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## **URUGUAY**

### **PUNTA DEL TIGRE “B” COMBINED-CYCLE PROJECT**

**(UR-L1070)**

#### **LOAN PROPOSAL**

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ELECTRONIC LINKS	
<b>REQUIRED</b>	
1.	Annual work plan (AWP) <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36798955">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36798955</a>
2.	Complete procurement plan <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36798985">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36798985</a>
3.	Monitoring and evaluation arrangements <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36806694">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36806694</a>
4.	Environmental and Social Management Report (ESMR) <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36806711">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36806711</a>
<b>OPTIONAL</b>	
1.	Multiyear execution plan <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36798937">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36798937</a>
2.	Guide to Clean Fossil Fuel Technologies for the Power Sector in Latin America and the Caribbean <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36831248">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36831248</a>
3.	Conclusions reached by the multiparty energy commission <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36831712">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36831712</a>
4.	Presentation on energy policy in Uruguay by the National Energy Director <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36831722">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36831722</a>
5.	Analysis of technical alternatives for increasing generating capacity in the national grid <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36833485">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36833485</a>
6.	Technical characteristics of the Punta del Tigre B combined-cycle power plant <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36843245">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36843245</a>
7.	Note on DNE support for the Punta del Tigre B power plant and regasification plant <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36865085">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36865085</a>
8.	Project socioeconomic and financial evaluation report <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36798969">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36798969</a>
9.	Executing agency institutional capacity assessment (ICAS) report <a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36806847">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=36806847</a>

## ABBREVIATIONS

ANCAP	Administración Nacional de Combustibles, Alcohol y Portland [National Fuel, Alcohol, and Cement Administration]
AWP	Annual work plan
BCI	Bid comparison index
CAF	Andean Development Corporation
DNE	National Energy Directorate
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
EDF	Expected Default Frequency Model
EIRR	Economic internal rate of return
ENPV	Economic net present value
EPC	Engineering, Procurement, and Construction
GDEF	Gerencia de División Económico Financiera [Economic-Financial Division]
GWh	Gigawatt hours
ICAS	Institutional Capacity Assessment System
KfW	Kreditanstalt für Wiederaufbau
kWh	Kilowatt-hour
LNG	Liquefied natural gas
MIEM	Ministry of Industry, Energy, and Mining
MMm <sup>3</sup>	Millions of cubic meters
MW	Megawatts
MWh	Megawatt hours
O&M	Operation and maintenance
PMR	Progress Monitoring Report
SEPA	Procurement Plan Execution System
SIN	Sistema Interconectado Nacional [National Electricity Grid]
tCO <sub>2</sub>	Tons of carbon dioxide
TCR	Tribunal de Cuentas de la República [State Audit Department]
TOCAF	Texto Ordenado de Contabilidad y Administración Financiera [Amended Text on Financial Accounting and Administration]
URSEA	Unidad de Regulación de Servicios de Energía y Agua [Energy and Water Services Regulation Unit]
UTE	Administración Nacional de Usinas y Transmisiones Eléctricas [National Electricity Generation and Transmission Authority]

**PROJECT SUMMARY**  
**URUGUAY**  
**PUNTA DEL TIGRE “B” COMBINED-CYCLE PROJECT**  
**(UR-L1070)**

Financial Terms and Conditions				
<b>Borrower:</b> National Electricity Generation and Transmission Authority (UTE) <b>Executing agency:</b> UTE <b>Guarantor:</b> Eastern Republic of Uruguay			<b>Flexible Financing Facility*</b>	
			<b>Amortization period:</b>	25 years
			<b>Original weighted-average lifetime:</b>	15 years
			<b>Disbursement period:</b>	5 years
<b>Source</b>	<b>Amount</b>	<b>%</b>	<b>Grace period:</b>	5 years
IDB (OC)	US\$200,000,000	27.0	<b>Inspection and supervision fee:</b>	**
CAF	US\$180,000,000	24.3		
KfW	US\$70,000,000	9.4	<b>Interest rate:</b>	LIBOR-based
UTE	US\$291,200,000	39.3	<b>Credit fee:</b>	**
<b>Total</b>	<b>US\$741,200,000</b>	<b>100.0</b>	<b>Currency of approval:</b>	US\$ from Ordinary Capital
Project at a Glance				
<b>Project objective:</b> The project’s general objective is to help satisfy the growing demand for electricity, diversify the electricity matrix on an environmentally sustainable basis, and mitigate systemic vulnerability, particularly in years of low rainfall. The <b>specific objective</b> is to support the construction of a gas-fired combined-cycle power plant together with ancillary works, and support the development of a program to modernize the UTE’s environmental management.				
<b>Special conditions precedent to the first disbursement:</b> The UTE will provide evidence of: (i) the preparation of the consolidated environmental management plan for Punta del Tigre; and (ii) a satisfactory technical review by the IDB of the bid that is awarded the combined-cycle plant project. <b>Special conditions precedent to the second disbursement:</b> (i) development of a complementary gas emissions dispersion model (paragraph 3.4).				
<b>Special execution conditions:</b> The UTE will: (i) submit semiannual progress reports on the execution of the combined-cycle project and the environmental management modernization component, including environmental and social considerations; (ii) 12 months before the date set for the first combustion turbine to come on stream, submit a report certifying the start of a water quality and aquatic habitat monitoring program, including its initial results; (iii) six months before the date set for the first combustion turbine to come on stream, submit a report certifying the start of implementation of the plan of action to create a coastal park in the combined-cycle project area; (iv) immediately after the first combustion turbine comes on stream and the steam turbine starts operations, the IDB will perform environmental inspections to verify that plant operation is compliant with its environmental and social policies, in accordance with agreed upon standards and applicable national regulations; and (v) before the last disbursement, the UTE will submit a final report on implementation of the coastal park in the combined-cycle project area (paragraph 3.5).				
<b>Exceptions to Bank policies:</b> None.				
<b>Project qualifies as:</b> SEQ <input type="checkbox"/> PTI <input type="checkbox"/> Sector <input type="checkbox"/> Geographic <input type="checkbox"/> Headcount <input type="checkbox"/>				
<b>Procurement:</b> All project procurement will be conducted in accordance with the Bank’s policies and procedures, as defined in documents GN-2349-9 and GN-2350-9. No exceptions to the Bank’s policies are foreseen. See updated procurement plan (Annex III).				

(\*) Under the Flexible Financing Facility (document FN-655-1), the borrower has the option to request modifications to the amortization schedule, as well as currency and interest rate conversions, in all cases subject to the final amortization date and the original weighted-average lifetime of the loan. In considering such requests, the Bank will take into account market conditions and operational and risk management considerations.

(\*\*) The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank’s lending charges, in accordance with the applicable policies.

## I. DESCRIPTION AND RESULTS MONITORING

### A. Background and rationale

- 1.1 Uruguay does not have proven oil, coal, or natural gas reserves of its own; and it has already attained maximum development of its hydroelectric potential with large-scale power plants. The national electricity grid (SIN) has installed generating capacity of 2,692 megawatts (MW), of which 57.1% is hydroelectric<sup>1</sup> and 32.5% thermal, while 10.4% comes from other renewable sources. There is 2,000 MW capacity for interconnection with Argentina, although this is subject to limited use, depending on prices and the availability of energy for export in the neighboring country. There is also 72 MW capacity for interconnection with Brazil, subject to the same constraints.
- 1.2 Uruguay is one of the countries with greatest electricity coverage in Latin America (98%). The SIN serves over 1.3 million customers, concentrated mainly in the residential sector (88%) which consumes 40% of the energy; Montevideo accounts for 44% of demand. In 2011 demand for power amounted to 9,976 gigawatt-hours (GWh), with imported electricity representing 4.9% of this value, and peak demand at 1,745 MW. Growth is projected at 3.8% per year over the next five years, and by 2015, demand is expected to exceed 11,000 GWh, with a peak of approximately 2,000 MW.<sup>2</sup>
- 1.3 **Hydrology.** The hydrology of the river basins connected to Uruguay's hydroelectric system is highly variable, and this directly impacts the cost of electricity supply. In years of normal or high rainfall, hydropower generating capacity is sufficient to cover a large portion of total demand;<sup>3</sup> but, in dry years, thermal generation is essential for meeting demand, particularly since most hydroelectric plants are run-of-the-river dams with little long-term storage capacity; and the system basically depends on the Uruguay river basin, and the Negro river sub-basin, which have experienced dry periods simultaneously. In 2001-2010, hydropower met between 43% (2006) and 98% (2001) of demand.<sup>4</sup>
- 1.4 **Imports.** Interconnections with neighboring countries also provide backup in coping with the variability of hydrological cycles, contributing up to 35% of demand (2006) albeit at high prices. Import contracts are generally subject to interruption and depend on marginal cost and availability in the exporting countries. The average import price between 2009 and 2011 was US\$199 per megawatt hour

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<sup>1</sup> Including 945 MW from the Salto Grande binational hydroelectric plant shared with Argentina.

