

Chapter1 Introduction

1.1 Background of the Request

Due to its unique coastal wetland ecosystem, Yucatan Peninsula is known over the world as an important site for nature conservation. The soil is limestone origin, the land is almost completely flat, and there is no river run but ample amount of underground water called "cenote". In order to conserve those valuable ecosystems, the Ministry of Environment and Natural Resources (SEMARNAT) has been designated a series of natural protection areas for proper management. On the other hand, there are many problems which bear threat the environment such as artificial division of wetland ecosystem due to socio-economic development and increasing pressure for natural resource utilization caused by local people as well as tourists. It is, therefore, required urgently to strengthen the conservation system including development of human resources and installation of necessary facilities.

Taking into consideration the above situation, the Government of the United Mexican States requested to the Government of Japan technical cooperation aiming at conservation, restoration and sustainable use of coastal wetland.

1.2 Process of Project Formulation

- 1) Basic Study on the Natural Environment Conservation of Mexico (March-April, 2000)
The Japan International Cooperation Agency (JICA) dispatched a study team for Mexico regarding the natural environment conservation, and examined possibility of technical cooperation with priority areas based on the information obtained by the team
- 2) Preparatory Study I (July-August, 2001)
JICA study team implemented field survey and confirmed background of the request, outline of the project and implementing agency. The team organized a joint Project Cycle Management (PCM) workshop and prepared basic plan of cooperation.
- 3) Preparatory Study II (May-June, 2002)
The JICA study team prepared draft project document including Project Design Matrix (PDM) and Plan of Operation (PO) together with Mexican side based on the result of additional PCM workshop.
- 4) Exchange of Record of Discussion (R/D) (July, 2002)
Final discussion about the project implementation will be carried out and R/D for the commencement of the Project and the project document will be signed by both parties.

1.3 Outline of the Project

This project is a technical cooperation project (hereinafter, called as the "Project") to be carried out in the Ría Celestún Biosphere Reserve (RBRC) located at northwest part of

Yucatan Peninsula with the project purpose, "The RBRC office conducts comprehensive environmental management activities properly". The project period will be five years starting from early 2003. Inputs of Japanese side include two (2) long-term experts, short-term experts, provision of necessary equipment, acceptance of trainee and a part of implementation cost. The Project will be implemented according to the scheme of contract-type technical cooperation of JICA.

Chapter2 Background of the Project

2.1 Overview of Socio-economic Situation

As a result of tight financing policy after the monetary crisis in 1994, the Gross Domestic Product (GDP) of Mexico declined by 6.9% in the following year. However, the annual economic growth rate had recovered thereafter due to price hike of crude oil, which is a major export item of the country. In the year 2000, total population was 97.4 million and per capita GDP was US\$ 5,933. Unemployment rate was 2.5% as of September 2001.

Mexico is a member of the North American Free Trade Area (NAFTA) and keeps close international relation with the USA and Canada. At the same time it has also good economic relations with Japan. At present Japan is the most important trading partner in Asia. Imports from Japan amounted to be US\$ 5.22 billion in 2000, and export to Japan, US\$ 2.39 billion. A total of 444 Japanese companies are operating in Mexico in 2001.

Mexico is known as a leading tourist destination ranking seventh in the world, attracting more than 22 million visitors. As one of the 12 countries that contain rich biodiversity, the so-called countries of mega-biodiversity, scenery of nature and wildlife and recreation relating to nature resources attracts tourists, so as for ancient archeological assets.

About utilization of natural resources, there are historical differences among localities. In general, large-scale agriculture development using heavy machineries - a prototype of the USA- is pronounced in the central and northern regions, while development scale in Southern region and Yucatan Peninsula is relatively small. Particularly for the latter localities, common land of indigenous people, called "ejido", shall be taken into consideration for various socio-economic planning and development.

