

**MINISTRY OF ENVIRONMENT, WATER AND FORESTS
MINISTRY OF AGRICULTURE, LIVESTOCK AND FISHERIES
THE REPUBLIC OF MADAGASCAR**

**THE STUDY ON RURAL DEVELOPMENT
AND
WATERSHED MANAGEMENT
IN
THE SOUTH-WEST REGION OF ALAOTRA
OF
THE REPUBLIC OF MADAGASCAR**

FINAL REPORT

JANUARY 2008

JAPAN INTERNATIONAL COOPERATION AGENCY

**NIPPON KOEI CO., LTD.
JAPAN OVERSEAS FORESTRY CONSULTANTS ASSOCIATION**

PREFACE

In response to the request from the Government of Madagascar, the Government of Japan decided to conduct the Study on Rural Development and Watershed Management in The South-West Region of Alaotra and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Kenjiro Onaka (up to March 2006) and Mr. Yutaka Matsumoto (from May 2006) of Nippon Koei Co., Ltd. consisting of Nippon Koei Co., Ltd. and Japan Overseas Forestry Consultants Association to the Republic of Madagascar between October 2003 and January 2008.

The study team held discussions with the officials concerned of the Government of Madagascar, and conducted the field surveys at the Study area. Upon returning to Japan, the study 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 Madagascar for their close cooperation extended to the study.

January 2008

Ariyuki MATSUMOTO

Vice President

Japan International Cooperation Agency

January 2008

Mr. Ariyuki MATSUMOTO
Vice President,
Japan International Cooperation Agency
Tokyo, JAPAN

Letter of Transmittal

Dear Sir,

We are pleased to submit herewith the Report of the Study on Rural Development and Watershed Management in The South-West Region of Alaotra in the Republic of Madagascar. The Report was prepared based on the results of the Study conducted for the period from August 2003 to January 2008.

The objectives of the Study consist of (1) formulation of the environmental management and rural development plan in the southwest region of the Alaotra lake for securing the sustainable livelihood of local people, and execution of the pilot projects in order to identify the problems solving and (2) technology transfer of planning of a master plan and execution of pilot projects to the counterpart organization and the local people through on-the-job training. In the Study over five years, problems, needs and potentials were identified and counter measures for problems solving in development were formulated. Afterwards 12 pilot projects composed of 7 projects in a watershed management sector and 5 projects in a rural agricultural sector were formulated based on the proposed counter measures with an immediate term by mutual agreement of the government of Madagascar. The pilot projects were undertaken for about 30 months to assess the practicality and applicability of the identified interventions. The development plans in the Report were prepared based on a lot of lesson and result learned through the executed the pilot projects.

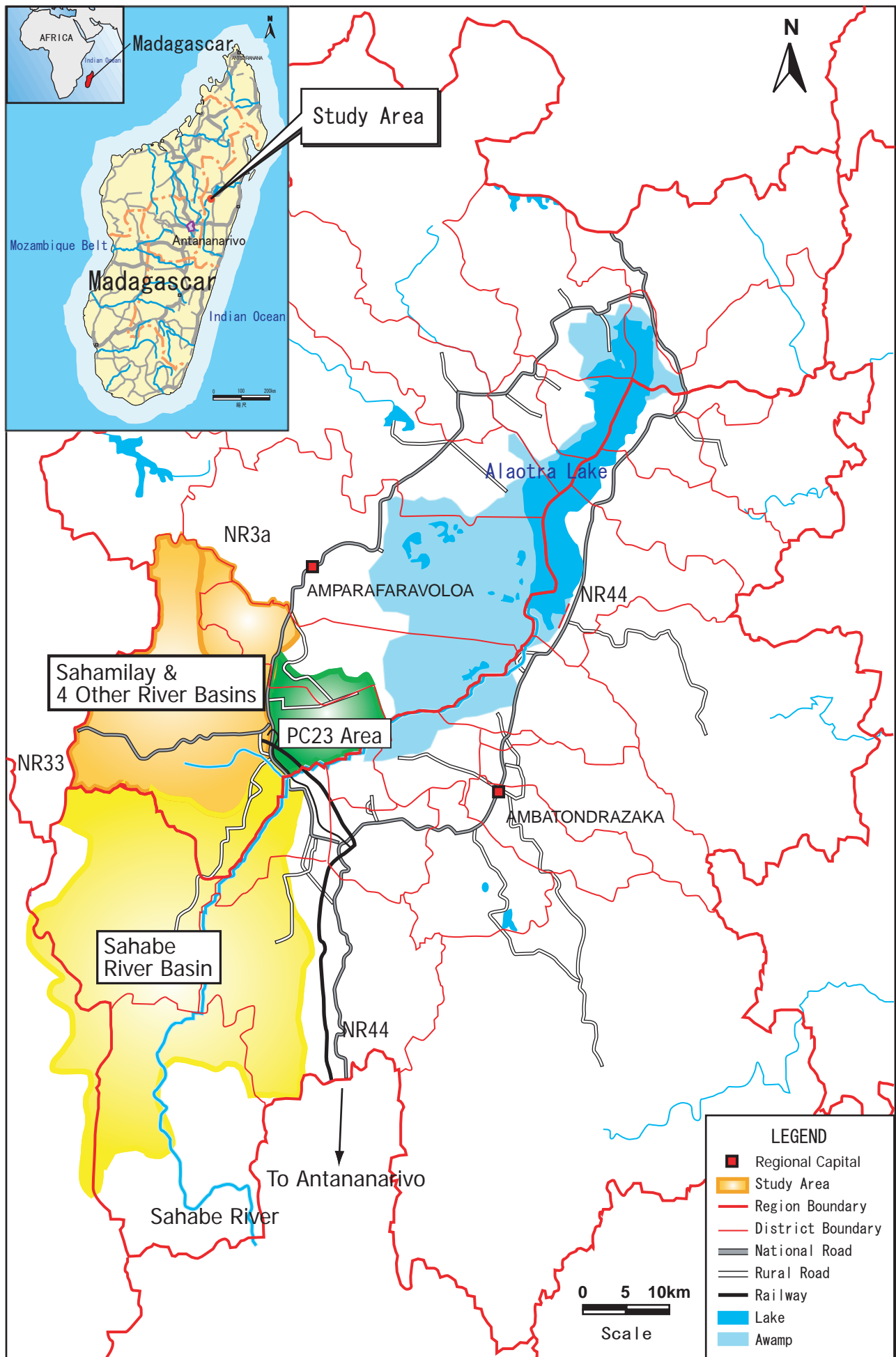
The Study was performed based on continual partnership of the Ministry of Environment, Water and Forests, Ministry of Agriculture, Livestock and Fisheries as counterparts as well as Ministry of Health Family Plan, Ministry of Home Affairs, Ministry of Defense as a central government, Alaotra Mangoro regional office and residents in pilot project area.