<sup>2</sup> 2011 data. Source: Ministry of Industry, Energy, and Mining. <http://www.miem.gub.uy>.

<sup>3</sup> The supply of renewable energy for a medium-rainfall year is about 8,750 GWh, which includes all three hydroelectric plants on Río Negro (Gabriel Terra, Rincón de Baygorria and Constitución), with a total installed power of 593 MW, and the Uruguayan part of the Salto Grande binational power plant. The only hydroelectric plant with effective reservoir capacity or energy reserve is Gabriel Terra (150 MW), with a reserve volume equivalent to 4.5 months' generation.

<sup>4</sup> Source: Ministry of Industry, Energy, and Mining. <http://www.miem.gub.uy>.

(MWh), with imports from Argentina attaining an average price of US\$425/MWh in 2009. In periods of peak demand and in dry years, neighboring exporters are highly unlikely to have surpluses since their priority is to supply their own domestic demand.<sup>5</sup>

- 1.5 Power generation based on nonconventional renewable energy is growing, with currently installed wind power capacity of 43 MW and biomass thermal capacity of 240 MW. Uruguay has an ambitious plan to promote wind energy to cover its growing electricity demand. In February 2012, the third bidding process was held for wind turbine parks, and bids were received for 780 MW, following the 332 MW awarded in the first two bidding processes, and the 200 MW which the Administración Nacional de Usinas y Trasmisiones Eléctricas [National Electricity Generation and Transmission Authority] (UTE) plans to incorporate directly. Wind power capacity is expected to exceed 1,000 MW by 2015. Nonetheless, the large-scale installation of wind turbine plants requires backup in terms of rapid response firm generation for hours when there is no wind.<sup>6</sup> Given the intrinsic variability of hydrology in Uruguay (paragraph 1.3), the most efficient backup generation solution is thermal, and within that, combined-cycle plants (paragraph 1.9).
- 1.6 **Supply of natural gas.** Uruguay is connected to Argentina through the Cruz del Sur gas pipeline (Buenos Aires-Colonia-Montevideo), which has a carrying capacity of over 6 million cubic meters per day (MMm<sup>3</sup>/d). The current equipment at Punta del Tigre “A” (250 MW) can consume up to 1.8 MMm<sup>3</sup>/d operating with natural gas. The remaining demand for gas in Uruguay (nonelectric) could amount to between 0.6 and 0.9 MMm<sup>3</sup>/d until 2015. Given that the new combined-cycle power plant could consume up to 2.0 MMm<sup>3</sup>/d, the maximum demand in Uruguay in 2015 would be some 4.7 MMm<sup>3</sup>/d, which could be supplied through the Cruz del Sur pipeline, if gas was available to be transported through the pipeline.<sup>7</sup>
- 1.7 **Regasification plant.** The possibility of being able to rely on stable natural gas supply in Uruguay through pipelines is currently very small, owing mainly to the high level of consumption in the domestic market in Argentina, which is reducing surpluses for export.<sup>8</sup> Given this situation, a project to build a liquefied natural gas (LNG) regasification plant close to Montevideo is being developed by the UTE and the National Fuel, Alcohol, and Cement Administration (ANCAP),<sup>9</sup> with the potential involvement of the Argentine energy company Energía Argentina Sociedad Anónima (ENARSA). This plant is expected to have an initial capacity of

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<sup>5</sup> Source: UTE.

<sup>6</sup> Intermittent generation sources such as wind produce energy representing only a third of installed capacity.

<sup>7</sup> In Argentina, two regasification plants have been installed, one in Bahía Blanca and the other in Escobar.

<sup>8</sup> The possibility of importing gas from Bolivia requires major investments to expand gas pipelines in Argentina and thus increase carrying capacity.

<sup>9</sup> The UTE and ANCAP have set up a special-purpose entity known as Gas Sayago S.A. to develop the “NGL del Plata” regasification plant.

10 MMm<sup>3</sup>/d, and will make it possible to access the international LNG market, reducing reliance on natural gas imports via pipelines, and ensuring a supply of natural gas in sufficient quantities to cover demand. This plant is expected to come on stream in late 2014.

- 1.8 **Rationale for the operation.** The electricity sector in Uruguay faces short- and medium-term challenges stemming from: (i) demand growth; (ii) systemic vulnerability to variable rainfall patterns; (iii) the volatility of fossil fuel prices (natural gas, oil, and petroleum products); (iv) limited availability of natural gas through pipelines; and (v) high prices and limited availability of imported electricity, especially in dry years.<sup>10</sup> Given this situation, the Uruguayan government's strategy entails: (i) diversification of the electricity matrix, particularly by large-scale incorporation of wind power (paragraph 1.5); (ii) diversification of sources of electricity imports by constructing a 500 MW transmission line between Uruguay and Brazil; (iii) construction of an LNG regasification plant (paragraph 1.7); (iv) the installation of power plants based on biomass (forest residue and paper pulp plants);<sup>11</sup> and (v) the implementation of energy efficiency programs.<sup>12</sup>
- 1.9 **Proposed solution.** The UTE has analyzed the alternatives for increasing generating capacity in an environmentally sustainable manner, considering, among other things, the available technologies, fuel sources (i.e., gas, liquid fuels, coal), hydroelectric, nonconventional renewables (wind, biomass, mini hydros), import constraints, and the impact of hydrology on supply reliability.<sup>13</sup> As a result, it has been concluded that the best solution is to expand the wind turbine park combined with the installation of a combined-cycle plant and a re-gasification plant (paragraph 1.7). The large-scale installation of wind turbine parks is only possible if there is firm generation at times when there is insufficient wind, and the combined cycle is the most appropriate type of plant given its rapid response, efficiency, and cost. This solution makes it possible to guarantee energy supply, increase renewable energy, and reduce systemic vulnerability particularly in dry years, representing the most robust alternative in the different hydrological scenarios considered.<sup>14</sup> The

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<sup>10</sup> See electronic link. Document of the National Energy Directorate (DNE).

<sup>11</sup> The Bank has approved a non-sovereign guaranteed loan for a new cellulose plant (which includes 160 MW generation capacity) (UR-L1068).

<sup>12</sup> The Uruguayan government's sector strategy considers these challenges and their solutions, which were discussed and agreed upon in a multiparty parliamentary commission. See link.

<sup>13</sup> See Sustainable Energy Sector Guidelines, paragraph 3.28 (document GN-2613) and the electronic link, Analysis of technical alternatives for increasing generating capacity in the national grid.

<sup>14</sup> The criterion used by the UTE to decide on the expansion of the generating park consists of having sufficient firm backup to avoid rationing greater than 10% of annual demand, even in the historically driest periods on record, and a scenario in which electric energy imports are not available.



combined cycle is the most cost-efficient thermal generating solution,<sup>15</sup> with the least environmental impact at a reasonable cost for Uruguay (paragraph 2.10). In addition, as energy dispatch is managed on a marginal cost basis, the combined cycle will replace less efficient thermoelectric plants with higher levels of greenhouse gas emissions (see Table 1). This solution is the best for integrating hydro-thermoelectric systems both because of its costs and because of its technical flexibility for dispatch as basic or intermediate generation. It is therefore economically and environmentally superior to other thermal technologies, as has been analyzed in numerous studies done internationally and in the Latin American region in particular.<sup>16</sup>

**Table 1. Comparison of indicators for thermal power plants to Punta del Tigre “B”**

Thermal plants	Variable cost (US\$/MWh)	Emissions (tCO <sub>2</sub> */MWh)
Central CTR	279	0.85
Punta del Tigre-A (diesel-fired)	217	0.68
Battle Sala B	180	1.12
Battle 6th unit	144	0.87
Battle 5th unit	140	0.84
Motors	121	1.13
Average of current thermal park	168	0.87
Punta del Tigre-B (diesel-fired)	165	0.53
Punta del Tigre-B (natural gas-fired)	95	0.39

\* Tons of carbon dioxide

- 1.10 **Project location.** The Punta del Tigre “B” power plant will be built on the same land where the Punta del Tigre “A” power plant currently operates. This plant has a transmission line with capacity to transport the additional power generated by the new plant to the Las Brujas substation (a 500 kV line currently operating at 150 kV). The property also has a gas pipeline from the Cruz del Sur pipeline branch (the future regasification plant will be connected to this network), and with a pipeline that will be used to transport liquid fuel from a pumping station owned by the State oil company ANCAP. The installations of the two pipelines have sufficient capacity to satisfy the additional demand required by Punta del Tigre “B”.

