

Date: October 14, 2016

Environmental and Social Considerations in Detailed Planning Survey
(Technical Cooperation for Development Planning)

1. Full Title of the Project

The Project for Study on Integrated Development of the Adjacent Zones to the Yacyreta Dam Reservoir

2. Type of the study (e.g. Master Plan, Feasibility Study, Detailed Design, etc.)

Master Plan and Feasibility Study

3. Categorization and its reason

The Project is classified as "Category A" because it falls into an agriculture sector involving large-scale irrigation development, and is likely to have a significant adverse impact due to its characteristic under the JICA guidelines for environmental and social considerations (April 2010)

4. Agency or institution responsible for the implementation of the Project

Responsible organization of the project is the Ministry of Agriculture and Livestock, Paraguay.

5. Outline of the Project (objectives, justification, location, proposed activities, and scope of the study)

5-1 Objectives

The main objective of the project is to formulate an integrated development plan of the adjacent zones to the Yacyreta Dam Reservoir, utilizing water resources from the Yacyreta Dam Reservoir, through public-private sector collaboration.

5-2 Justification

The Master Plan and Feasibility Study are expected to contribute to increase agricultural production, to mitigate poverty, as well as to mitigate the adverse climate change effects.

5-3 Location

The project site is in the extreme south of Paraguay, located about 250 km southeast of Asuncion. The area is beside a border with Argentina, separated by Río Paraná River. The specific project site is an adjacent downstream area to the Yacyreta Dam Reservoir in Itapua and Misiones Prefecture (Departments).
A map of the project site is shown in the section 6-2.

5-4 Proposed activities

A major proposed activities include the preparation of master plans and implementation of the feasibility study. More specifically, there are four (4) major proposed activities:

Activities

- (1) Development of an integrated development master plan of the adjacent zones to the Yacyreta Dam Reservoir
- (2) Development of an action plan for realizing the above master plan
- (3) Development of a feasibility study on irrigation and drainage plan

(4) Consensus building among persons/organizations concerned

5-5 Scope of the Study – Detailed Study activities

The project will cover the following activities:

Activity 1: Development of an integrated development master plan of the adjacent zones to the Yacyreta Dam Reservoir

- 1-1 To collect and analyze information of policies, plans, laws and institutional systems with regard to (1) water resources and irrigation/drainage development, (2) land tenure, (3) agricultural development, (4) processing and marketing of agricultural produce, (5) agricultural finance and so forth.
- 1-2 To conduct field survey with regard to (1) natural conditions, (2) socio-economic conditions, (3) land tenure, (4) land use, (5) agricultural production, (6) processing and marketing of agricultural produce, (7) agricultural finance, (8) irrigation/drainage and other infrastructure facilities for agricultural production, and so forth.
- 1-3 To review and analyze unit water requirement after analyzing present water use situations and available water resources for irrigation.
- 1-4 To conduct discussions with organizations concerned at the central, departmental and municipal levels; interviews with local residents, agricultural sector organizations, private companies and others to identify the necessities and intentions of irrigation and agricultural development.
- 1-5 To formulate an integrated development master plan, which includes:
 - Basic development concepts for the site of the Project for the Study and beneficiaries
 - Basic concepts for land tenure and land use
 - Basic concepts for water resources utilization and management
 - Basic development concepts for agricultural production and value chain (including aquaculture)
 - Basic development concepts for infrastructure facilities for production, processing and marketing of agricultural produce
- Environmental and social considerations (to conduct Strategic Environmental Assessment (SEA))
 - Organizational system for implementation of the master plan in view of public-private partnerships

Activity 2: Development of an action plan for realizing the above master plan

- 2-1 To determine execution targets by component of the master plan
- 2-2 To formulate an action plan comprising project components and their implementation plan (budget, schedule, etc.) to accomplish the targets set above
- 2-3 To examine roles and tasks of each stakeholder in view of public-private partnerships
- 2-4 To examine a monitoring system for implementation of the action plan

Activity 3: Development of a feasibility study on irrigation and drainage plan

- 3-1 To conduct supplemental field surveys to formulate a facility development plan for irrigation and drainage system
- 3-2 To examine and review functions of a water intake and its canal under the control of "Yacyreta Binational Entity"
- 3-3 To prepare basic design documents of primary and secondary irrigation canal system
- 3-4 To prepare basic design documents of primary and secondary drainage canal system

