

**PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE**

Report No.: PIDA741

Project Name	DJ Geothermal Power Generation Project (P127143)
Region	MIDDLE EAST AND NORTH AFRICA
Country	Djibouti
Sector(s)	Other Renewable Energy (100%)
Lending Instrument	Specific Investment Loan
Project ID	P127143
Borrower(s)	Republic of Djibouti
Implementing Agency	Ministry of Energy
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	06-Feb-2013
Date PID Approved/Disclosed	04-Dec-2012, 08-Feb-2013
Estimated Date of Appraisal Completion	05-Dec-2012
Estimated Date of Board Approval	21-Mar-2013
Decision	

I. Project Context

Country Context

The Republic of Djibouti aspires to leverage its strategic location between the Red Sea and the Gulf of Aden to become a maritime and international business hub for East Africa. The country, which had a population of about 905,564 and a growth rate of about 1.9 percent in 2011, is poorly endowed with natural resources and has limited arable land, rainfall and water. Furthermore, its manufacturing sector is weak and its agriculture sector is virtually non-existent. Djibouti has little industry and depends heavily on foreign assistance to help support its balance of payments to finance development projects and to meet its food requirements. With less than 1,000 km² of arable land (0.04 percent of 23,200 km²) and an average annual rainfall of 5.1 inches, the country has a chronic food deficit and is totally dependent on imports to meet its food needs. As a result, Djibouti is highly sensitive to external shocks such as spikes in food and fuel prices and natural disasters such as floods and droughts.

Djibouti's economy is overwhelmingly based on rents and revenues derived from hosting military bases for France and the USA, and from the commercial activities of its harbor (international transshipment, refueling center and regional transit). Landlocked Ethiopia, which has a population of 75 million, is the primary user of Djibouti's port and currently generates 85 percent of the trade that transits through its container terminal.

While having a GDP per capita income in Power Purchase Parity terms of US\$2,290 in 2009, Djibouti is placed in the low-middle income bracket. The country remains effectively locked in a trap of high unemployment and poverty. The unemployment rate is approximately 60 percent and close to 42 percent of the country's population lives below the absolute poverty line of US \$2 per day. Djibouti is almost a city-state, with two third of its population living in Djibouti city. The third of the population not formally residing in the capital consists mainly of shantytown dwellers, who rely on the informal sector for their living, and poor pastoral and nomadic people, who sparsely occupy the rest of the land. Finally, the presence in the country of a large number of refugees fleeing conflicts in neighboring countries exacerbates poverty and increases the pressure on already strained national social services.

Since 2005, Djibouti has known a fiscal expansion and a surge in Foreign Direct Investments (FDI) that have helped transform the economy and generate a rapid average yearly growth of 5.2 percent. The port has benefited from investments that have contributed to a marked increase in activity. The creation of the Djibouti Free Zone in 2004 for instance has enabled the import, storage, transformation and re-export of goods without being subject to tariff or non-tariff barriers. In addition, a public-private partnership (PPP) involving Dubai World led to a significant increase in investment, efficiency, activity and revenues of Djibouti's port, airport and customs. It also resulted in the construction of a new container terminal that helped significantly expand the port's capacity. Gulf investments in the small East African country also included tourism, a sector that benefited from the recent building of a five star hotel that provided a welcome boost to business.

Despite progress on infrastructure development, Djibouti's high growth did not succeed in significantly reducing poverty or unemployment. Economic activity has been largely confined to the free trade zone and the port, and the positive spillovers to the rest of the economy have been minimal. Thus far, the development of domestic companies and the benefits of foreign investments have been hampered by high production costs stemming most importantly from high energy prices. of Economy and Finance in charge of Planning with technical input from the MoE. A survey of Small and Medium Enterprises (SMEs) conducted in 2008 for a World Bank-commissioned study revealed that the lack of reliable, secure and low-cost energy supply was considered by more than half of the interviewees as the single most important constraint to doing business in Djibouti. Even though the tariffs offered by EDD are high, the utility has operated under a heavy financial burden and the Government has had to regularly provide the energy utility with budgetary support.

