allocation makes the coastline that owned by the community decreased. In pre-reclamation, the community had all the coatline that located in Serangan Island which is 13.5 kilometer long. Meanwhile in post-reclamation, the coatsline that owned/can be used by the community is only about 2,5 kilometer from all the coastline of post-reclamation in Serangan Island about 20 kilometers. That means, about 17,5 kilometer of the coastline or ¾ of the the total coastline is owned by the party that cerried out the reclamation, which is PT. BTID.

Land Physical Condition Change in Micro

In analyzing the land physical condition change in micro in pre and post-reclamation in Serangan Island, it can be divided into 2 territory zone which are settlements area and PT. BTID area. In settlements zone there are six cases of change such as: Football Field / Serangan Island City Park, Village Market, LPD and KUD; Turtle Conservation Institution, Camping Zone, and Watersports facility; Temples that taken care of by Kesiman Palace, Temples that taken care of by SeranganPekraman Village; and cemetery. Meanwhile, in the PT. BTID zone there are 3 case of land use change, which are: BanjarKubu and its community; Temples that taken care of by Kesiman Palace, Temples that taken care of by SeranganPekraman Village. All the cases will be described in details in the table below.

LAND TYPE	PRE-RECLAMATION			POST-RECLAMATION		
	LAND USE	LAND AREA	LOCATION	LAND USE	LAND AREA	LOCATION
SETTLEMNETS AREA						
Case 1 (City Park)	Sea (there is bridge between islands)	40 acre	Between the islands cluster of BanjarDukuh and BanjarKawan, Kaja Tengah, Peken	City Park, Football field, Jogging Track, Parking Area of DalemSusunanWadon Temple, empty area	30 acre (the rest is empty)	Between the islands cluster of BanjarDukuh and BanjarKawan, Kaja Tengah, Peken
Case 2 - Village Market - LPD - KUD	Village Market	1 acre	South of Desa Temple	Village Market (sea reclamation)	8,7 acre	South of Segara Temple
	LPD dan KUD (in one building)	0,9 acre	North of Desa Temple	LPD (sea reclamation)	0,8 acre	South of Segara Temple
				KUD (Part of the sea reclamation)	8,2 acre	South of Segara Temple
Case 3 - Turtle Conservation Institution and Camping Area - Watersport and Melasti Area Expansion	Sea	-	East of Cemetery	Turtle Conservation Institution and Camping Area (reclamation land)	80 acre	East of Cemetery
	Melasti Area and the Sea	± 66 acre	The Northeast end of Serangan Island	Water sport and Melasti Area (reclamation land)	2,35 hectare	The Northeast end of Serangan Island
Case 4 (Temples that taken care of by Kesiman Palace) - DalemSakenan Temple and PesamuanAgung - *Pelaba*Sakenan Temple - DalemSusunanWadon Temple	DalemSakenan Temple and PesamuanAgung	51 acre	The northwest end of Serangan Island	DalemSakenan Temple and PesamuanAgung	1 hectare	The northwest end of Serangan Island
	Empty area and selling area when there is ceremony	1,45 hectare	North and East part of Sakenan Temple	Empty area and selling area when there is ceremony	1,45 hectare	North and East part of Sakenan Temple
	Dalem SusunanWadon Temple	26 acre	East Part of BanjarDukuh	Dalem SusunanWadon Temple	26 acre	East Part of BanjarDukuh
Case 5 (Temples that taken care of by SeranganPakraman Village) - Desa Temple - Puseh Temple/ DalemCemara - Segara Temple - DalemKhayangan and Prajapati Temple	Desa Temple	10 acre	East of SD N. 1 Serangan	Desa Temple	10 acre	East of SD N. 1 Serangan
	Puseh Temple/ DalemCemara	13 acre	East of Village Market (New)	Puseh Temple/ DalemCemara	19 acre	East of Village Market (New)
	Segara Temple	4 acre	East of the new village market	Segara Temple	6 acre	East of the new village market
	DalemKhayangan Temple and Prajapati Temple	8 acre	West of Cemetery	DalemKhayangan Temple and Prajapati Temple	18 acre	West of Cemetery
Case 6 (Cemetery)	Cemetery (almost divided into 2 parts)	1,7 hectare	North of DalemKhayangan Temple	Cemetery (Became one / not divided)	2,5 hectare	North of DalemKhayangan Temple
PT. BTID AREA						
Case 7 - BanjarKubu - BanjarDukuh	BanjarKubu	2 acre	North of Tanjung Sari Temple	Land owned by PT. BTID	-	Right side of canal
	BanjarDukuh	2,5 acre	South of BanjarKawan	BanjarDukuh	3,5 acre	South of BanjarKawan
Case 8 (Temples that taken care of by Kesiman Palace) - BejiDalem SakenanTe	Moor area	-	East of PuncakingTingkih Temple	Beji DalemSakenan Temple	6 acre	PT. BTID area (East of PuncakingTingkih Temple)