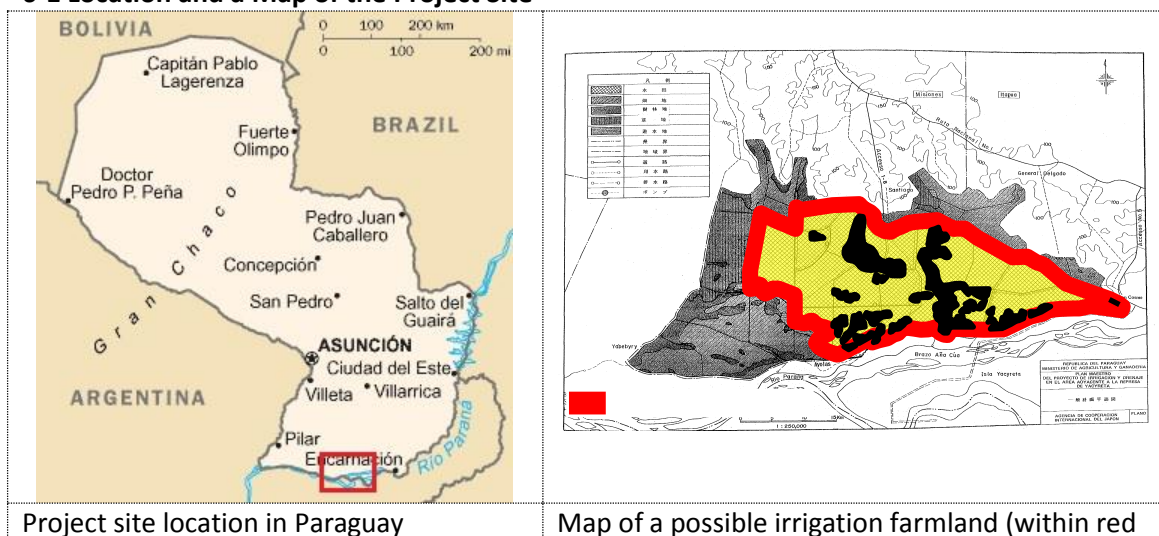
- 3-5 To prepare basic design documents of necessary roads for maintenance of the canal system and others.
- 3-6 To formulate a land use plan
- 3-7 To formulate a farming plan
- 3-8 To formulate an operation and management plan for various facilities
- 3-9 To examine system and organization for appropriate water management as well as organization for facility operation and management
- 3-10 To prepare a rough estimate of the plan of irrigation/drainage system and roads
- 3-11 To conduct economic and financial analyses
- 3-12 To conduct environmental and social consideration study, which includes:
 - Systematic comparison of alternatives taking into account Strategic Environmental Assessment (SEA)
 - Scoping of evaluation parameters and methodology to the irrigation and drainage prioritized development.
 - Elaboration of a draft environmental assessment report
 - Assistance to establish a abbreviated Resettlement Action Plan (RAP)
- 3-13 To propose a public implementation system and project promotion system for irrigation and drainage facility development
- 3-14 To propose a water rights system and an irrigation water charge collection system

Activity 4: Consensus building among persons/organizations concerned

- 4-1 To conduct stakeholder analyses
- 4-2 To establish a public-private partnerships system for planning, coordination and implementation of the project
- 4-3 To hold various workshops and seminars for formulation and consensus building of the master plan and the action plan
- 4-4 To establish a promotion council by the authorities and persons concerned toward the irrigation and drainage facility development
- 4-5 To obtain approval at the JCC on the integrated development master plan and the feasibility study on irrigation and drainage facility development plan

6. Description of the project site

6-1 Location and a Map of the Project Site



line) and surrounding areas

6-2. Environmental and social condition

6-2-1 Environmental condition

(1) Geography

The project site is in the extreme southern region along the Río Paraná River, which divides Paraguayan and Argentinian territory. The project area is between 90 and 70 meters above sea level, and is characterized as a flat lowland.

There are two (2) major rivers in the project site, and the Yabebyry River and Atingui Rivers are proposed drainage waterway.

(2) Climate

The climate of the project site consists of a subtropical climate. The area has a humid climate with moderate precipitation throughout the year, with moderate seasonal changes in temperature.

6-2-2 Social condition

The project site is in Itapua and Misiones Prefecture (Departments), and population of Itapua is 517.047, and Misiones is 113.644 (2007, source: Dirección General de Estadística, Encuestas y Censos).