<sup>15</sup> The average efficiency of the thermal generating park is 31.3% (electricity generated/heat capacity of fuel burned) whereas the efficiency of the Punta del Tigre “B” combined-cycle plant would be about 55%.

<sup>16</sup> The study *Guide to Clean Fossil Fuel Technologies for the Power Sector in Latin America and the Caribbean* by the Latin American Energy Organization (OLADE), the Center for Energy, Environmental, and Technology Research (CIEMAT), and Deutsche Montan Technologie GmbH (DMT) finds that natural gas-fired combined-cycle plants are the most economic way to obtain firm energy with low emissions and environmental impact. See electronic link for further details.

**B. Regulatory framework governing the energy sector in Uruguay**

- 1.11 The electricity sector in Uruguay is governed by Law 18,632/97, the New Regulatory Framework of the Electricity Sector. There is separation of roles with: (i) a regulatory body, the Energy and Water Services Regulation Unit (URSEA); (ii) a standards agency, the National Energy Directorate, attached to the Vice Ministry of Energy of the Ministry of Industry, Energy, and Mining (MIEM); and (iii) a planning and system operation entity, the Electricity Market Administration (ADME). Participants in the generating segment are the UTE (55.3% of installed capacity), the Salto Grande binational hydroelectric plant (Salto Grande) (35.1%), and private firms (12.6%). Trading on the wholesale electric market (MEM) is basically done through contracts, but spot market transactions are also allowed. Private entities can participate in the generation segment, and units dispatch according to marginal cost. Transmission and distribution are regulated monopolies, in which the UTE is the leading stakeholder. The State-owned ANCAP has a monopoly on the importation and marketing of hydrocarbons and petroleum products, except for the importation of gas; and it is the main supplier of fuels to the UTE. The sector separates the roles of regulation (URSEA), policy-making (MIEM), and business (UTE). The sector is consistent with the Bank's Public Utilities policy (Operational Policy OP-708).
- 1.12 **National Electricity Generation and Transmission Authority (UTE).** The UTE is a decentralized State agency founded in 1912 under an Organic Law (Law 15,031/80), with a mission to guarantee Uruguay's electricity service on a sustainable basis. Its annual budget is prepared on the basis of strategic planning and is approved by the executive branch of government. The UTE has a board of directors that includes a representative from opposition parties.
- 1.13 **Rates and subsidies.** Electricity rates are proposed by the UTE to URSEA and approved by the executive branch. They are calculated on the basis of an average hydrological year, cover medium-term supply costs (investment, operation and maintenance, and return of between 6% and 10% on assets) and do not include subsidies. Rates are adjusted annually to reflect fuel costs and inflation; and in exceptional cases, there has been more than one increase per year. Electricity prices in Uruguay are among the highest in the region (US\$0.21/kilowatt-hour (kWh) for residential customers consuming between 101 and 600 kWh per month). However, users consuming less than 100 kWh/month have rates that are 30% lower per kWh.
- 1.14 **Stabilization Fund.** In 2010, an Energy Stabilization Fund was created to reduce the adverse impact of potential water shortages on the financial position of the UTE and on public finances (Article 773 of Law 18,719). In December 2010, the UTE transferred US\$150 million to the Fund, which has a ceiling equivalent to US\$500 million (in *unidades indexadas*, inflation-indexed monetary units). The Fund's operating regulations (Decree 442/011) require the UTE to make transfers to the Fund when annual rainfall is more than 115% of the average; whereas the UTE can receive transfers from the Fund when annual rainfall is below 90% of the average. This Fund is mainly used to offset the additional expense incurred by high

thermal generating costs in dry years, which previously were covered through government loans to the UTE.<sup>17</sup>

- 1.15 **The IDB's participation in the sector.** The Bank has been supporting the Uruguayan government with several technical cooperation programs, including a regional regasification plant (funding for preparatory studies for the liquefied natural gas plant project, operation RG-T1462), which financed part of the technical and environmental studies. Another technical cooperation operation has recently been approved to support the Punta del Tigre "B" combined-cycle power plant project (operation UR-T1080) on due diligence for the combined-cycle technical and environmental studies. Lastly, another technical cooperation operation is being executed to analyze distributed generation potential based on renewable energy and energy efficiency (operation RG-T1886).
- 1.16 **Other multilateral and bilateral agencies working in the sector.** The main multilateral and bilateral agencies working in the sector are: (i) the Andean Development Corporation (CAF), which, among others, is cofinancing interconnection with Brazil and the Punta del Tigre "B" project; (ii) the World Bank, which has been supporting a Global Environmental Facility operation for an energy efficiency program; and (iii) the Japan International Cooperation Agency (JICA) with a pilot plan to install photo-voltaic panels.
- 1.17 **Country strategy, the Bank's actions in the sector, and lessons learned.** The Bank's country strategy with Uruguay 2010-2015 (document GN-2626) prioritizes support for investments to ensure the energy supply, by incorporating regasification infrastructure and associated investments for electric power generation using gas and combined cycles. These approaches are aligned with the government's energy policy. Lessons learned in the sector include the advisability of turnkey contracts for this type of project, and the importance of having an independent supervisory firm to adequately monitor the works.
- 1.18 **Consistency with the Ninth General Capital Increase (GCI-9).** The combined-cycle project and the modernization of the UTE's environmental management (the project) are consistent with the guidelines and contribute to the targets set by the Bank's Ninth General Capital Increase on: (i) integration, because the plant will consume imported gas or fuel; and in the future could export electric energy, depending on conditions in the regional market; and (ii) climate change, since the plant will displace energy dispatch from inefficient thermal equipment, help reduce the emissions factor of the overall thermal generation park, and increase its efficiency, as well as serving as backup to the growing level of wind generation capacity (paragraphs 1.9 and 2.3).

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<sup>17</sup> In exceptional situations, with drought declared by law, the Uruguayan government can provide extraordinary financing, or suspend in whole or in part the contributions to general revenues that the UTE is required to make.

**C. Objective, components, and cost**

- 1.19 The project's general objective is to help satisfy the growing demand for electricity, diversify the electricity matrix on an environmentally sustainable basis, and mitigate systemic vulnerability, particularly in years of drought. The specific objective is to support the construction of a gas-fired combined-cycle power plant together with ancillary works, and support the development of a program to modernize the UTE's environmental management.
- 1.20 **Project cost.** The total project cost is estimated at US\$741.2 million, of which US\$200 million (27.0%) will be financed by the IDB. Counterpart funding of US\$180 million (24.3%) will be provided by CAF, US\$70 million (9.4%) by Kreditanstalt für Wiederaufbau (KfW), and US\$291.2 million (39.3%) by the UTE. In the event of an increase in the cost of the project or if additional funding is needed, the amounts in question will be provided by the UTE.
- 1.21 **Component I. Infrastructure works.** Component I includes the final engineering designs, supply of equipment and materials, works construction, electrical and electromechanical work, and implementation of the combined-cycle plant (530 MW). This is a turnkey or Engineering, Procurement, and Construction (EPC) bidding process. The plant must be designed to be able to use natural gas and diesel as alternative fuels, depending on availability. The plant includes two dual combustion turbines with heat recovery boilers and a steam turbine, with auxiliary systems and complementary facilities for operation. The amount for this component is estimated at US\$481.3 million (not including taxes and importation expenses).
- 1.22 **Timetable of the EPC contract.** The timeframe for project construction is estimated at 36 months, divided into the following stages: (i) installation and implementation of the first combustion turbine, which includes manufacture, transport, installation of the turbine, ancillary works for the transformation substation and connections to the transmission grid; the deadline for provisional acceptance of this turbine is 18 months from the entry into force of the EPC contract; (ii) installation and implementation of the second combustion turbine after 22 months; and (iii) completion of the cycle, with the installation and implementation of the steam turbine at 36 months, and final acceptance at 48 months. The Bank loan will finance up to US\$196.9 million of the EPC contract, contributing to payments defined by milestones, on a prorated basis between the cofinancing entities. Operation and maintenance (O&M) will be undertaken by the EPC contractor, based on the provisional acceptance of the first turbine, for a three year period (renewable) during which the UTE will receive training to manage the system.
- 1.23 **Component II. Modernization of UTE environmental management.** The UTE has been working to improve environmental management, with significant achievements such as ISO certifications for hydroelectric and thermal generation, and positive results in the treatment and disposal of the polychlorinated biphenyls

(PCBs) emitted by transformers, among other issues.<sup>18</sup> Nonetheless, there is still no comprehensive diagnostic assessment or proposal for a plan of specific actions. In that context, the UTE plans to develop a program to modernize environmental management that will contribute to the sector's environmental sustainability, for a total of US\$1 million to be financed out of the Bank loan, including: (i) a comprehensive environmental diagnostic assessment of the UTE; (ii) development of environmental action plan; (iii) development of an environmental management and performance plan; and (iv) execution of a pilot project to be identified, scaled, and implemented during the loan execution period (e.g. industrial waste management).