mple						
Case 9 (Temples that taken care of by SeranganPakramanVillage) - Pat Payung Temple	Pat Payung Temple	2 acre	North of Tanjung Sari Temple	Pat Payung Temple	2 acre	PT. BTID area (North Tanjung Sari Temple)
- Tanjung Sari Temple	TanjungSari Temple	5 acre	West of Pat Payung Temple	Tanjung Sari Temple	21 acre	PT. BTID area (West of Pat Payung Temple)
- Puncaking Tingkih Temple	PuncakingTingkih Temple	5 acre	South of Tanjung Sari Temple	PuncakingTingkih Temple	19 acre	PT. BTID area (South of Tanjung Sari Temple)
- Taman Sari Temple	Taman Sari Temple	1,5 acre	South of Pat Payung Temple	Taman Sari Temple	6,5 acre	PT. BTID area (South of Pat Payung Temple)
- Tirta Arum Temple	Tirta Arum Temple	4 acre	South of Taman Sari Temple	Tirta Arum Temple	50 are	Wilayah PT. BTID (South of Taman Sari Temple)
- BatuApi Temple	Sea	-	South end of Serangan Island	BatuApi Temple	1,2 acre	PT. BTID area South end of Serangan island)
- BatuKerep Temple	Sea	-	East end of Serangan Island	BatuKerep Temple	0,8 acre	PT. BTID area (east end of Serangan island)

Source: Summaries of Interviews and Observations, 2017

Based on the tables above, it can be seen in the settlements are found 6 cases, almost all of them experienced land expansion in post-reclamation, which mostly in pre-reclamation all the land from the expansion was the hoarded sea in post-reclamation. So are in the PT. BTID area which not only experienced land expansion in 3 cases, but also got new land in post-reclamation. Just like in the BejiDalemSakenan, BatuApi Temple, and BatuKerep Temple case which just built in post-reclamation because in pre-reclamation the land was still a sea. Based on the physical condition changes that happened in Serangan Island because of the reclamation, the existing model comparison of the physical condition in pre and post-reclamation will be described which consists of land area changes, location, and land use.

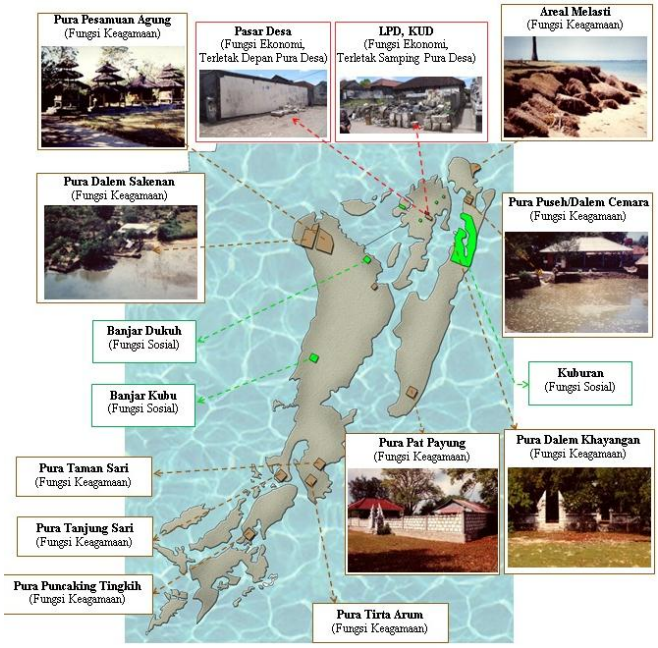

Figure 3. Physical ConditionLand use of Pre-reclamation
(Source: Analysis, 2017)