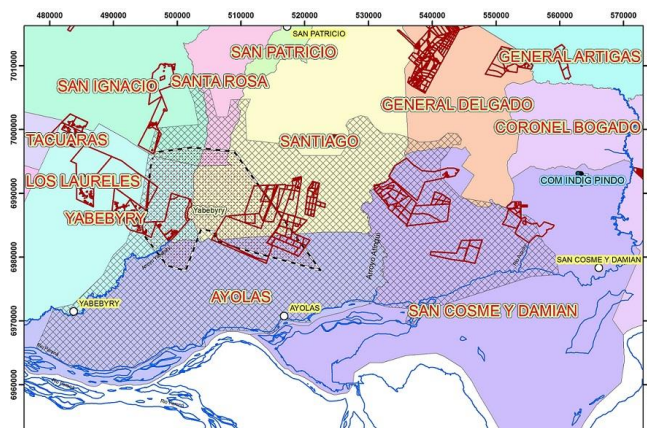
The project site is in the administrative sub-divisions (District) and demography of the major related districts are shown in the following table.

Misiones

District	Population (2002)
Ayolas	15.219
Yabebyry	2.854
Santiago	6.753

Itapua

District	Population (2002)
San Cosme y Damian	7,322
Cornel Bogado	17,065



Project site and Districts

7. Legal Framework of Environmental and Social Considerations

7-1 Laws and regulations related to Environmental Impact Assessment (EIA)

7-1-1 Laws, regulations and standards related to environmental and social considerations

In Paraguay, following are the major laws and regulations which stipulate environmental impact assessment (EIA) obligation and processes:

Laws and regulations for EIA study:

- (a) Law N° 294/93, Evaluación de Impacto Ambiental
- (b) Modification of Law 294/93, Law N° 345/94
- (c) Decree N° 14.281/96
- (d) Law N° 1561/00, Que Crea el Sistema Nacional del Ambiente (SISNAM), el Consejo Nacional del Ambiente (CONAM) y la Secretaria del Ambiente (SEAM)
- (e) Decree N° 453/13
- (f) Regulation, N° 954/13
- (g) Resolution SEAM, N° 244/13

Other related laws for EIA study:

- (h) Law 3239/2007, Ley de los Recursos Hídricos
- (i) Law 422/1973, Ley de Forestal
- (j) Law N° 4241/2010, Ley de Restablecimiento de Bosques Protectores de Cauces Hídricos
- (k) Law N° 3966/2010, Ley Orgánica Municipal
- (l) Law N° 96/92, Ley de Vida Silvestre
- (m) Law N° 352/94, Ley de Areas Silvestres Protegidas
- (n) Law N° 816/ 1996, Ley de Defensa de los Recursos Naturales

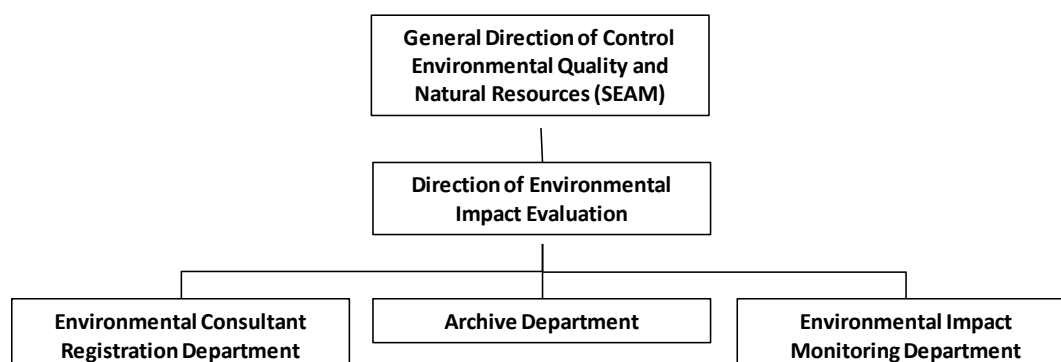
7-1-2 Requirements and procedures of Environmental Impact Assessment (EIA)

According to the Environmental Evaluation Law No, 294/93, the proposed JICA study project falls into a large scale agricultural development category, and a full EIA study should be conducted to obtain an approval from a Secretary of Environment (SEAM). The SEAM will issue an Environmental license – Environmental impact Declaration – during feasibility study phase and prior to the infrastructure construction. The project proponent can also apply a ‘strategic environmental license’ during the master plan study period, so that the proponent can officially start seeking financial resources.

Terms of Reference (TOR) for the EIA study is shown in the section 11 of this document.

7-2 Responsible institution for EIA process

The main agency in charge of environmental Evaluation process is a ‘Environmental Evaluation Direction’ in the Secretary of Environment (SEAM). The SEAM was created in a year 2000, according the law No. 1561/00 – creation of SEAM.



A organizational chart of Environmental Evaluation Direction

8. Provisional Scoping (types and magnitudes of possible adverse impacts and mitigation measures)

8-1 Types and magnitudes of possible impacts

A preliminary scoping of the environmental and social Impact assessment was carried out during a project planning survey, based on possible activities after a formulation of the master plan (M/P) and feasibility study (F/S) for the prioritized project/s. The aim of this master plan is integrated agricultural development plan. Possible prioritized projects to examine the preliminary scoping is categorized into three (3) activities; (i) construction of new irrigation facility, (ii) construction of drainage canal, and (iii) construction of road.