- 1.24 **Component III. Project management and administration.** Component III includes the contracting of a consulting firm to assist the UTE in supervision of the works. It also considers importation expenses, social contributions, payment of value-added tax and other charges that will be covered from the counterpart resources. In addition, US\$75 million (15% of the value of the works) of counterpart funds have been assigned to contingencies, and US\$2.0 million from the Bank financing have been earmarked to cover the financial expenses associated with the IDB loan.

**Table 2. Estimated costs (US\$ thousands)**

Item (US\$ thousands)	Total	IDB	Counterpart		
			CAF *	KfW *	UTE
<b>Component I.</b> Infrastructure works	481,391	196,975	178,255	70,000	36,161
<b>Component II.</b> Modernization of UTE environmental management	1,000	1,000	0	0	0
<b>Component III.</b> Project management and administration	258,812	2,025	1,745	0	255,042
Works supervision	10,000	0	0	0	10,000
External audit of the project	200	0	200	0	0
Social contributions	8,894	0	0	0	8,894
Financial expenses	3,570	2,025	1,545	0	0
Importation expenses and value-added tax	95,267	0	0	0	95,267
Other expenses and charges	65,239	0	0	0	65,239
Contingencies	75,642	0	0	0	75,642
<b>TOTAL</b>	<b>741,203</b>	<b>200,000</b>	<b>180,000</b>	<b>70,000</b>	<b>291,203</b>
%	100.0%	27.0%	24.3%	9.4%	39.3%

\*Financing is already approved by the respective organizations.

<sup>18</sup> See link. [http://www.ute.com.uy/pags/Institucional/gestion\\_destacada.html](http://www.ute.com.uy/pags/Institucional/gestion_destacada.html).

## D. Results Matrix

- 1.25 **Expected outcomes.** The Results Matrix contains indicators of outputs, outcomes, and associated impacts. The following project outcomes are expected: (i) an increase in the supply of electric energy in the system; (ii) diversification of electric power generating sources; (iii) reduction of systemic vulnerability in dry years; and (iv) reduction of the thermal park emissions factor. The project is expected to have the following impacts: (i) an increase in installed generating capacity (including wind power); (ii) a reduction in the average cost of thermal generation; and (iii) a reduction in energy imports.

## II. FINANCING STRUCTURE AND MAIN RISKS

### A. Financing instruments

- 2.1 The project will be implemented as an investment loan in works with a sovereign guarantee, financed 100% from Ordinary Capital (OC) with an amortization period of 25 years. The borrower will be the UTE, and the Eastern Republic of Uruguay will guarantee the loan. The estimated disbursement period is five years, as shown in the following provisional timetable (see Table 3).

**Table 3. Provisional disbursement schedule (US\$ millions)**

Source	Year 1	Year 2	Year 3	Year 4	Year 5	Total
<b>Component I. Infrastructure works</b>						
IDB	49.2	59.1	49.2	39.4	0	196.9
Counterpart	71.1	85.3	71.1	56.9	0	284.4
Total	120.3	144.4	120.3	96.3	0	481.3
<b>Component II. Modernization of UTE environmental management</b>						
IDB	0.0	0.1	0.4	0.3	0.2	1.0
<b>Component III. Project management and administration</b>						
IDB	0.1	0.4	0.7	0.9	0	2.0
Counterpart	33.0	45.9	65.6	110.3	2	256.8
Total	33.1	46.2	66.3	111.2	2	258.8
<b>Project total</b>	<b>153.4</b>	<b>190.7</b>	<b>187.0</b>	<b>207.8</b>	<b>2.2</b>	<b>741.1</b>
<b>%</b>	<b>20.7%</b>	<b>25.8%</b>	<b>25.2%</b>	<b>28.3%</b>	<b>0.3%</b>	<b>100.0%</b>

### B. Environmental and social risks and mitigation measures

- 2.2 The project has been classified as a category “A” operation in the framework of the Bank’s Environment and Safeguards Compliance Policy (Operational Policy OP-703). The following key impacts and environmental and social risks were identified during the analysis process: (i) the generation of greenhouse gases, specifically carbon dioxide (CO<sub>2</sub>), and particularly when the plant operates with diesel; (ii) gas emissions from the combustion of natural gas and/or diesel, mainly nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), PM (suspended particles), and carbon

- monoxide (CO); (iii) an increase in water temperature in the river, and the resulting potential impact on the aquatic habitat, owing to discharges from the cooling system; and (iv) although not directly related to the project, potential difficulties in developing a coastal park in the project area, due to the diversity of interests among the local inhabitants and a fishing community established at the site.
- 2.3 Measures to mitigate and manage the impacts mentioned in items (i) and (ii) above were mainly applied in the project design stage. The Bank has verified the design parameters, the content of the bidding documents, and the emissions models implemented; and it has found that the values of both generation efficiency and CO<sub>2</sub> emissions are within the limits set by the Bank's guidelines for thermal plants.<sup>19</sup>
- 2.4 In terms of impact on the water, the area in which there could be an increase of up to 2°C is small (2.88 ha), bearing in mind the large volume of the recipient water body (the River Plate). Water quality and aquatic habitats will be subject to complementary monitoring to verify compliance with the applicable standards and implement additional measures, if necessary. The executing agency will also be asked to design and implement a strategy and plan of action for managing the situation relating to the implementation of the coastal park.
- 2.5 As a result of the analysis, it has been shown that by incorporating the conditions into the loan contract, the project satisfies the applicable requirements of the Bank's policies, particularly Operational Policies OP-703 and OP-102.

### **C. Fiduciary and execution risks**

- 2.6 The executing agency will be the UTE, which has wide-ranging experience with multilateral organizations and is familiar with procedures and rules similar to those of the Bank.<sup>20</sup> Nonetheless, an institutional capacity assessment of the UTE was conducted, using the Institutional Capacity Assessment System (ICAS) methodology. The consolidated result of the capacities evaluated showed satisfactory development with a low risk level.
- 2.7 **Risk management.** During project preparation, workshops were held with the UTE to identify the project's potential risks. These are summarized in the risk management matrix, and include development risk related to the provision of gas to the combined cycle through the regasification plant, which is currently in the bidding process. The execution and start of the regasification plant operation could be delayed, in which case the combined-cycle plant would have to use diesel in the early stages of its operation. Although international emission standards are fulfilled with diesel, the benefits would be limited since the reductions in generating costs and emissions would be less. The benefits of the regasification plant are very important for Uruguay. Savings for the electric power system using natural gas (instead of diesel) in the combined cycle could be between US\$95 million and

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<sup>19</sup> Document OP-916. Liquid and Gaseous Fossil Fuel Power Plant Guidelines.

<sup>20</sup> The most recent operation with the Bank was loan 903/OC-UR, which was executed satisfactorily.

US\$190 million per year<sup>21</sup> depending on rainfall and the prices of oil and gas. Accordingly, despite representing an impact factor for the combined cycle, the probability of delay is actually quite small because there is a strong economic incentive to speed up execution.<sup>22</sup> The other risks identified, including development, environmental and social, and fiduciary risks, are considered of medium and low level, and are duly mitigated.

- 2.8 **Procurement.** Procurement will be undertaken in accordance with the Bank's procurement policies (documents GN-2349-9 and GN-2350-9). The procurement plan will be managed through the Procurement Plan Execution System (SEPA) ([www.iniciativasepa.org](http://www.iniciativasepa.org)). No exceptions to these policies are foreseen. The combined cycle EPC contract (component I) was put out to bid by the UTE in accordance with national legislation on government procurement and contracting, following the provisions of the Texto Ordenado de Contabilidad y Administración Financiera [Amended Text on Financial Accounting and Administration] (TOCAF). The contract, which was ultimately awarded by direct contracting, was the result of an international competitive process, and was ultimately awarded to the best bid that met the specifications. Two international competitive processes were held and abandoned because none of the bids submitted met the conditions in the respective bidding documents.<sup>23</sup> Consequently, the UTE decided to use direct contracting in accordance with the TOCAF.<sup>24</sup> Through reviews and comments on the bidding documents, the project team has verified, on a timely basis, that good practices and the Bank's criteria on the subject were followed; and it has concluded that the process was undertaken in accordance with the Bank's procurement policies, having applied criteria of economy and efficiency, advertising, equal opportunity, competition, and transparency in the process. Details are provided in Annex III, Fiduciary Agreements and Requirements. The procurement envisaged

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<sup>21</sup> Estimation based on a plant-use factor in the range of 30% to 60%, and assuming a generating cost that would be US\$70/MWh higher in the case of diesel.