2.2 Over View of Target Sector : Conservation of Natural Environment

Following the Article 27 of the Mexican Constitution, which proclaimed importance of environmental conservation, General Law for the Ecological Equilibrium and the Environmental Protection (LGEEPA) was launched in 1988. The law defines overall

regulations concerning environment such as conservation of bio-diversity, sustainable use of natural resources, protection of atmospheres and water, etc. This law also defined Natural Protected Area (ANP). Currently, ANPs are categorized by six types, e.g., biosphere reserves and national parks, based on the concept of the Convention on Biological Diversity. Those protected areas extend approximately 6.6 % of the country.

Most of ANPs were originally established during the late 1970's, and their number and area have increased rapidly. In order to strengthen the conservation activities of ANPs, the National Commission of Nature Protection Areas (CONANP) has established as a decentralized organization of SEMARNAT in 2000. However, the management system has not been established well to cope with thus increased necessity.

RBRC, the target area of the Project, is an ANP under administration of CONANP and known as a core of wetland ecosystem having vast mangrove vegetation and important growing area of flamingo. However, due to recent outbreak of illegal garbage disposal of local residents, over-fishing and animal poaching, establishment and strengthening of the management system are required urgently.

2.3 Strategy of the Mexican Government

1) National Development Plan (2001-2006)

The National Development Plan (2001-2006) of the present administration headed by the President Vicente Fox Quesada was launched on May 2001. It is indicated that the plan has the purpose to revert the irrational way of utilization of nature in short time. The present administration pursues to establish alternative measures and projects with objective to create people's awareness on environmental protection, to foster productive practices based on projects that take into account the importance to preserve the nature, in sum to develop the concept of sustainable development.

2) Conservation of biodiversity

About strategies for conservation of biodiversity in Mexico there have been some conceptual programs of SEMARNAT (SEMARNAP at the time) such as "Program for Protected Natural Areas of Mexico (1995-2000)" and "National Strategy for Biodiversity (2000)". The main lines of their strategies are: 1) to protect and conserve different component of biodiversity, 2) to justify the value of biodiversity, 3) to enhance the knowledge and information on environmental conservation, and 4) to utilize nature resources in sustainable manner.

3) Work program of CONANP (2001-2006)

This program was launched in May 2002 by revising the former program of SEMARNAP for ANP (1995-2000). In this program CONANP is planning to introduce a regional system for systematic management of 127 federal ANPs scattering

over the country. The ANPs are going to be managed by 13 regions of the country that were newly established based on the hydrological criteria.

The three States of Yucatan Peninsula (Yucatan, Campeche and Quintana Roo States) are formed one region namely Region XII with 17 ANPs, and meanwhile the director of Sian Ka'an Biosphere Reserve in Quintana Roo State acts as a regional coordinator.

2.4 Past and On-going Wetland Conservation Projects

2.4.1 Major projects assisted by donor agencies

Major projects relating to wetland conservation and assisted by international donors are summarized hereinafter.

1) Protected Area Management program (PAM program)

Ten nature reserves of the country have been supported by World Bank-Global Environmental Facility (GEF) fund since 1996 (Phase I). The Bank was extended the project for another 12 reserves (Phase II). In the both cases, CONANP has been the executing agency and the Mexican Fund for Nature Conservation (FMCN) has been the administrative agency. In Yucatan Peninsula, RBRC is not covered by this program, although Ria Lagartos Biosphere Reserve (RBRL) was included as one of the ten reserves in the Phase I.

2) Mesoamerican Biological Corridor Project

This project is also implemented by World Bank-GEF fund with executing agency of the National Commission for Knowledge and Use of Biodiversity (CONABIO). In Yucatan Peninsula, the area between RBRL and RBRC (8 municipalities, 245,000 ha with 15 communities) is selected as one of the corridors project sites. The project was started from 2001 and will cover the two focal areas: Hunucma municipality, and Sinache, Yobain and Dzidzantun municipalities. The main activities are participatory design and monitoring, capacity building of government, and promoting sustainable use of biodiversity through pilot projects.