Evaluation parameters were determined from the JICA Guidelines for Environmental and Social Considerations 2010, and possible impacts are examined at the three (3) project phases/stages: (i) planning phase, (ii) construction phase, and (iii) operation phase.

The results of preliminary scoping are shown below.

category	No.	Evaluation Parameters	Rating			Planning (M/P study) phase: Points to consider Construction phase: Evaluation reasons Operation Phase: Evaluation reasons
			Planni ng Phase	Constr uction Phase	Operat ion Phase	
Social Environment	1	Involuntary Resettlement	B-	C	C	Land acquisition is expected for the construction of irrigation canals, but the land is owned by few large-scale land owners, so resettlement is not expected. Land owners may welcome land acquisition by the government because infrastructure development will improve land productivity and increase the land value.
	2	Local economy such as employment and livelihood, etc.	B-	C	B+	Planning phase: The project should be designed to increase benefit to the small scale farmers. Construction phase: Local inhabitants may be hired as a construction worker. Operation phase: Through an increase of crop production, processing and transportation, employment opportunity may increase, which may benefit to the local economy.
	3	Land use and utilization of local resources	D	C	B+	Large-scale land use change is expected. The change is current extensive pasture land will be converted into highly productive irrigated land using existing water resources, and therefore, it is assumed that economic value of the land will be higher.
	4	Social institutions such as social infrastructure and local decision-making	D	C	C	Operation phase: It is expected that water management committee will be realized associated with irrigation infrastructure development, as well as public-private cooperation will be strengthened. On the other hand, a consensus on water

	king institutions				distribution and cost sharing of irrigation water/facility should be generated.
5	Existing social infrastructures and services	D	C	B+	Operation phase: A positive effect on the improvement of public and social services is expected, caused by the development of public agricultural infrastructure and roads.
6	The poor, indigenous and ethnic people	B-	C	C	There is no residential area of indigenous and/or ethnic minorities at the project area. Planning phase: Land value will increase by the irrigation infrastructure development, so there is a positive effects to the landlord. A special consideration for the small scale farmers and/or poor is needed for them to participate the project so that they will obtain benefits from the project. There are positive benefits to the large-scale landowners by the irrigation development, but small-scale farmers who do not have land at the project area will not have any effects, so the project is expected to expand the gaps between themselves in the project area. However, the number of large-scale landowners is limited, so the significant impact is not assumed.
7	Misdistribution of benefit and damage	D	B-	B-	Planning phase: Because there is a limited number of large-scale land owners at the project area, a special consideration should be paid for fair distribution of the project benefits. Operation phase: By monitoring the project effect, a mechanism of fair distribution of the project benefits should be continuously achieved.
8	Cultural heritage	C	C	D	Planning phase: An infrastructure development should be planned to avoid the cultural heritage sites, in case if there is a cultural heritage site in the project area.
9	Local conflict of interests	D	C	D	No major impact is expected during the project
10	Water Usage or Water Rights and Rights of Common	D	B+/-	B+/-	Regarding to the water rights and distribution, the official mechanism such as a water committee should be organized in order to develop consensus among stakeholders. Operation phase: An additional water use becomes possible, and therefore, evaluation is B +. However, regarding the fairness of water-use rights, the benefit may be limited to only the irrigated land users.
11	Sanitation	B-	B-	B-	Planning phase: It is necessary to plan the structure and scale properly, so that public health problems will be avoided. Operation phase: Because the irrigation facility is a large-scale, there is a possibility of