<sup>22</sup> Although the UTE is one of the key stakeholders in the regasification project, it does not have control of its timetable and therefore cannot guarantee its start-up date. The Uruguayan government issued a support letter through the National Energy Directorate (DNE) confirming the policy decision to proceed with the bidding process and execution of the regasification plant. See electronic link.

<sup>23</sup> The bid documents for the second process indicated that only the bid with the best bid comparison index (BCI), which considers factors including equipment performance, would be analyzed, and that, if the specifications were not met, the bid with the second best index would not be analyzed, and the process would be abandoned, which is what ultimately happened.

<sup>24</sup> The UTE had the possibility of using direct contracting from the beginning, but undertook two international competitive processes before applying this mechanism. If IDB procedures had been applied, the result would have been the same: the award would have gone to the second-best bid from the second process, since the best bid in terms of the BCI did not comply with the specifications. The UTE negotiated and reached an agreement with the consortium Hyundai Engineering & Construction Co. Ltd., Kepco Plant Service & Engineering Co. Ltd., and Hyundai Corporation for a price equivalent to US\$481 million for the total investment. In terms of the BCI, the difference between the bid awarded the contract and the one rejected in the second bidding process was 3.2%. The contract is expected to be formalized by the end of 2012.



for component II to modernize UTE environmental management are small-value consulting service contracts and studies.

- 2.9 **Retroactive financing and recognition of expenditures.** The Bank may provide retroactive financing for up to US\$39.4 million (19.7% of the proposed loan amount) charged against the loan proceeds, and may recognize eligible expenditures incurred by the borrower prior to the loan approval date of up to US\$56.88 million (19.5% of the estimated amount of the local contribution) charged against the local contribution. These expenditures will include the first payment of the EPC contract and will be financed provided that requirements substantially analogous to those established in the loan contract have been met. The expenditures will have been incurred as of 12 October 2011, but in no case will expenditures incurred more than 18 months prior to the loan approval date be financed.

**D. Other topics and special considerations**

- 2.10 **Technical viability.** The bidding process for the combined cycle set standards for ensuring the use of widely proven, highly reliable technology. The turnkey contract modality will be used, and an external consulting firm will be contracted to provide supervisory support. These elements ensure the design, operation, and functioning of the plant, while minimizing technical risks. The cost estimated by the UTE for the plant is considered reasonable in relation to market prices.<sup>25</sup> The Bank has hired an international consulting firm to review the winning bid, to ensure that it is compliant with international standards and regulations, and to identify areas that require attention during construction.
- 2.11 The Bank team reviewed the Expected Default Frequency (EDF) model used by the UTE for planning. This model optimizes the expansion and use of resources, and includes an analysis of: (i) the level of demand; (ii) the availability of equipment (including wind turbines in the future); (iii) hydrological behavior; and (iv) exchanges with neighboring countries. The total management cost is the sum of the operating cost and the cost of non-supply of electric energy or outage cost. The analysis also considers different scenarios for the cost of fossil fuels. The model showed that the combined cycle is the best alternative, and the most robust in the face of the uncertainties considered.
- 2.12 **Economic viability.** To perform the economic evaluation of the combined cycle, the total supply cost was calculated in scenarios with and without the project, assuming average rainfall. It was found that the project has the following main economic benefits: (i) reduction in supply costs obtained from savings in the use of fuels and imports; and (ii) reduction in the probability of interruptions to electricity supply (with a consequent reduction in outage costs avoided). An economic internal

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<sup>25</sup> This point, as well as other technical aspects such as the capacity of the gas pipeline, multi-product pipeline and existing transmission lines, and the extraction and discharge of water, were analyzed and verified during the analysis missions undertaken jointly with technical staff from CAF and KfW.

rate of return (EIRR) of 23.8% was obtained, along with an economic net present value (ENPV) of US\$207 million, with flows discounted at 12%, for a situation in which the project operates with diesel; and an EIRR of 42.5% and an ENPV of US\$1.191 billion for the gas-fired scenario.<sup>26</sup> Consequently, the project is considered economically viable, and produces a higher return when operating with natural gas. Lastly, a sensitivity analysis was conducted, verifying that the project still yields a return with a 30% increase in investment costs or an 18% increase in operating costs, or a two year delay in going on stream.

- 2.13 **Financial viability.** The firm has a healthy financial and operational structure, with equity of US\$5.939 billion, revenues of US\$1.554 billion, a low debt level of US\$587 million, and earnings before interest, taxes, depreciation, and amortization (EBITDA) of US\$376 million.<sup>27</sup> The UTE's cash flow is solid, supported by a rate structure that is adjusted regularly to reflect operating costs and investments. Nonetheless, it is exposed to fuel price fluctuations for thermal plants; and rainfall levels could force an increase in financing needs, especially in the short term. The creation of the Energy Stabilization Fund (in an amount equivalent to up to US\$500 million) largely mitigates this risk.
- 2.14 The UTE has a local risk rating of AAA (*Fitch*). It has also issued tradable bonds on the local market, so the firm's financial information is published and kept regularly up-to-date on the website of the Central Bank of Uruguay. Over the next five years, the UTE expects to make investments of over US\$1.5 billion. Considering current financial commitments and the additional borrowing associated with the planned investments, the UTE would have sufficient capacity to meet its obligations under the project's loan contracts.<sup>28</sup>

### III. IMPLEMENTATION AND MANAGEMENT PLAN

#### A. Summary of implementation arrangements

- 3.1 **Execution mechanism.** The UTE's Economic-Financial Division (GDEF) will be responsible vis-à-vis the Bank for loan-related actions, and will receive support from specialized units for each activity. The contracting of an international consulting firm to assist the UTE in monitoring the works and the O&M contract will ensure both execution and adequate operation and maintenance of the plant. Execution of the environmental management modernization component will be under the technical leadership of the Environmental Division, which will rely on the corresponding units for bidding processes, contracting, and contract monitoring.

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<sup>26</sup> The results are highly positive because, in a scenario without the project, the alternative for the system is high-cost importation. In the case of gas-fired plants, 25% of the cost of the investments in the regasification plant were allocated as estimated consumption for the combined cycle.

<sup>27</sup> Figures as of 31 December 2011.

<sup>28</sup> Financial projections show that leverage levels would remain below 2.0 (debt/EBITDA) with interest coverage greater than 10.0 (EBITDA/interest). For further details see: <http://www3.bcu.gub.uy/autoriza/ggmvr/ute/mvr/calif260412.pdf>.

- 3.2 The GDEF will be responsible vis-à-vis the Bank for: (i) coordination of all loan-related activities; (ii) preparation of physical-financial status reports; (iii) the presentation of no objection and loan disbursement requests, and the maintenance of accounting records; (iv) implementation and maintenance of a control system that ensures resources are correctly used; and (v) preparation of reports including the progress monitoring report (PMR), annual work plans (AWPs) and semiannual monitoring reports.
- 3.3 Loan disbursements will be made through direct payments to the EPC contractor, or through advances of funds, subject to a programming of expenses, which will be justified prior to the subsequent disbursement. The loan will be executed on the basis of an AWP and the SEPA. Component I disbursements will be made according to the milestones identified in the EPC contract. The GDEF will verify fulfillment of the technical aspects of the payment milestones, supported by the supervisory firm. The Bank team will be supported by technical and environmental consultants.
- 3.4 **Conditions precedent to the first disbursement:** The UTE will submit evidence of the following to the Bank's satisfaction: (i) preparation of the environmental and social management plan (ESMP), consolidated for Punta del Tigre (plants A and B); and (ii) satisfactory technical review by the IDB of the bid awarded the combined-cycle project. **Conditions precedent to the second disbursement:** The UTE will submit, to the Bank's satisfaction, evidence of: (i) development of a complementary gas emissions dispersion model to confirm the results of the environmental impact assessment (EIA).
- 3.5 **Special execution conditions.** The UTE will submit evidence of the following to the Bank's satisfaction: (i) a semiannual status report on execution of the combined-cycle project and the environmental management modernization component, to include information on compliance with the environmental and social standards defined in the environmental management plan; (ii) 12 months before the date set for the first combustion turbine to come on stream (provisional acceptance), a report certifying the start of a water quality and aquatic habitat monitoring program, together with initial results; (iii) six months before the date set for the first combustion turbine to come on stream (provisional acceptance), a report certifying the start of implementation of the plan of action previously agreed upon with the IDB for creating a coastal park in the combined-cycle project area; (iv) immediately after (a) the first combustion turbine comes on stream (provisional acceptance) and (b) the steam turbine starts operating (provisional acceptance of the complete combined cycle), environmental supervision visits by the IDB, to verify that the plant operation is fulfilling the Bank's environmental and social policies, according to the agreed upon standards and applicable national regulations; and (v) before the last disbursement, a final report on the implementation of the coastal park in the combined-cycle project area.