3) Parks in Peril Program

USAID has been supporting reserve management of northern Yucatan peninsula by Parks in Peril Program in terms of tie-up with an international NGO (Non-Government Organization), The Nature Conservancy (TNC) since 1991. Both RBRL and RBRC are included as target sites of this program. The project scheme in RBRL extends constructing infrastructure, integrating local communities into the reserve management, improving long-term financial security and environmental education. However, comparatively less activities were envisaged in RBRC until now.

4) Marine Reserve Project

This is the project of European Union carried out through ENDESU (a local NGO) with the purpose to promote eco-tourism in four reserves such as RBRL, Sian Ka'an Biosphere Reserve, and Isla Contoy National Park in Yucatan Peninsula and Islas del Golfo de California. In RBRL, about 1 million pesos were used for construction of field infrastructure, improvement of ships and boats, maintenance of trails, establishment of community organization, etc, in 1999-2002.

2.4.2 Activities of wetland conservation committee of the Yucatan State

In order to coordinate wetland conservation activities in state level, a committee of restoration, conservation and sustainable use of wetlands distributing in the coastal zone of Yucatan State was formed in 1996 by SEMARNAP, PEMEX, SECTUR, Progreso municipality, CNA, Association of El Palmar State Reserve, CINVESTAV, etc. Main activities realized by the committee are: improvement of water flow through construction and cleaning of drainage, maintenance of tap water, rehabilitation of channels, etc. In RBRC, 5 fresh water springs and 2 drainages were cleaned and maintained by the committee from 1997 to 2000.

Those activities are now done by boat operators using the fund of CULTUR.

2.4.3 Activities of NGOs in RBRC and the vicinity

1) PRONATURA Peninsula Yucatan (PPY)

Collaborative wetland conservation activity between the government and NGO was initiated by PRONATURA in the end of 1980s. In recent years its Yucatan branch (PPY) undertook threat analysis for seven ecosystems of RBRC and has developed GIS system with the data set of vegetation, land-use, landownership, zoning of the reserve, urban mapping and health data using 1998 satellite image and aero photos. Currently, it is in the process to develop eco-regional plan of northwest Yucatan with CINVESTAV, CICY, UADY and EPOMEX of Campeche University as a part of the aforementioned Parks in Peril Program of USAID/TNC.

At present PPY is the largest NGO regarding environmental conservation in Yucatan Peninsula having 53 staff with annual budget of 8 million pesos. It has a branch office in RBRC.

2) Ducks Unlimited de Mexico (DUMAC)

DUMAC is a domestic NGO affiliating Ducks Unlimited, which is an international NGO having been working for research on waterfowls and conservation of wetland as their natural habitat since 1974. Main activities of DUMAC in Yucatan are: holding training courses of nature reserves and wildlife management, restoration of hydrologic systems of mangrove at Isla Arena watershed, restoration of water flow regulation system at Carbonera in Chuburná Puerto, inventory studies of waterfowls and

classification of wetlands.

Four full-time staff are working in Yucatan Peninsula with approximate annual budget of 700,000 pesos. It has a field training facility in RBRC.

3) Ninos y Crias (NyC)

NyC is working in Yucatan Peninsula since 2000 regarding such fields as environmental education for children and young adults, research and conservation of important wildlife species (flamingo, sedentary and migratory birds, sea turtles and crocodiles) and promotion of environmental friendly enterprises for socio-economic and cultural development of community. NyC coordinates an environmental education program with the RARE Center. There are 13 regular staff with approximate budget of 900,000 pesos.

4) Others

There are several community-level NGOs established recently such as MUCEM and GECE which are people's groups of Celestun municipality. PPY supported their establishment.

Chapter3 Understanding of Current Problems and Issues

3.1 Institutional Framework

3.1.1 Protected natural areas (ANPs) and organizations responsible for their management

A total of 127 ANPs of the Federal Government has been designated according to LGEEPA as shown in the table below.