						offensive smell and/or mosquitoes/pests occurrence depending on the structure and seasons.
	12	Hazards (Risk), Infectious diseases such as HIV/AIDS	D	B-	B-	Construction phase: There is a potential risk of infectious diseases, HIV/AIDS among construction laborers. Operation phase: No impact is expected during the operation stage. Regarding to the HIV, it cannot be denied the possibility of secondary infection.
Natural Environment	13	Topography and Geographical features	D	B-	B-	Construction phase: A modification of the terrain will occur by digging and soil removal for building the irrigation canals and road.
	14	Groundwater	D	D	B-	A groundwater extraction is not expected. Operation phase: there is a possibility of groundwater contamination due to the use of pesticides in the paddy fields, but it is not predictable at the present.
	15	Soil Erosion	D	B-	B-	Construction phase: There is a possibility of soil erosion during the construction phase. Operation phase: Because of the change in hydrological conditions due to the irrigation facilities (especially water drainage into natural rivers), there is a possibility of riverbank and/or soil erosion.
	16	Hydrological Situation	D	D	C	Operation phase: Because of the change in hydrological conditions due to the irrigation facilities (especially water drainage into natural rivers), there is a possibility of water flow change in downstream.
	17	Coastal Zone, (Mangroves, Coral reefs, Tidal flats, etc.)	N/A	N/A	N/A	The project area does not include coastal area, so an impact is not expected.
	18	Flora, Fauna and Biodiversity	D	A-	A-	Planning phase: A detailed study on wild life, especially endangered species, and rare plants should be conducted, and the facilities should be carefully designed in order to minimize the impact, as well as mitigate the impacts to the wildlife. Construction phase: there may be a possibility of serious negative impact to the wildlife, depending on the structure of the facilities. Operation phase: There may be a possibility of serious negative impact to the wildlife, depending on the structure of the facilities.
	19	Meteorology	D	D	C	Operation phase: A large scale irrigated agricultural land development is expected, but the impact on local climatic change (positive or negative) is unpredictable.
	20	Landscape	D	B-	B-	There are changes in the landscape, however, the impact (positive or negative) is

						unpredictable.
	21	Global Warming	D	C	B+	Construction phase: Construction machinery will produce an exhaust gas, but a time and an amount are limited. Operation phase: The project considered a positive "adaptation" effect on climate change, such as drought resistances.
Pollution	22	Air Pollution	D	C	B-	Construction phase: Dust and exhaust gas from the construction machinery is assumed, but the impact may be limited. Operation phase: there is a possibility of air pollution when pesticide is sprayed on a large scale paddy fields.
	23	Water Pollution	D	B-	B-	Operation phase: There is a possibility of (drainage) water pollution by chemical fertilizers used in the paddy field.
	24	Soil Contamination	D	B-	B-	Construction phase: there is a possibility of soil contamination caused by the fuel spill from construction vehicles. Operation phase: there is a possibility of soil contamination by pesticides used on a large scale paddy field.
	25	Waste	D	B-	D	Construction phase: Wastes, mostly excavated soils, should be properly handled.
	26	Noise and Vibration	N/A	B-	D	Construction phase: Noise/vibration by heavy machinery and transport of materials by trucks will take place at the construction sites.
	27	Ground Subsidence	N/A	D	D	Since no groundwater extraction is planned in this project, and therefore, no land subsidence will take place.
	28	Offensive Odor	N/A	D	B-	Operation phase: Because the irrigation facility is a large-scale, there is a possibility of occurrence of offensive smell depending on the structure and seasons.
	29	Bottom sediment	N/A	D	C	Water will be transported through irrigation canal, so no river bottom erosion is expected, except drainage river.
	30	Accidents	D	B-	C	Construction phase: Potential risk of accidents would arise during the construction phase, including traffic accidents caused by vehicles

Rating:

A+/-: Significant positive/negative impact is expected.

B+/-: Positive/negative impact is expected to some extent.

C: Extent of impact is unknown. (Examination is needed. Impacts may become clear as study progresses.)

D: No impact is expected.

N/A: Not Applicable

8-2 Mitigation measures

Detailed mitigation plans and measures will be elaborated during the implementation of the master plan and feasibility study phase, since prioritized construction activities are determined as study progress.

To establish a mitigation measures, including abbreviated resettlement action plan, are included in TOR of the EIA study.

9. Alternatives to the project activities including ‘without project’ option

(1) Without Project Option

Consideration of “without project option” means a “Do nothing option”, which is either no master plan formulation nor no feasibility study, or Paraguay government will not take any action after study. In this case, water resource cannot be utilized effectively to improve agriculture productivity. Furthermore, small farmers cannot obtain opportunity for increase income through effective utilization of water resource.

One of the risk of this study project is that Paraguay Government could not finance nor take any action on the infrastructure construction, which happened when the previous Master Plan in was formulated in 1985. In that sense, do nothing option may happen again, due to the limited capacity of Paraguay Government capacity.

(2) Consideration of alternative/optional activities in Drainage and Sewerage treatment systems.

The EIA Study during the feasibility study will discuss the details of alternative or optional activities, and economic benefits versus environmental and social negative risk will be discussed fully.