**B. Summary of results monitoring measures**

- 3.6 **Monitoring.** The UTE will submit a semiannual monitoring report on the project, for Bank approval, no later than 60 days after 30 June and 30 December of each year, or on alternative dates coordinated with the other lenders. The UTE will use a monitoring system that integrates the financial-accounting information and progress made based on the PMR. The report will focus on the indicators in the Results Matrix (Annex II); problems encountered will be analyzed, and corrective measures adopted will be indicated. The reports for 30 December of each year will also include the AWP for the following year, with a forecast of disbursements and an updated procurement plan. These reports will be reviewed in semiannual meetings held between the Bank and the GDEF, and the other cofinancing entities.
- 3.7 The Bank team will be supported by technical consultants to monitor the project, for purposes of identifying possible execution problems on a timely basis. The IDB team will make quarterly visits to the works, coordinated with the other cofinancing entities, and maintain an ongoing dialogue with the GDEF.
- 3.8 **Evaluation.** The UTE will present a midterm report to the Bank 60 days after 50% of the loan proceeds have been disbursed; and a final evaluation report 60 days after the loan has been fully disbursed. These reports, whose terms of reference will require Bank's no objection, will include the following issues: (i) progress in achieving the targets set in the Results Matrix; (ii) degree of fulfillment of contractual obligations; (iii) the effectiveness of the monitoring and evaluation system; and (iv) lessons learned.
- 3.9 **Ex post socioeconomic evaluation.** After a full year of operation of the combined-cycle plant, an ex post cost-benefit evaluation will be performed using up-to-date information on demand, project cost, and generating costs, including energy imports.
- 3.10 **Audit.** The executing agency will submit annual financial statements for the project, audited by the Tribunal de Cuentas de la República [State Audit Department] (TCR), or by an independent audit firm acceptable to the Bank and selected in accordance with its policies and procedures. These audited financial statements will be submitted annually within 120 days following the end of each fiscal year during the execution period.

Development Effectiveness Matrix			
Summary			
I. Strategic Alignment			
1. IDB Strategic Development Objectives	Aligned		
Lending Program	The intervention is aligned with the lending program (i) to small and vulnerable countries, (ii) to support climate chance initiatives, renewable energy and environmental sustainability, and (iii) to support regional cooperation and integration.		
Regional Development Goals	The intervention contributes to protecting the environment, responding to climate change, promoting renewable energy, and enhancing food security: Stabilization of CO2 equivalent emissions (metric tons per habitant).		
Bank Output Contribution (as defined in Results Framework of IDB-9)	The intervention contributes to the following Bank outputs: (i) Number of cross border and transnational projects supported (infrastructure and customs, etc), and (ii) Percentage of power generation capacity from low-carbon sources over total generation capacity funded by IDB.		
2. Country Strategy Development Objectives	Aligned		
Country Strategy Results Matrix	GN-2626	The intervention contributes to the improvement of electricity and gas offer capacity.	
Country Program Results Matrix	GN-2661-4	The project is included in 2012 Country Program Document.	
Relevance of this project to country development challenges (If not aligned to country strategy or country program)			
II. Development Outcomes - Evaluability	Highly Evaluable	Weight	Maximum Score
	9.3		10
3. Evidence-based Assessment & Solution	9.9	25%	10
4. Ex ante Economic Analysis	10.0	25%	10
5. Monitoring and Evaluation	7.5	25%	10
6. Risks & Mitigation Monitoring Matrix	10.0	25%	10
Overall risks rate = magnitude of risks*likelihood	Medium		
Environmental & social risk classification	A		
III. IDB's Role - Additionality			
The project relies on the use of country systems (VPC/PDP criteria)	Yes	The project relies on the use of all financial management country systems, and, as far as procurement, information systems and shopping method.	
The project uses another country system different from the ones above for implementing the program			
The IDB's involvement promotes improvements of the intended beneficiaries and/or public sector entity in the following dimensions:			
Gender Equality			
Labor			
Environment	Yes	The project includes the preparation and implementation of a program to modernize environmental management.	
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project			
The ex-post impact evaluation of the project will produce evidence to close knowledge gaps in the sector that were identified in the project document and/or in the evaluation plan.			

The intervention is aligned with three dimensions of the lending program: (i) lending to small and vulnerable countries, (ii) support climate change initiatives, renewable energy and environmental sustainability and (iii) to support regional cooperation and integration. The intervention contributes to the Bank regional development goals 2012-2015 to protect the environment, responding to climate change, promoting renewable energy, and enhancing food security. The specific outputs it contributes to are: (i) Number of cross border and transnational projects supported (infrastructure and customs, etc.), and (ii) Percentage of power generation capacity from low-carbon sources over total generation capacity funded by IDB. The intervention is aligned with the country strategy and with the country program.

The general objective of the project is to contribute to the satisfaction of the growing demand for electric energy, while diversifying the energy matrix in a environmentally sustainable way and mitigating the vulnerability of the system especially during years with low rainfall. The specific objective of the project is to support the construction of a gas combined system power generation plant and its complementary civil works. The project also aims at improving the environmental management of the UTE.

The results matrix presents the outcome and product indicators related to the objectives and components of the program. Outcome indicators presented in the matrix are SMART. The program includes an economic analysis and a monitoring and evaluation plan based on an ex post methodology that should measure if some the expected results were achieved.

Most of the risks currently identified in the risk matrix are reasonable and they include mitigation measure and related metric to track their implementation.

## RESULTS MATRIX

<b>Project objective</b>	The project's general objective is to help satisfy the growing demand for electricity, diversify the electricity matrix on an environmentally sustainable basis, and mitigate systemic vulnerability, particularly in years of low rainfall. The specific objective is to support the construction of a gas-fired combined-cycle power plant together with ancillary works, and support the development of a program to modernize the UTE's environmental management.
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Output Indicators	Baseline 2012	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Target	Means of verification	Comments
<b>Components 1 and 3</b>								
530 MW combined-cycle power plant installed	0	0	0	0	1	1	UTE report, inspection visit, Ministry of Industry, Energy, and Mining (MIEM)	Two simple-cycle turbines will be provisionally received in 2014, and a steam turbine in 2016.
<b>Component 2</b>								
UTE environmental diagnostic assessment performed	0	0	1	0	0	1	UTE report	
Environmental plan of action developed	0	0	1	0	0	1	UTE report	
Environmental performance and management system designed	0	0	0	1	0	1	Consultant report with the management system design by the UTE	
Pilot project implemented using the environmental management system <sup>1</sup>	0	0	0	0	0	1	UTE report, inspection visit to UTE offices and the Punta del Tigre B plant, management system reports.	

<sup>1</sup> The specific pilot project will be identified during program execution. Once it has been chosen, indicators for evaluation after the end of the project will be defined (e.g. cost per ton of industrial waste treated).

Outcome indicators	Baseline (2011)	Target (2016)	Means of verification	Comments
GWh/year generated in Uruguay	9,524	13,392	MIEM (National Energy Directorate (DNE))	Base level (MIEM DNE data). The target was calculated using the UTE expansion scenario, assuming hydroelectric generation similar to the average of the last few years (average rainfall year).
% of nonhydroelectric generation in the Uruguayan electricity system	32%	52%	MIEM DNE	The % of nonhydroelectric generation is used as an indicator of the diversification of the matrix towards other generation sources (wind, biomass, combined cycle). This indicator also shows the reduction of vulnerability in dry years.
Thermal firm installed capacity as a proportion of maximum demand	64%	80%	MIEM DNE	The indicator shows systemic vulnerability in dry years.
Reduction of the thermal power plant park emissions factor (tCO <sub>2</sub> /MWh)	0.87	0.51	UTE report	<p>The thermal park emissions factor was calculated using information provided by the UTE on: (i) emissions factor (tCO<sub>2</sub>/MWh) per plant in operation; (ii) thermal generation in 2011 (base level); and (iii) the UTE expansion factor (target) which assumes hydroelectric generation with an average rainfall year.</p> <p>These scenarios assume that the Punta del Tigre B plant is operating with natural gas in 2016.</p>

Impact indicators	Baseline (2011)	Target (2017)	Means of verification	Comments
Reduction in electricity imports (GWh/year)	470.3	120	MIEM DNE	Baseline provided by electricity imports in 2011. The target was calculated by the UTE assuming that the combined-cycle plant comes on stream with maximum capacity in 2016, and an average rainfall year.
Increase in installed generating capacity (MW)	2,697	3,880	MIEM DNE	2011 was used as the baseline. For 2016, it is assumed that wind power generation increases by 673 MW based on tenders awarded by the UTE, that 560 MW of thermal generation (fossil fuel and biomass) are installed, and that a 50 MW thermal plant will close down.
Reduction in the average cost of thermal generation (US\$/MWh)	200.6	118.3	UTE / ADME / MIEM DNE report	Average generation cost was calculated using information provided by the UTE on: (i) costs per plant in operation; (ii) thermal generation in 2011 (baseline); and (iii) the UTE expansion scenario (target) assuming hydroelectric generation with an average rainfall year. These scenarios assume that the Punta del Tigre B plant is operating with natural gas in 2016.