We wish to express our deep appreciation and sincere gratitude to the officials concerned of your Agency, the Ministry of Foreign Affairs, and the Ministry of Agriculture, Forestry and Fisheries of the Government of Japan for the courtesies and cooperation kindly extended to us. We would also like to express our hearty gratitude to the officials concerned from the Madagascar Office of JICA, the Embassy of Japan in Madagascar, the Ministry of Environment, Water and Forests, Ministry of Agriculture, Livestock and Fisheries, provincial and district governments, and other stakeholders for the close cooperation and various forms of assistance extended to us during field investigations and studies in Madagascar.

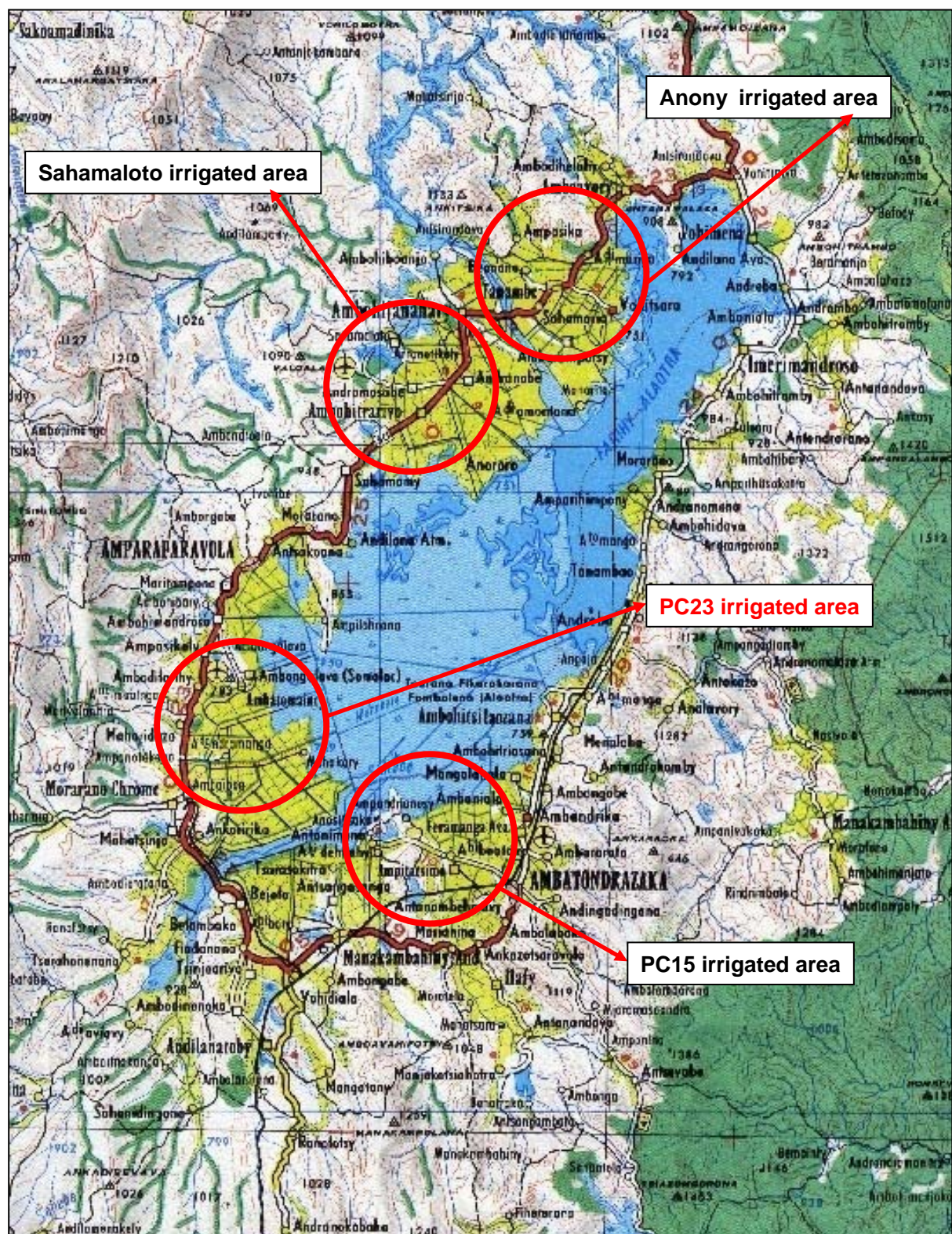
Finally we do hope that this report will be utilized by Ministry of Environment and Water and Forests, Ministry of Agriculture, Livestock and Fisheries and irrigation development and environment conservation in the southwest region of the Alaotra Lake will be executed successfully along with irrigation and watershed management plan as national policy and this report will contribute to poverty reduction of the local people.

