

## B-1 14th Environmental Study Tour in Bali Present conditions report of coast environmental problem in Indonesia Bali

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### 1. mangrove forests condition

#### (1) Introduction

This time, I watched the mangrove forests of Bali in study tour. So I express my thoughts and status report of the mangrove forests.

#### (2) Summary of The Mangrove Information Center

The Mangrove Information Center is a local agencies of Indonesian Ministry of Forestry has done sustainable management of mangrove.

Indonesian mangrove area has accounted for a quarter of the world's one.

As we continue to strengthen the efforts of mangrove forest conservation in Indonesia, through the project "Development of mangrove forest management", and received the support of JICA in 1992-1999. In 1993, "project of demonstrate that sustainable management, development of mangrove" is initiated by the support. In addition, it was the goal to support tree-planting activities and to explore the possibility of investment in order to achieve sustainable management of mangrove. And The Mangrove Information Center has the support of JICA again in 2001-2004.

#### (3) Mangrove forest condition

Prior to mangrove forests are protected, mangroves were cut down to shrimp farming.

At present, the mangrove forests are protected by The Mangrove Information Center. As shown in the Fig. 1, farms trace of shrimp are used to grow the mangrove. I saw the mangrove forests, I suspect there is a problem of waste as a matter of status quo. I suspect that the plastic garbage most of the trash.

Looking at the Fig. 2, plastic garbage stuck to the roots of the tree. The roots are covered by the garbage, it die because the roots not be able to breathe. Tide bring the garbage from the sea. And I think that garbage of the sea come from river.



Fig.1



Fig.2

## 2. Badung river estuary barrage

### (1) Badung river Overview

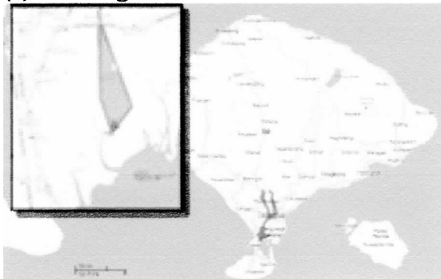


Fig.3 Badung river map

Badung river is through Denpasar, Badung the county, because it is a regional economic activity is active around the tourism, demand for water will increase is expected. Therefore, river water quality is a problem. Land use of Badung river basin has changed a lot between 2008-1992. Residential area of red in Figure 1 is increased, increasing 743ha between 2008 to 1992, agricultural land has decreased 622ha (Fig 5).

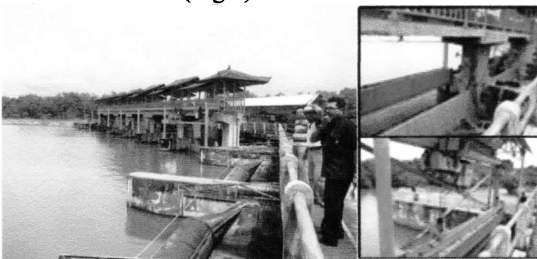


Fig.4 Estuary barrage

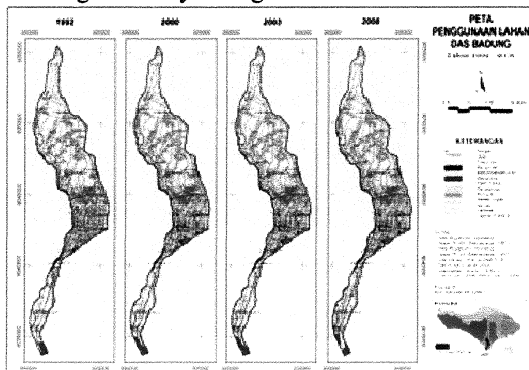


Fig.5 Badung river watershed

### (3) Badung river estuary

It is located in the southern part of Bali, is about more than 20km in from upstream to downstream, the Badung river. Estuary weir is provided at the mouth portion of the river, river water and sea water is prevented from mixing. The estuary barrage, it has become a boss brackish seawater Upstream Migration Toward the downstream portion from the mouth of the river, but it is not suitable for the use of human agriculture, and industrial and other water supply. It is installed as the main purpose it keeps track of the use of water that the deadline in the river weir there, to block on Upstream Migration of seawater. The purpose of flood control is applied often at the same time. I was going water, the drainage barrier brush sediment also provided relief gate and sluice gate is provided (Fig 4).

### (4) Current Status and Problem of Badung river estuary weir

Waste flow to arrive estuary weir reservoir, their processing is very. From the fact that people have a large fishing was as if many fish. In addition, water level difference between the dry season and the rainy season is about 30 cm.

## 3. Coral Preservation Activities

### (1)Introduction

The reason I took part in Environmental Study Tour in Bali 2013 is that it is an interesting project to transplant coral.

### (2)The state of coral

coral destruction is a big problem in Bali. Bali is famous for coral reefs. Actually, I dived with a snorkel and saw coral. Rubbish was seen between corals. The water was dirty and in some places it smelled bad.

This time, we transplanted corals at Amed Beach.

We put putty in pumice in Fig.6 and Fig.7. We fix coral like in Fig.8. We put them in the transplanting rock on the bottom of the sea like Fig.9. A little ago, they used cement instead of putty. But it took half a day for cement to get hard and it was not efficient. It takes only five minutes for the putty to go hard. So transplanting went easily under the instruction of people in Bali.

There are many projects to recover coral in Bali. We have to sort out rubbish and recycle it. After we remove rubbish coral will be destroyed by another rubbish I am afraid. At present, one third of the coral in the world is destroyed. We can make our life more

economical. I'd like to think about the environment from now on.



Fig.6



Fig.7



Fig.8

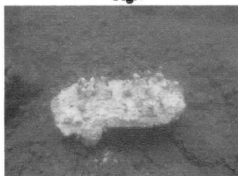


Fig.9

#### **4. Conclusion**

To solve the garbage problem of mangrove forests, it is necessary to solve the garbage problem of the entire Bali.

The garbage is falling here and there in the city of Bali. The Citizens of Bali are throwing away the garbage to river and road. So I think that it is necessary to change the conscious of the people to solve the garbage problem. I think that it is a difficult problem...

Before I go to Bali, it was the image of a beautiful island. However, looking at the environmental problem of Bali, the image vanished.

I felt garbage problem is serious among the environmental problem of Bali.

The garbage problem spoil a beautiful landscape of the city and beaches.

Also, do significant damage to the mangrove forest that took up this time. If the garbage problem solve, I think mangrove forests will be better than it is now.

By seeing the environmental problem of Bali what is a tourist destination, I got good experience. I would like to participate again, if given the chance.

#### **5. Acknowledgments**

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