## **FIDUCIARY AGREEMENTS AND REQUIREMENTS**

<b>Country:</b>	Uruguay
<b>Project number:</b>	UR-L1070
<b>Name:</b>	Punta del Tigre “B” Combined-Cycle Project
<b>Executing agency:</b>	National Electricity Generation and Transmission Authority (UTE)
<b>Prepared by:</b>	Gabriele M. del Monte and Nadia Rauschert

### **I. EXECUTIVE SUMMARY**

1. The fiduciary agreements and requirements defined for this program are based on the following analyses: the 2005 Country Financial Accountability Assessment (CFAA), and the executing agency’s institutional capacity assessment (ICAS) performed in April 2012. In March 2011, the evaluation of public financial management was started, using the Public Expenditure and Financial Accountability (PEFA) methodology, with a final report of its findings expected in late 2012.
2. Uruguay’s fiduciary risk is considered low, in the sense that public or donor funds are unlikely to be used for unauthorized purposes. Public financial management in Uruguay is considered generally responsible and transparent, albeit with a high level of control that can slow the corresponding processes. In terms of public procurement, the country has a recognized legal and institutional framework and a solid legal foundation, but the system has certain weaknesses that undermine effectiveness and may generate higher costs in terms of international transactional costs for the processes. Studies done in 2005 and 2008 show that corruption is not perceived as a problem and rate the country as a “medium risk.”
3. The total cost of the program is estimated at US\$741.2 million (consisting of: a US\$200 million loan from the Bank, US\$180 million from CAF, US\$70 million from KfW, and US\$291.2 million in local counterpart funding provided by the National Electricity Generation and Transmission Authority (UTE)). The operation’s guarantor will be the Eastern Republic of Uruguay, and the borrower and executing agency will be the UTE, a State-owned company devoted to electric power generation, transmission, distribution, and marketing, related services, and consulting, which will be responsible for the management of project resources as well as arranging the timely delivery of the local counterpart funding.

### **II. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY**

The executing agency is a legal entity created under domestic public law, with a level of technical autonomy defined by constitutional rules governing State decentralized industrial and commercial enterprises, and by Decree Law 15,031 of 4 July 1980 (UTE Organic Law).

For purposes of illustration, the context of the systems with which the executing agency operates is described below:

- a. Budget. This is prepared by the UTE in accordance with current constitutional provisions, and structured according to the entity's own regulations, given its specialization. The budget is prepared annually by the Economic-Financial Division based on instructions received from the Ministry of Economy and Finance's Office of Planning and Budget and the objectives the different areas of the UTE agree to pursue based on the entity's strategic planning.
- b. Treasury. There is a Treasury sector within the Economic-Financial Division.
- c. Accounts and financial reporting. The executing agency uses the SAP management and accounting system, and prepares its annual financial statements in accordance with current accounting rules in Uruguay.
- d. Internal control. There is an internal audit and management monitoring unit that reports to the UTE Board of Directors; and an audit committee consisting of three board members.
- e. External control. As a bond issuer, the UTE is regulated by the Central Bank of Uruguay. For this purpose it must file quarterly financial statements with a compilation report, and annual statements accompanied by an independent external audit report. In addition, pursuant to the Constitution, its annual financial statements are audited by the Tribunal de Cuentas de la República [State Audit Department] (TCR).
- f. Procurement and contracting procedures. These are based on the Texto Ordenado de Contabilidad y Administración Financiera [Amended Text on Financial Accounting and Administration] (TOCAF). The ICAS score for execution capacity produced the following result for the goods and services management system (SABS): a satisfactory level of development and low risk in standards and procedures relating to request, authorization, quotation, contracting, verification of execution or delivery, registration, and verification of the existence of the goods and services to be procured in operational programming.

### **III. FIDUCIARY RISK EVALUATION AND MITIGATION MEASURES**

The consolidated result of the UTE capacities evaluated using the ICAS shows a satisfactory development level associated with low risk.

This result is in keeping with the UTE's track record in the previous operation it executed with the Bank (loan 903/OC-UR), which shows a history of compliance with contractual obligations, backed by unqualified audited financial statements. A similar endorsement arises from the results of the Bank's regular supervision of the execution of the previous program, pursuant to its policies, or the standards the borrower is required to fulfill under the loan contract.

### **IV. CONSIDERATIONS FOR THE SPECIAL CONDITIONS OF THE CONTRACTS**

To streamline the negotiation of the contract by the project team, the agreements and requirements to be addressed in special conditions are set out below:

- Exchange rate for accounts in dollars. The executing agency reports that the conversion from local currency to dollars will be done based on the exchange rate on the payment date.

- Financial statements must be submitted at the end of each year during the execution period will be audited either by the TCR or by a private firm acceptable to the Bank.

## **V. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION**

The procurement policies applicable to this loan are set forth in documents GN-2349-9 and GN-2350-9.

### **1. Procurement execution**

Although the main procurement involved in the Punta del Tigre “B” combined-cycle project has been awarded to the consortium led by the Korean firm Hyundai, other procurement processes (consulting and services) remain for which it is considered appropriate to note the following:

- 1.1. Before starting procurement processes, the procurement plan for the first 18 months must be recorded in the SEPA and be kept up-to-date by the executing unit.
- 1.2. The relevance of the expense, in other words the terms of reference, technical specifications, bid documents, and budget, which are the responsibility of the project’s sector specialist/Project Team Leader, always requires no objection before the start of the respective award process.

### **2. Works procurement under turnkey contracts**

- 2.1. The loan involves a single works procurement process: the construction of the Punta del Tigre “B” combined-cycle power plant under the turnkey modality (four-year execution), plus operation and maintenance (O&M) for a three-year period (renewable for another two years), the process for which is now being finalized after having awarded the contract by direct contracting to the consortium Hyundai Engineering & Construction Co. Ltd., Kepco Plant Service & Engineering Co. Ltd., and Hyundai Corporation (HDEC-KPS-HDC consortium), pending signature of the respective contract. The legal adequacy of the process has been verified by the State Audit Department (TCR).
- 2.2. The direct contracting of the HDEC-KPS-HDC consortium by the UTE, given that there is no current Bank loan, was conducted using national regulations for government procurement and contracting, following the provisions of the TOCAF (Article 33, section 22), after holding two international competitive processes that were unable to produce a winning bidder.
- 2.3. The Bank has confirmed, in due time, that the documents used in the two international bidding processes substantially complied with good practices and its own regulations on the subject.
- 2.4. The first international competitive bidding process was published on 25 May 2011 in national newspapers, the UTE’s website, and UNDB online. Bids were opened on 20 December 2011, after three postponements and after having answered more than 700 questions in 19 circulars. There were five bids (Cobra Instalaciones y Servicios SA; Electroingeniería SA; Ansaldo Energía SPA and Construcciones e Instalaciones Electromecánicas S.A. forming a consortium called “Ansaldo SPA and CIEMSA”; Abener Energía SA and General Electric International Inc.; and Hyundai Engineering

Co. Ltd., Kepco Plant Service & Engineering Co. Ltd., and Hyundai Corporation, forming the “HEC-KPS-HDC” consortium).