10. Result of the stakeholder meeting on environmental and social consideration including roles and responsibilities

JICA technical cooperation (TC) project preparatory mission explained the rules and guidelines on the environmental consideration process to the project responsible agency – Ministry of Agriculture and livestock (MAG). The MAG understood it and agreed with JICA, and signed the minutes of meeting (MM) on February 11, 2016, stated the following:

II. Other Relevant Points to Consider for Implementation of the Project for the Study

(10) Elaboration of EIA Report, and an acquisition of the environmental license from SEAM
In order to comply with environmental impact assessment laws and regulations in Paraguay, as well as with environmental consideration guidelines by JICA, a proponent of the large-scale agricultural development project should elaborate on the EIA report during the feasibility study phase. The JICA project team will support an initiative to elaborate on the EIA report, complying to the regulations in both countries. Before the construction phase of the project, however, MAG is responsible for submitting the EIA report to SEAM to obtain the environmental license in a timely manner.

The MAG will also agree to abide by JICA Guidelines for Environmental and Social Considerations’ in order to ensure that appropriate considerations will be made for environmental and social impacts of the Study. This statement of understanding is described in the section of “Study Description” of the draft Record of Discussion (R/D). The RD will be signed before the commencement of the master plan study activity between the chief representative of JICA Paraguay Office and the Minister of the MAG.

11. Terms of Reference (TOR) for Environmental and Social Considerations

Terms of Reference for Environmental and Social Considerations on the Project for Study on Integrated Development of the Adjacent Zones to Yacyreta Dam Reservoir

1.1 PURPOSE

The Government of Paraguay and the Japan International Cooperation Agency (JICA) require a preparation of an Environmental Impact Assessment (EIA), during the feasibility study (FS) and prior to the construction of the and economic benefits versus environmental and social negative risk will be discussed., drainage and maintenance road facility development. Main and related legal regulations and guideline requirements of the EIA process are summarized as:

Paraguayan legal regulation related to the EIA process:

- (a) Law N° 294/93, Evaluación de Impacto Ambiental
- (b) Modification of Law 294/93, Law N° 345/94
- (c) Decree N° 14.281/96
- (d) Law N° 1561/00, Que Crea el Sistema Nacional del Ambiente (SISNAM), el Consejo Nacional del Ambiente (CONAM) y la Secretaria del Ambiente (SEAM)
- (e) Decree N° 453/13
- (f) Regulation, N° 954/13
- (g) Resolution SEAM, N° 244/13

Other legal regulations related to the environmental conservation:

- (h) Law 3239/2007, Ley de los Recursos Hídricos
- (i) Law 422/1973, Ley de Forestal
- (j) Law N° 4241/2010, Ley de Restablecimiento de Bosques Protectores de Cauces Hídricos
- (k) Law N° 3966/2010, Ley Orgánica Municipal -
- (l) Law N° 96/92, Ley de Vida Silvestre
- (m) Law N° 352/94, Ley de Areas Silvestres Protegidas
- (n) Law N° 816/ 1996, Ley de Defensa de los Recursos Naturales

Japanese guideline:

- (a) JICA Guidelines for Environmental and Social Considerations, April 2010.

This Terms of Reference (TOR) defines the scope of work which the Consultant should undertake in compiling the EIA report. Public consultation is an integral part of the EIA Process according to the EIA regulations in Paraguay.

1.2 SPECIFIC OBJECTIVES

The Consultant should undertake surveys, conduct studies, assist Ministry of Agriculture and Livestock (MAG) and related other government institutions such as Ministry of Public Works and Communication (MOPC) in consultations with the other related stakeholders, including local governments and communities, and compile the EIA report. The EIA should cover at least