Category	Number	Area ('000 ha)	
Biosphere Reserves	31	10,436.3	61.2%
National Parks	66	1,346.3	7.9%
Natural Monuments	4	14.1	0.1%
Natural Resources Protection Areas	1	183.6	1.1%
Flora and Fauna Protection Areas	21	4,473.9	26.2%
Other Categories	4	602.2	3.5%
Total	127	17,056.4	100%

Source: Work Program, CONANP (2001-2006)

All the federal ANPs are under administration of CONANP, which is one of the seven decentralized organizations of SEMARNAT. Number of ANPs where more than one federal government staff are assigned is 56 and others remain untouched or are partly supported by local government and NGOs. More detailed information about CONANP and SEMARNAT is given in Annex 1.

3.1.2 Institutional framework of ANP and biosphere reserve

1) National System for Natural Protected Area (SINAP)

SINAP is an information gathering system of SEMARNAT to be used for effective management of important ANPs. Conditions that shall be evaluated for registration to SINAP are: high biodiversity, endemic species, risk and endangered species, ecosystems diversity, important natural phenomena, environmental services, integrity of habitats and ecosystem, social participation in conservation. There are 38 ANPs having been registered to SINAP.

2) Advisory council for ANPs

LGEEPA prescribes that advisory council shall be organized by SEMARNAT for each natural protected area with representatives of federal administration, academic institution, center of investigation, user groups, local committees, private companies, NGO and so forth. The advisory council functions as an official advisory organization for management of each ANP.

3) Protection and sustainable use of wildlife

The species that require special protection are enlisted on the official norm, NOM-059-Ecol-1994. Currently 2420 species of vertebrate are specified in the list.

From the aspect to harmonize conservation and development, this Law of Wildlife published in 2000 defines the Unit for Conservation and Sustainable Use of Wildlife (UMA). Commercial utilization of wildlife, which is generally prohibited, becomes possible when management plan is approved as UMA by SEMARNAT.

4) Regulation of user's fee for ANPs with aquatic activities

Article 198 of the Federal Law of Rights modified on 1 January 2002 defines user's fee for ANPs with aquatic activities in which RBRC will be included. In short, persons who enjoy recreational or tourist activities inside the ANPs have to pay 20 pesos per day. The profits obtained from user's fee will be refunded to each ANP for the purpose of strengthening conservation activities. This regulation is expected to implement within this year.

5) Definition of biosphere reserve

Biosphere reserve is one of the federal category of ANPs for conservation,

preservation and restoration of rich biodiversity. The reserves are divided into the nucleus zones and buffer zones. The activities which are allowed in nucleus zone are restricted to scientific investigation and environmental education. On the other hand, sustainable use of natural resources as well as recreational activities can be promoted in buffer zone.

3.1.3 Institutional framework of RBRC

Ria Celestun Biosphere Reserve (RBRC) was originally established as Refugee for Fauna (Refugio Faunístico) in 1979, and enacted as a biosphere reserve having a total area of 81,482 ha in 2000. "Ria" means coastal lagoon having freshwater inflow from springs. It has been registered as the 36th site of SINAP in August 2001. As of June 2002, five CONANP staff are working at the RBRC management office (hereinafter, called as "the RBRC office"). Outline of the RBRC office is shown in Annex 2.

The advisory council of RBRC is formed for the Yucatan State side as shown in Figure 1. At present, the Governor of Yucatan State and the Mayor of Celestun Municipality chair the council as Honorable President and Executive President, respectively. The Director of the RBRC office acts as Technical Secretary and relevant four federal delegations (SEMARNAT, PROFEPA, SAGARPA and SEDESOL) participate in as special members. There are three committees under Executive President such as Technical and Scientific Committee, Social Development Committee, and Sectoral Committee, and more than 20 organizations join for those committees.