- 2.5. On 14 June 2012, the UTE Board of Directors unanimously decided to reject all five bids received, abandoning the bidding process due to the fact that it was unable to reliably confirm the experience required by the best qualified bidder, HEC-KPS-HDC consortium (subject of a criminal complaint by a member of the Chamber of Deputies for alleged fraud by HEC in the documentation related to the required experience), and because the remaining bids did not fully meet the requirements of the bidding process.
- 2.6. On 25 June 2012, the UTE advertised the international bidding process for the second time in national newspapers, the UTE’s website, and UNDB online. There were no postponements.
- 2.7. On 8 August 2012, the bids were opened. Five bids were received, four from the same firms/consortiums in the previous bidding process (Cobra Instalaciones y Servicios SA; Electroingeniería SA; Ansaldo Energía SPA; Abener Energía SA and General Electric International Inc.); and the fifth by the consortium made up of Hyundai Engineering and Construction (HDEC), Kepco Plant Service & Engineering Co. Ltd. (KPS), and Hyundai Corporation (HDC), forming the “HDEC-KPS-HDC” consortium. On this occasion, the firm HEC, the subject of the aforementioned complaint, did not participate.
- 2.8. These five firms/consortiums represent a substantial part of the specific market for combined-cycle plants of the capacity specified in the bidding documents.
- 2.9. The bidding documents used in this process specified that before verifying the formal compliance and experience of the firms and/or consortiums, the Award Assessment Committee (AAC) would analyze all of the technical bids to identify the best bid comparison index (BCI), combining the various technical and economic factors including construction, maintenance, and services for the turbines. Once the best BCI was identified, the bid bonds would be returned to the other firms and the background of the firm with the best BCI would be evaluated (on a pre-award basis). Thus, if the firm with the best BCI did not meet the requirements, the second rated firm could not be selected since the process itself would be canceled. In this case, in accordance with the TOCAF, the UTE would then undertake a direct contracting process.
- 2.10. On 23 September 2012, bidders were notified of the preliminary result of the evaluation of the bid with the best BDI (Electroingeniería) and observations on the analysis were received from the four firms obtaining the lower BCI scores. The observations received were analyzed by the AAC and rejected.
- 2.11. On 27 September 2012, based on the evaluation of the background by the AAC, the UTE Board of Directors resolved to reject the bid by Electroingeniería, given that it did not meet the technical requirements of the bid documents.
- 2.12. On the same date, the UTE Board of Directors, after having held two competitive processes that could not be completed, decided to make use of national legislation (TOCAF, Article 33, section 22) and immediately proceed to engage in negotiations for the direct contracting of a firm/consortium to execute the Punta del Tigre “B” Combined-Cycle Project. In this case, and as provided in its resolution, the Board

indicated that the consortium with which it would negotiate would be the second-best rated bid (second-best BCI) from the last international bidding process, which was abandoned (the HDEC-KPS-HDC consortium).

- 2.13. On 28 September 2012, Electroingeniería filed an administrative appeal against the UTE's resolution rejecting its bid. By resolution of the Board of Directors, the UTE rejected the appeal filed. Electroingeniería has the opportunity to file an action for annulment in Administrative Court. However, such an appeal would not stay the execution of the direct contracting process. On 14 November 2012, Electroingeniería sent documentation to the Bank explaining its position regarding its disqualification by the UTE in the second bidding process.
- 2.14. As a point of information, it is reported that the difference between the economic bid with the best BCI (Electroingeniería) and the second-best BCI (HDEC-KPS-HDC consortium) was 3.3%.
- 2.15. It should be noted that the UTE is authorized, under national legislation applicable to decentralized State administrations, to engage in direct contracting from the start of the process. However, it decided to hold two international competitive bidding processes before engaging in direct contracting.
- 2.16. Based on the bidding documents used in the second process, the UTE has negotiated and reached an agreement with the HDEC-KPS-HDC consortium for an amount equivalent to US\$481 million (total cost of the investments), which was unanimously approved by UTE Board resolution on 18 October 2012. In terms of the BCI (which is not considered for the direct contracting), the winning bid ended up being equivalent to 3.2% more than the Electroingeniería SA bid in the abandoned second bidding process.
- 2.17. On 19 October 2012, the UTE submitted the file to the TCR for it to rule on the legality of the contracting process. The TCR, under case 6233/12 dated 31 October 2012, had no observations on the justification of the direct contracting or fulfillment of the requirements. Nonetheless, the TCR stated that "...no expenditures may be committed without available funds in the applicable accounting category..." and it is in this area that it makes an observation for the UTE.
- 2.18. By Board Resolution 12-1737 dated 6 November 2012, the UTE restated the expenditures in accordance with the observation made by the TCR. With this ruling, the UTE would be in a position to sign the contract with the HDEC-KPS-HDC consortium.
- 2.19. Lastly, it is important to note that the consortium led by the firm Ansaldo (Italy) has submitted a memorandum to the UTE indicating that the direct contracting being undertaken by the UTE should not be with the HDEC-KPS-HDC consortium, but rather with Ansaldo, since its bid was the most competitive after that of Electroingeniería SA (according to Ansaldo's own calculations). This memorandum, however, does not represent a formal protest of the direct contracting process. It should be noted that both competitive bidding processes prior to the direct contracting were conducted in accordance with international best practices applicable to this type of bidding process for turnkey projects, there was adequate advertising, reasonable terms were provided for preparation of bids, numerous consultations for clarification were received and answered, the rationale for rejecting the bids was duly founded, and there was a high rate of participation by major international suppliers of combined-cycle plants. In

addition, for the second bidding process, certain adjustments were made to the bidding documents, such as the limitation of liability to the amount of the contract, in accordance with international practices for projects of this type that contributed to improving the bids.

2.20. Given the foregoing and based on available information, it can be concluded that the direct contracting was undertaken:

2.20.1. Following national legislation on government procurement, in accordance with the TOCAF;

2.20.2. While, from the technical and formal viewpoint, direct contracting was used, the consortium with which the direct contracting was negotiated was identified through a highly competitive comprehensive process substantially similar to Bank procedures; the contract would be entered into with the second-best bid in the last competitive bidding process held according to national regulations, with a minimal difference in price between the first and second bids, both considered reasonable, market prices. The final price of the awarded contract is lower than the amount bid by the HDEC-KPS-HDC consortium in the second bidding process.

2.20.3. The contracting is considered consistent with the provisions of paragraph 1.9 of document GN-2349-9, and the process undertaken was consistent with the Bank's procurement policies, following criteria of economy and efficiency, advertising, equal opportunity, competition, and transparency in the process.

### 3. Procurement, selection, and contracting of consulting services

3.1. Consulting firms: will be selected and contracted pursuant to Bank policies. Calls for expressions of interest with international advertising (value in excess of US\$200,000) will be subject to ex ante review.

3.2. Selection of individual consultants: n/a

### 4. Training: n/a

5. **Advance procurement/Retroactive financing**: For the advance procurement of the Punta del Tigre "B" combined-cycle power plant, retroactive financing of the first advance could be needed, depending on the date of the EPC contract.

### 6. Table of thresholds for Uruguay (US\$ thousands)

Works			Goods and nonconsulting services			Consulting services	
ICB	NCB	Shopping	ICB	NCB	Shopping	International advertising	100% national short list
≥ 3,000	3,000-250	< 250	≥ 250	250-50	< 50	≥ 200	< 200

7. **Threshold for ex post review** — NOT APPLICABLE. Although the UTE is considered a low-risk executing agency, the procurement to be financed by the Bank loan and conducted under Bank regulations are for consulting firms in amounts greater than US\$200,000, and therefore subject to ex ante review. The only procurement for a smaller amount, financed

from the loan proceeds, involves the contracting of a consulting firm for the environmental action plan. Organizing ex post review for this procurement alone is not considered efficient.

8. **Major procurement processes:** The loan only involves six consulting firm contracts, in addition to the works procurement: four using the proceeds of the Bank loan and two with national counterpart funding. These will be undertaken during the execution of the loan, and are included in the initial procurement plan in a required annex to this Plan for Operation Development.
9. **Procurement supervision:** The method is ex ante review.
10. **Records and files:** No special provisions. A dedicated file will be maintained.

## **VI. AGREEMENTS AND REQUIREMENTS FOR FINANCIAL MANAGEMENT**

### **1. Programming and budget**

There are no additional requirements other than those contained in the contract.

### **2. Accounting and information systems**

Project record-keeping will use the entity's SAP system. Financial statements for the executing agency and the project will be issued pursuant to accounting rules accepted by the Bank in its financial management policy, and will need to be audited annually by the TCR or by a private firm of auditors acceptable to the Bank (the same firm that audits the executing agency's financial statements).

### **3. Disbursements and cash flow**

To manage project funds, the executing agency will open a special account (nominative) for the project at the Central Bank of Uruguay, which will receive the funds disbursed by the Bank for subsequent transfer to another account to be used by the project for its payments.

Disbursements will be released as "advances" based on actual liquidity needs, supported by an appropriate financial and disbursement projection.

### **4. Internal control and external audit**

The project's external audit reports and the review of disbursement processes and requests, will be submitted for each fiscal year during the disbursement phase, no later than 30 April of the following year. International Auditing Standards (IAS) and the guidelines issued by the Bank for this purpose will be observed. The reports issued by the internal audit area may also be considered, to the extent as they cover aspects of the project.