Very truly yours,

Yutaka MATSUMOTO
Team Leader of the Study Team for the Study on
Rural Development and Watershed Management in
The South-West Region of Alaotra in Madagascar



Location Map



Map of region of the Alaotra Lake

Photographs



No.1 Antettezantany village (upper basins of the Sahamilahy river)

Paddy field in intermediate and mountainous area and vegetation of back mountains



No.2 Maheriara village (upper basins of the Sahamilahy river)

Paddy field in intermediate and mountainous area and vegetation of back mountains



No.3 Lavaka

Landslide originated in the typical geologic structure in Madagascar



No.4 Access road to areas around the lake Alaotra

Dirt road area of Route44 in rain season



No.5 the Sahabe river during high water in rain season

PC23 irrigation area P1 main canal tentative head works, left bank downstream side



No.6 the Sahabe river during low water in dry season

PC23 irrigation area P1 main canal tentative head works, right bank downstream side, other side is intake of the P1 headrace

Photographs



No.7 PC23 irrigation area of the Sahamilahy river system

Accretion of sand at P1 main canal



No.8 PC23 irrigation area P5 main canal system

Irrigated paddy field and diversion works of the secondary canal



No.9 PC23 irrigation area P5 main canal system

From right side, tertiary drainage canal, tertiary canal and farm road



No.10 PC23 irrigation area P5 main canal system

Check gate for reuse of water of tertiary drainage canal



No.11 PC23 rain-fed area, Mahakary village

Promotion of diversification of agriculture income sources pilot project, haricot beans of semiannual crop in dry season



No.12 PC23 rain-fed area, Mahakary village

Promotion of diversification of agriculture income sources pilot project, nursery tree of mango for fruit cultivation

Photographs



No.13 Mid basins of the Sahamilahy river, Maheriara village

Promotion of diversification of agriculture income sources pilot project, broiler poultry farming



No.14 PC23 rain-fed area, Mahakary village

Promotion of diversification of agriculture income sources pilot project, preparation of butchering of chicken by poultry farming group



No.15 Mid basins of the Sahamilahy river, Maheriara village

Promotion of diversification of agriculture income sources pilot project, improvement of field husbandry technique of paddy



No.16 Mid basins of the Sahamilahy river, Maheriara village

Promotion of diversification of agriculture income sources pilot project, fish pond



No.17 PC23 irrigation area No. 4 farm field

Strengthening the research and extension system for new variety and high potential crop pilot project, left side: trial field of sensibility to temperature paddy variety, right side: paddy field of existing variety



No.18 Project area, Bejofo village

Unhusked rice Depot which a rice mill company set along national route 3a

Photographs



No.19 Upper basins of the Sahamilahy river, Antettezantany village

Conservation of natural forest pilot project, setting of sign bar of border of conservation area



No. 20 Mid basins of the Sahabe river, Sahanidingana village

Development of community and school forest pilot project, preparation of nursery field



No.21 Recovery of vegetation in lavaka pilot project

Earth retaining works of sandbag for active lavaka



No.22 Recovery of vegetation in lavaka pilot project

Planting of nursery of grevellea around intermediate lavaka



No.23 Upper basins of the Sahamilahy river, Antettezantany village

Traditional tree stone stove



No.24 PC23 area, Ambohidrony village

Extension of improved stove pilot project, using of improved stove by participant