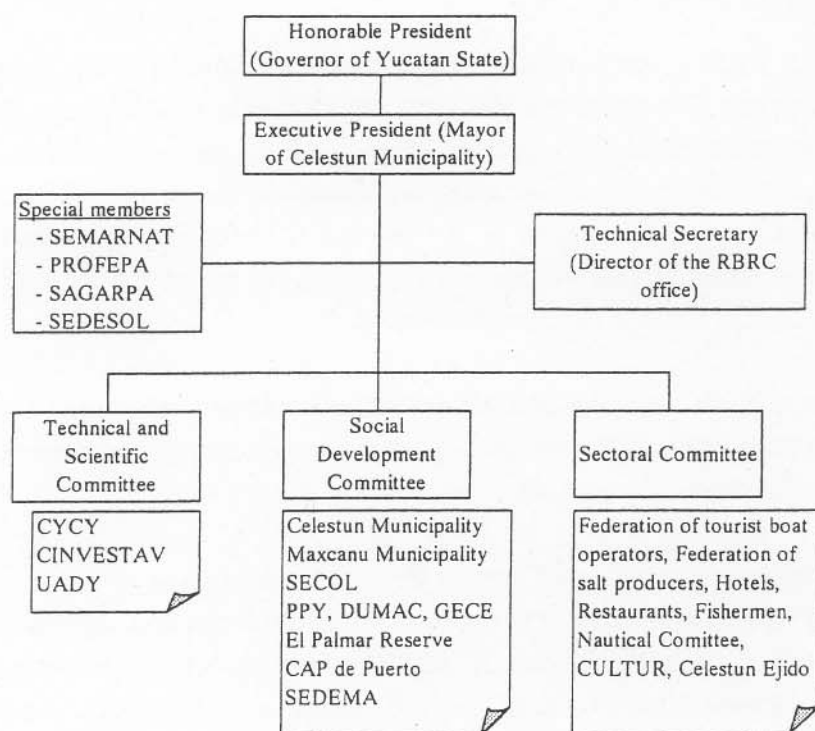


Figure 1. Organization of the advisory council for RBRC in Yucatan State

The comprehensive management program of RBRC has been prepared and is now final review stage by COFEMER for official publication. According to the management program, the area is designated into two nucleus zones and five buffer zones as shown in the following table. Location and zoning maps of RBRC are given in [Annex 3](#).

Category		Area (ha)	%	Remarks
Nucleus Zone		30,291.0	37.2	
	Northern Nucleus Zone	7,035.0	8.6	Yucatan State
	Southern Nucleus Zone	23,255.4	28.5	Yucatan and Campeche States
Buffer Zone		51,191.2	62.8	
	Sub-zone of sustainable use of the natural resources	43,130.6	52.9	Water areas (coastal and Ria) and land area
	Sub-zone of restricted use	4,322.8	5.3	Ria and mangrove area up to 200m from the coast
	Sub-zone of human settlement	154.9	0.2	Celestún and Isla Arena
	Sub-zone of public use	0.3	0.0	Beach of Celestún port (600m ²) and the bridge on the estuarine lagoon (2,400m ²)
	Sub-zone of restoration	3,582.6	4.4	Beside the main road to Celestún (135 ha) and to Isla Arena (3447 ha)
Total		81,482.2	100.0	

Source: Management program, RBRC. 2001.

In the RBRC, approximately 600 species of vertebrate are recorded (140 fish, 13 amphibians, 64 reptiles and 304 birds and 79 mammals). Among these, 115 species are the species enlisted in the NOM-059-ECOL-1994 including 12 endemic species (2 fish, 4 reptile, 3 birds and 3 mammals) with possible danger of extinction. Particularly for reptiles, among 64 species in the reserve (1 crocodile, 7 turtles, 20 lizards, and 36 snakes), about 1/3 are the species enlisted in the list of the norm (4 species for special protection, 11 rare, 6 threatened species).

Flora of RBRC includes 549 species, of which 45 are endemic to Yucatan Peninsula and 14 species are enlisted in the aforementioned norm (3 rare species, 7 under special protection and 4 threatened).

3.2 Participatory Analysis on Current Problems and Issues

In the Preparatory Study I, it is confirmed by both Japan and Mexican sides that "Wetland conservation of RBRC is insufficient" (= core problem) comparing to other reserves despite its importance in overall wetland ecosystem of Yucatan Peninsula. Problems and issues retrieved from the core problems are analyzed by means of participatory workshops and associated field survey during the Preparatory Study I and II. They are described hereinafter. For socio-economic situation of RBRC, please refer to [Annex 4](#).