



**DIRECTORATE GENERAL OF WATER RESOURCES,  
MINISTRY OF PUBLIC WORKS**



**PUBLIC WORKS SERVICE, BALI PROVINCE**

**THE COMPREHENSIVE STUDY  
ON WATER RESOURCES DEVELOPMENT  
AND MANAGEMENT  
IN BALI PROVINCE  
IN  
THE REPUBLIC OF INDONESIA**

**FINAL REPORT  
MAIN REPORT**

**AUGUST, 2006**



**JAPAN INTERNATIONAL COOPERATION AGENCY**

**YACHIYO ENGINEERING CO., LTD.  
NIPPON KOEI CO., LTD.**

<b>GE</b>
<b>JR</b>
<b>06-040</b>

**Exchange Rate**

**<Master Plan Study>**

**US\$1.00 = RP9,260 = ¥106.97      Average of May 2004  
- April 2005**

**<Feasibility Study>**

**US\$1.00 = RP9,750 = ¥110.75      Average of Year 2005**

## **PREFACE**

In response to a request from the Government of Indonesia, the Government of Japan decided to conduct the comprehensive study on water resources development and management in Bali Province, and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Masatomo Watanabe of Yachiyo Engineering Co., Ltd. between September 2004 to June 2006.

The team held discussions with the officials concerned of the Government of Indonesia and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of this project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Indonesia for their close cooperation extended to the study.

August 2006

Ariyuki Matsumoto,  
Vice President  
Japan International Cooperation Agency

August 2006

Mr. Ariyuki Matsumoto  
Vice President  
Japan International Cooperation Agency  
Tokyo, Japan

Dear Mr. Matsumoto

### **LETTER OF TRANSMITTAL**

We are pleased to submit to you the final report of the Comprehensive Study on Water Resources Development and Management in Bali Province. The report has been prepared, taking into account the advices and suggestions of your Agency. Also included are the comments made by Directorate General of Water Resources (DGWR) under the Ministry of Public Works, and the Provincial Government of Bali.

In Indonesia, structural reform of the water resources sector (WATSAL) is being advanced, and a new water resources law has been established in 2004 in accordance with the principle of democracy, decentralization and transparency. The provinces and cities/regencies have been taking the initiative in implementing water resources development and management.

The Study was being implemented to compile a master plan for the comprehensive water resources development and management in Bali Province up to the target year of 2025 which consisted of Ayung Dam project, water supply project, flood control project, structural reform and capacity building, intending to achieve the sustainable development of local society and economy through the stable supply of safe water and reduction of flood damage. In the process of compilation of the master plan, stake holders' meetings were held, and opinions from stake holders' were incorporated widely.

The feasibility study of the priority project, consisting of Ayung dam project, water supply project (western system, central system and eastern system) in southern Bali Area and river improvement project selected in the master plan, has been implemented. Meanwhile, for the operation and maintenance of multiple Ayung dam and water supply facilities, the arrangement program for Dinas-PSDA (Water Resources Management Service Office) and Balai-PSDA (Water Resources Management Unit) including capacity building program have been proposed. It is expected that the stable water supply, mitigation of flood damage and management improvement and institutional strengthening shall be enhanced by implementing the above-mentioned project components.

We wish to take this opportunity to express our sincere gratitude to your Agency and the Ministry of Foreign Affairs. We also wish to express our deep gratitude to DGWR and the related organizations for the close cooperation and assistance extended to us during our study.

Very truly yours,



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Masatomo Watanabe

Team Leader

The Comprehensive Study on Water Resources  
Development and Management in Bali Province.

**PHOTOGRAPHS**



**Mt. Batur**

Famous Active Volcano, 1,717m height, as well as Mt. Agung Volcano, 2,567m. The areas (called as Kintamani) around the Mt. Batur a most famous picturesque scenery in Bali.



**Tirtagangga Spring**

The spring with plenty discharge is located in Abang, Karangasem Regency. The spring is surrounded by temples. The water from the spring is used for irrigation.



**Rice Terrace in Tegallalang Village**

This rice terrace is located 20 minutes by car from Ubud Town. This is a typical rice terrace in Bali and famous scenery in Ubud Town.



**Buagan Weir**

This weir is located 4km upstream from the river mouth of Badung river. JICA Study proposes rehabilitation of weir safely to pass the flood discharge through the weir.



**Estuary Dam**

This estuary weir is located at the Badung river mouth. The stored water is used for the Estuary Water Treatment Plant. The storage volume is equivalent to a half month operation of the plant.



**Estuary Water Treatment Plant**

The plant capacity is around 250lit/s. The raw water to enter the plant is contaminated due to the sewerage water from Denpasar city. The plant was constructed through the economic aid by France.