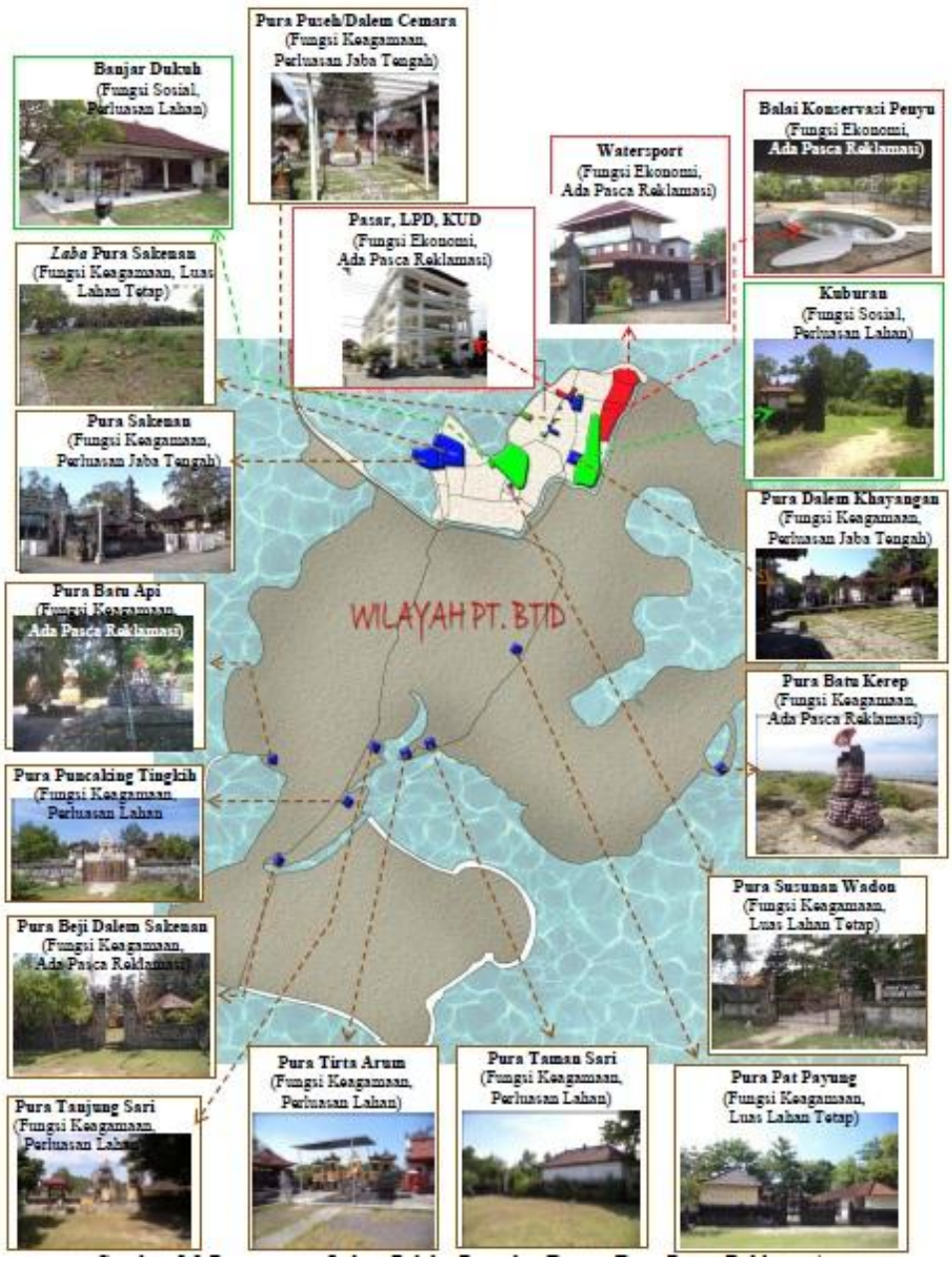

Figure 4. Physical Condition and Land use of Post-reclamation
(Source: Analysis, 2017)

E. CONCLUSION

Land physical condition changes in Serangan Island happened because of the reclamation in 1995-1998 that changed the shape and size of the land, area, territory, and land use change from pre to post-reclamation. The land use change happened in macro/globally and micro/detailed. By macro/globally, the land physical condition change through reclamation that changed the size of the Serangan Island from 111 hectare to 481 hectare in post-reclamation and allocate the territory into two part, which are: settlements and PT. BTID area in which divided by a 10 meters tourism canal. In post-reclamation the settlements area is getting smaller into 46.5 hectare, meanwhile the area owned by PT. BTID is about 435 hectare, in which the settlements area in pre-reclamatons was 111 hectare (all the land in pre-reclamation)

Land physical condition changes in micro, like: the sea became City Park, LPD, KUD, Village Market, Turtle Conservation Institution, and Watersport facilities. The reclamation land by PT.

BTID and in post-reclamation is already handed to SeranganPekraman Village that follows the mutual agreement. In other hands, there are also the temples expansion whether which taken care of by Kesiman Palace like DalemSakenan Temple and PesamuanAgung or the one that taken care of by SeranganPekraman Village like: Puseh/DalemCemara Temple, Segara Temple, DalemKhayangan Temple, Tanjung Sari Temple, PuncakingTingkih Temple, Taman Sari Temple, and Tirta Arum Temple. The temples in PT. BTID area which just built in post-reclamation on the land that used to be moor and sea, such as: DalemBejiSakenan Temple, BatuApi Temple, and Batukerep Temple. Based on the changes in macro and micro, the existing model is obtained in the comparison of land physical condition in pre and post-reclamation in Serangan Island.

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