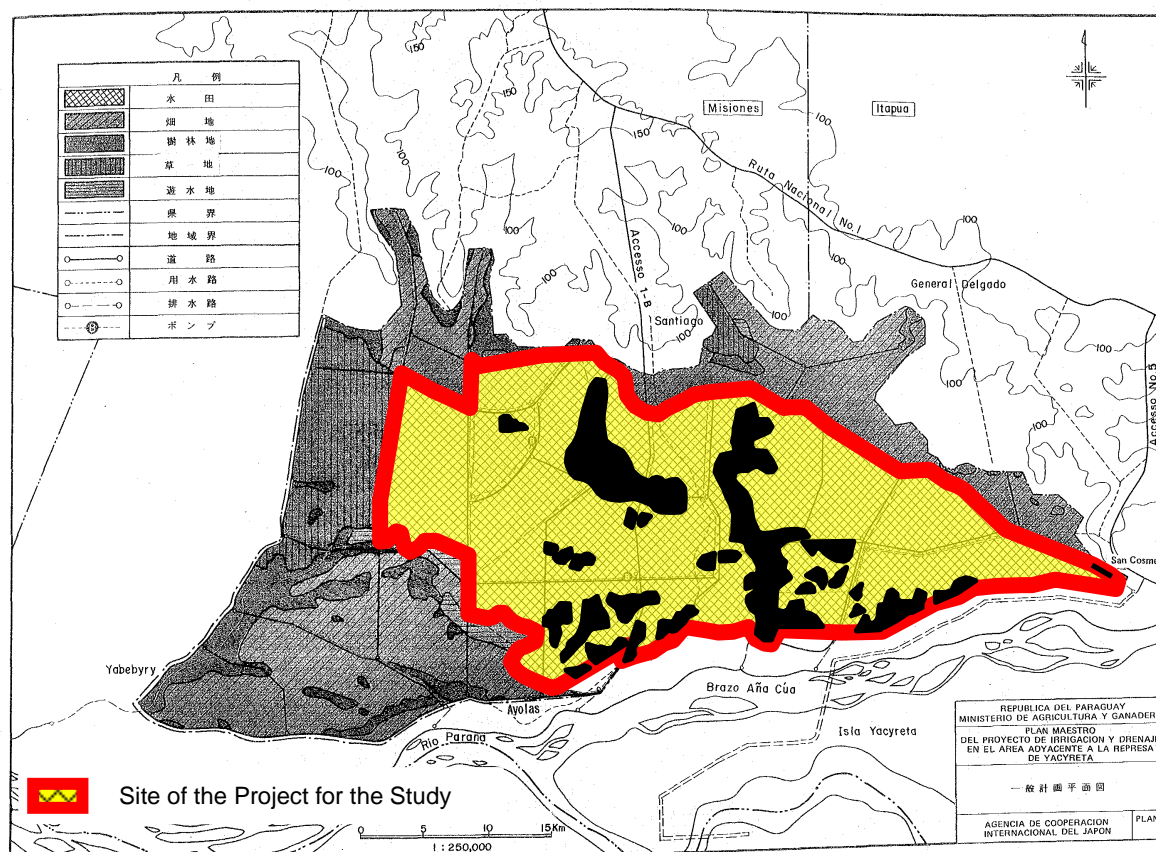
both (1) construction and (2) operation phase activities and will include, but not to be limited to, an assessment of the environmental and social impacts relating to the:

- (a) physical and geographical suitability of the proposed facility, and borrowing pit and haulage routes;
- (b) land acquisition and displacement of people;
- (c) earth and sand transfer and disposal plan to be employed;
- (d) pollution abatement options to be employed;
- (e) management control and operational practices of the irrigation and drainage facilities to be employed;
- (f) monitoring system during construction and for a long term operation.

1.3 STUDY AREA

The study area for the feasibility study will be possible irrigation farmland and surrounding areas, at where utilizing the 108 m³/s of water from the Yacyreta Dam Reservoir. More specifically, the study area is adjacent and down-stream area of Yacyreta Dam Reservoir, located in Misiones and Itapúa Prefecture.

Map of a possible irrigation farmland and surrounding areas



1.4 PUBLIC CONSULTATION

A credible Public Consultation is crucial to the successful completion of the assignment and preparing an acceptable Environmental Management Plan (EMP) and Resettlement Action Plan if required.

1.5 SCOPE OF WORK

(1) Scope of work for Strategic Environmental Assessment (SEA) before EIA study, during Master Plan formulation phase.

The Consultant should conduct the following activities:

- Study development plan and programs
- Select group of projects in order to realize development plans and programs
- Conduct preliminary Scoping (identification of evaluation parameters and method in order to select feasibility study projects)

(2) Scope of work at EIA study and reporting, during Feasibility Study phase.

1.5.1 - Project Description

The Consultant should provide a description of the scope and physical characteristics of the proposed facility.

1.5.2 - Project Alternatives

The Consultant should make a systematic comparison of alternatives, including “Do Nothing Option”, taking into account environmental and social factors.

1.5.3 - Existing Environment and Baseline Data Collection

The Consultant will define the study area taking into account the probable regions of both direct and indirect influence of the project.

The Consultant will collect baseline data on relevant physical, biological and socio-economic conditions, such as land use, natural environment and a presence of indigenous people.

1.5.3.1 - physical factors

Geology, topography, soils, climate and meteorology, surface and groundwater hydrology, existing water quality status.

1.5.3.2 - biological factors

Existing inventory of flora and fauna, sensitive habitats and endangered species, protected areas, and forest lands.

1.5.3.3 - socio-economic conditions - human factors

Population, employment, distribution of income, goods and services, presence of tribal and/or indigenous groups. Land features: land ownership, land-use and zoning, proximity of site to residential and economic locations and archaeological and historical properties.

1.5.4 - Assessment of Potential Impacts

The Consultant shall identify the divergence of the JICA environmental consideration guidelines (April 2010) and Paraguayan legal regulations, and find a resolution method.

The Consultant shall identify positive and negative impacts likely to result from the proposed project, interpreting “environmental” throughout the EIA study to include socio-economic impacts as well as impacts on the natural environment.

