

Technical Cooperation Profile

I. Basic project data

Beneficiary Country / Region	Republic of Bolivia		
Project name:	Support for the Preparation of the Miscuni Renewable Energy Hydroelectric Project		
Project number:	BO-T1117		
Project team:	Gastón Astesiano (INE/ENE), Team Leader; Emilio Sawada (ENE/CPR); Camilo López (INE/ENE); Carlos Lago (VPC/PDP); Roberto Laguado (CAN/CBO) and Diego Buchara (LEG/SGO); under the supervision of Leandro Alves (INE/ENE/CHF)		
Executing agency:	Inter-American Development Bank (IDB)		
Beneficiaries:	Empresa Nacional de Electricidad (ENDE) and Empresa Misicuni (EM)		
Date of request:	June 25, 2009		
Financing plan:	IDB (Infrafund):	US\$	300,000
	Local Counterpart:	US\$	30,000
	Total:	US\$	330,000
Execution period:	10 months		
Disbursement period:	12 months		

II. Background and problem statement

- 2.1 The Misicuni Multipurpose Project is located in the Department of Cochabamba, and its objective is to divert the waters from the Misicuni River (located at 3.700 meters above sea level) to supply the central Cochabamba Valley (located at 2.700 meters above sea level) with potable water, irrigation water and electric power generation for the grid.
- 2.2 Due to the dry weather conditions, the Cochabamba Valley has historically faced a water supply problem aggravated by the population growth in the region. This project is the most efficient and economical way to provide an additional water supply to the region, while generating power from a renewable source for the National Interconnected System (NIS).
- 2.3 Regarding the electricity supply through the NIS, about 60% of the generation is currently coming from natural gas fired thermal power plants. The Government of Bolivia (GoB) has decided to improve the energy matrix by adding more renewable hydro projects to the system which will allow the reduction of domestic hydrocarbon consumption and increase natural gas exports to the neighbor countries.
- 2.4 The whole project comprises the construction of a 120-m high rock filled and concrete face dam¹, a 19.5-km long, 2,6 meters diameter tunnel for water diversion (finalized in

¹ One aspect that requires attention for the construction of the dam and the reservoir is the resettlement of 175 families.

2005 with the financial support from the Government of Italy), a pressurized piping system which main component is a 3.5-km long, 1,6 meters diameter penstock (from 3.700 to 2.700 meters above sea level) that conveys a controlled water flow from the tunnel to the power plant to be built in the Cochabamba Valley. The powerhouse will house two turbine-generators sets (total installed power 80 MW), allowing the generation of about 216 GWh/year. With a yield of 3,2 m³/s, the discharged water will enter a stilling pond that is subsequently diverted to the potable water conduit to supply the population with 2.2 m³/sec and the rest to the main irrigation channels, covering an area of 6,000 Ha in the Cochabamba Valley.

- 2.5 The dam construction contract (US\$85 million) has been awarded to an Italian consortium and will be financed by the Government of Italy (GoI), National GoB, the Prefecture of Cochabamba (PoC) and the Andean Development Corporation (ADC). The contract was signed in May 2009.
- 2.6 The cost of the hydroelectric power plant, including complementary investments such as a substation and a 50 Km long 230 kV transmission line to the NIS, is estimated in about US\$110 million. The Inter-American Development Bank (IDB) will support these investments through a sovereign guaranteed loan to the GoB. The major stake holders of this project are the *Empresa Misicuni* (EM) (a special public entity created to promote and develop the Misicuni Multipurpose Project), and the *Empresa Nacional de Electricidad* (ENDE) a public national electricity company.
- 2.7 The IDB loan is registered in the 2009A pipeline under number BO-L1043 and it's amount is estimated in about US\$60 million (final amount under discussion). The Project Profile was discussed and approved at the Eligibility Review Meeting (ERM) on June 1, 2009. The borrower will be the Republic of Bolivia, and the executing agency will be ENDE. For the operation of the power plant a new *Misicuni* Hydropower Company will be created.

III. Program objective and description

- 3.1 The **general objective** of this Technical Cooperation (TC) is to support the GoB: (i) developing renewable energy resources; (ii) developing water and irrigation infrastructure; (iii) ensuring basic conditions for sustainable development in the Cochabamba Valley region; and (iv) improving the energy matrix by reducing dependency on fossil fuels.
- 3.2 The **specific objective** of the TC is to promote and support the preparation of the *Misicuni* Renewable Energy Hydroelectric Project (BO-L1043) by financing: (i) the revision of the basic engineering, project technical design, bidding documents and technical specifications of the *Misicuni* project; (ii) the review of the existing socio-economic, financial, institutional, environmental and social studies and the development of complementary studies required for the preparation of the operation; and (iii) institutional strengthening of the executing agency of the Project within ENDE.
- 3.3 **Components.** To achieve the proposed objectives, consulting firms and individual consultants that have had international experience with studies in comparable operations in Latin America and Caribbean countries will be selected and engaged for the project. The main components of this TC are:

- i. **Component I – Revision of Technical Studies.** This Component will: (i) support the review, update and complement the existing technical studies and designs for the project, including basic and detailed engineering for all the components of the power plant, substation and transmission line to connect to the NIS; and (ii) support the drafting of bidding documents, technical specifications and other project-related documents.
- ii. **Component II – Socio-economic, financial, institutional, environmental and social review.** This Component will finance the review and update of : (i) socio-economic aspects of the project including the cost-benefit analysis; (ii) financial analysis of the project including the financial projections of the power project; (iii) institutional aspects of the project including the analysis of the executing unit to be created and regulatory framework of the electricity sector; (iv) environmental and social studies, including the development of complementary studies required to prepare the loan operation².
- iii. **Component III – Institutional Strengthening of the Executing Agency.** This Component will finance the hiring of the consultants who will constitute the Executing Agency of the *Misicuni* Renewable Energy Hydroelectric Project (BO-L1043) until the Project is approved and henceforth these technical personnel will be financed with funds of the Project. In this way the same technical personnel that will participate in the final preparation of the project will also be part of the execution of the Project once approved. The executing team will be integrated by: (i) a Project Coordinator, specialized in project management; (ii) a specialist in hydroelectric projects; (iii) an economic and financial specialist; (iv) a specialist in procurement; (v) an administrator in charge of the financial management of the Project; and (vi) the required administrative personnel.

IV. Cost and financing

- 4.1 The cost of this TC to be financed with funds of the Infrastructure Project Preparation Fund (Infrafund) is estimated as US\$300,000. As described in paragraph 4.2(b) of document GN-2404-4, the Infrafund may finance, on a non-reimbursable basis, the preparation of specific programs, plans and projects to be funded by the IDB, including pre-feasibility and feasibility studies, project design, document preparation and revision to carry out financing requests and/or for bidding purposes and studies related to project viability (technical, economic, financial, environmental, social, institutional and legal), for public and private sector sponsored projects. The Infrafund is the only fund to support these kind of studies for such type of projects. The program will also include local counterpart funding in cash for US\$30,000. Table IV-I summarizes the TC's estimated costs.

Table 1: Summarized budget

Component	Financing
-----------	-----------

² This TC will support the environmental and social aspects related to the power plant and ancillary installations to be financed by the IDB. Another TC will be prepared to support EM in all the environmental and social aspects related to the works that are not financed by the IDB, especially those related to the dam construction and the resettlement of the families affected by the construction of the reservoir.

	IDB - Infrafund	Local	TOTAL
	(US\$)	(US\$)	(US\$)
Component I - Revision of Technical Studies	130,000	--	130,000
Component II – Socio-economic, financial, institutional, and environmental and social review	30,000	--	30,000
Component III – Institutional Strengthening of the Executing Agency	110,000	--	110,000
Local Support (logistics and administrative)		30,000	30,000
Contingencies	30,000	--	30,000
TOTAL	300,000	30,000	330,000
Percentage	(91%)	(9%)	100%

V. Executing agency and execution structure

- 5.1 By request of the Government of Bolivia, the IDB will be the Executing Agency of this TC. The procurement of works and goods as well as the selection and contracting of consulting services financed with Infrafund resources will be a responsibility of the Energy Division of the Infrastructure and Environment Department (INE/ENE), and carried out according to the IDB policies and procedures for Procurement of Works and Goods financed by the IDB (document GN-2349-7) and for Selection and Contracting of Consultants Financed by the IDB (document GN-2350-7).
- 5.2 INE/ENE will have the technical responsibility of this TC. INE/ENE will be responsible for the preparation of Terms of Reference and selection of the consulting firm and individual consultants, revision of the products prepared by the consulting firm and individual consultants, budget administration, logistics, local support and coordination between the GoB energy related entities, EM, ENDE and the consultants.
- 5.3 Technical staff of ENDE and EM will support the consultant firms and individual consultants during their field visits, and will monitor their activities, and review and evaluate the reports.

VI. Major issues

- 6.1 The TC may have a coordination risk since the project has several parties and beneficiaries and the communication channels could intertwine at some point. This risk is mitigated due to the fluent relation developed by the IDB project team with the major stakeholders, including ENDE, EM and the Vice Ministry of Electricity during the preparation phase of the loan operation. The fiduciary risk is mitigated by INE/ENE being the executing agency.

VII. Action Plan

- 7.1 Processing of the operation by INE/ENE will take a maximum of four weeks, counted starting at the date of the reception of Donor's eligibility. This will include the preparation of the indicative Terms of Reference for the consulting services that will be

required. However, the IDB Project Team, working in collaboration with the personnel of ENDE and EM, will take all feasible steps to shorten this period.

VIII. Environmental and Social Strategy

- 8.1 This TC was reviewed by the Environmental and Social Impact Review (ESR) Committee on June 29 of 2009. No negative environmental or social effects were identified and the TC has been classified as a “C” according to the Safeguard Classification Tool.
- 8.2 There are no foreseeable issues or impacts (environmental or social) during the execution of this TC. This TC will promote and support the use of renewable sources of energy in order to ensure a sustainable development in Bolivia, providing alternatives to minimize the dependency on fossil fuels. Each of the financed components will comply with the environmental and safeguards compliance (OP-703) of the IDB.
- 8.3 Considering its nature, this CT is not expected to generate negative environmental or social impacts.