Following this, the Consultant should describe the likely changes in the prevailing environmental conditions that may be brought about by establishing the proposed irrigation and drainage facility.

1.5.5 - Analysis and Evaluation of Risks

The Consultant shall identify the impacts that can translate to potential risks and conduct “scoping (identifying evaluation parameters and methodology)” in the (1) construction and (2) operation phases, and risk analysis performed.

Special attention should be paid to a possible impact from irrigation facility, from large scale land use changes, soil contamination from pesticide use, water contamination by fertilizer use, and from drainage water discharge to the surface water hydrology - Yabebyry River and Atinguy River.

1.5.6 - Formulation of Environmental Management Plan (EMP)

1.5.6.1 - Mitigation Plan

For each significant negative impact or major risk, the Consultant should recommend and describe a measure to avoid or mitigate (reduce to acceptable levels) or when unavoidable, to compensate for the damage.

If the project causes large-scale involuntary resettlement, the consultant should prepare a separate Resettlement Action Plan (RAP). The complete set of recommended measures -in the EMP - should also be presented in a summary table. Allocation of institutional responsibilities, budget and financial resources should be clearly specified, according to the Paraguayan legal regulations.

1.5.6.2 - Abbreviated Resettlement Action Plan (ARAP)

The proposed project shall need the land acquisition for irrigation facility development, but may not need any involuntary resettlement. According to the "JICA Guidelines for Environmental and Social Considerations (April 2010)", JICA should support the project proponent and EIA consultant/s to elaborate a separate “Brief Resettlement Action Plan (BRAP)”.

The contents of the ARAP is as follows, and all socio-economic survey (population census survey, property and land survey, households and livelihood survey), re-acquisition cost/ price survey, needs survey for life reconstruction measures, and other related survey results should be also submitted to JICA.

The contents of the Brief Resettlement Action Plan

- (1) The need for land acquisition and resettlement.
- (2) The survey results on entire occupied population census survey, and property and land survey of the project affected area.
- (3) The survey results on household and livelihood survey targeting at least 20 percent of the occupants of the project affected area.
- (4) Beneficiaries requirement and conditions for compensation of assets’ loss and livelihood reconstruction counter measures.
- (5) The compensation procedures on complete replacement costs of assets’ loss, based on

- the replacement cost/ price survey.
- (6) The livelihood and living standards reconstruction measures for affected household in order to improve or at least recover the living standards comparing to the previous/ original standard.
 - (7) Authority and grievance redress procedures of the institution/ entity responsible to the complaint process.
 - (8) Identification and the responsibilities of the institutions responsible for the resettlement (such as project implementing agencies, local governments, consultants, NGO, *et cetera*)
 - (9) The implementation schedule of physical relocation after the completion of assets' loss compensation payments.
 - (10) The costs and financial resources.
 - (11) Monitoring system and the monitoring form by implementing agencies.
 - (12) The affected residents' consultation results on the original plan and alternative livelihood reconstruction measures

1.5.6.3 - Management Plan

The consultant shall prepare an environmental management plan for the proposed facility.

1.5.7 - Environmental Monitoring Plan

During (1) construction and (2) operation of the facility, all of mitigation measures have to be preserved and monitored to evaluate impact in comparison to criteria and/or environmental standards. The recommendation for environmental monitoring plan should be proposed

1.5.8 - Public Consultation

The stakeholder meeting will be held after completion of Draft EIA Report and the opinions from the stakeholder at the meeting will be reflected in the Final EIA Report.

1.6 REPORT

The EIA Report should be concise and limited to significant environmental issues.

The format is as follows:

- Executive Summary
- Legal and Administrative Requirements ¹
- Project Description
- Scoping
- Project Alternatives ²
- Baseline Environmental Conditions ³
- Assessment of Environmental Impacts ⁴

¹ purpose of the EIA, EIA preparation process, legal actions required by government to approve action.

² description of proposed project, discussion of reasonable alternatives, decision making process followed during project definition

³ description of baseline environmental conditions in the vicinity of the proposed site

- Mitigation, Management and Monitoring ⁵
- Conclusions and Recommendations ⁶
- Results of Public Consultation
- Appendices (supporting data, information and surveys, - list of EIA papers and references)

12. Other relevant information

None. (Available on request)

⁴ identification of positive and negative impacts, assessment of significance (quantitative and qualitative), identification of key issues

⁵ including institutional responsibilities and procedures for reporting and analysis

⁶ key conclusions, positive and negative impacts of the proposed facility, recommendations in relation to acceptability of environmental impacts and conditions for project approval and/or reasons for project disapproval