II. Sectoral and Institutional Context

Institutional framework of the electricity sector. Djibouti's electricity sector is regulated by the Ministry of Energy, Water, and Natural Resources (MoE). In this capacity, the MoE oversees the state-owned and operated utility, Electricité de Djibouti (EDD), which has a monopoly on the generation, transmission, and distribution of electricity. The status and duties of EDD are defined in decree no. 83-071/PWEDD of February 2, 1983. The decree states that the State of Djibouti is ultimately responsible for EDD's obligations vis-à-vis third parties and suppliers. The decree also specifies that the electricity distributed by EDD can either be produced by the utility or by facilities owned by third parties.

Electricity tariffs. Electricity tariffs in the country are high and average US \$0.32/kWh, mainly as a result of increased oil prices and technical and non-technical inefficiencies. EDD's 2012 tariffs range from a social price of US\$0.153/kWh (life-line tariff) to US\$0.426/kWh paid by construction sites. Shops and government buildings are charged US\$0.397/kWh for their electricity. The

electricity tariffs offered by EDD are defined by a ministerial order of the Ministry

Electricity demand. In Djibouti, around 50% of the population only has access to electricity, as the demand is constrained by high tariff, high connection costs and an electricity grid that covers only Djibouti City and its outskirts. Hourly load data from 2009 shows that the national grid demand ranges between a low of 15 MW in winter to a high of 63 MW in summer. Fifty-four percent of the demand stemming from Djibouti City comes from large consumers. Recently, population growth (estimated at 1.9% per year since 2005) and urbanization of the country have led to a rising demand for electricity. The Ethiopian interconnection completed in 2011 has helped meet part of the increased demand. Work done by Parsons Brinckerhoff (PB Power) for the feasibility study of the electricity interconnection with Ethiopia foresees a 5.2 percent yearly increase in electricity demand from now until 2025. The forecasts of PB Power are more conservative than those of EDD as the utility also considers the additional demand that will be induced by large projects currently planned in Djibouti.

Electricity supply. Electricity supply consists of EDD's thermal capacities and hydroelectricity imports from Ethiopia. EDD relies primarily on ageing generation capacity running on expensive imported fuel oil to produce base load electricity. The utility has 18 generating units running on HFO in Boulaos and Marabout. One 15 MW generator is less than 5 years old (2007), fourteen generators equivalent to 78 MW are between 5 and 15 years old and the remaining capacity is 20 years and older. Due to unreliability of older generators, EDD's effective generation capacity is limited to 57 MW out of the 119 MW installed. If the electricity demand peaks in 2012 as forecasted by EDD, the company will be unable to meet peak demand from its installed capacity.

Energy imports from Ethiopia. Since 2011, a new interconnector between Addis Ababa, Ethiopia and Djibouti City provides the country with low cost energy supply when the resource is available. Under the terms of the Power Purchase Agreement (PPA), 180 to 300 GWh are to be sold to Djibouti annually. The PPA, which excludes energy sales during Ethiopia's dry season's peak hours, represents 22.35 to 37.24 MW of continuous generation. The supply of electricity is limited by hydrological conditions and the availability of excess energy: the hydro-based generation of Ethiopia is in excess of its demand during the wet season which happens to correlate with Djibouti's high demand summer months. Correspondingly, Djibouti's low demand in winter correlates with Ethiopia's dry season, a period during which daily peaks require thermal generation.

The energy supply from Ethiopia however is not provided under a firm capacity agreement, meaning that energy is not necessarily available when needed most by Djibouti. A firm capacity agreement with Ethiopia would create a better level of security of supply. However, only installed capacity in the country truly ensures security of supply. In negotiating firm capacity with Ethiopia, Djibouti will also have to consider that the cost of excess energy and/or firm capacity will continue to rise as Ethiopia continues to open new markets through additional transmission interconnections. If Djibouti were to entirely rely on Ethiopian capacity without an installed base of efficient, reliable capacity, it would expose itself to potential future price increases, which would be no different from the current situation where its reliance on the international oil market has exposed it to the risk of price hikes.

Least cost option for future electricity supply. In 2009, the World Bank commissioned a Least Cost Electricity Master Plan for Djibouti to determine the best option to bridge the growing gap between electricity demand and supply. According to this Master Plan, "the difference in cost between the

fossil fuel fired generation in Djibouti and the hydroelectric generation in Ethiopia is so large that Djibouti is likely to import most if not all the energy that is available. This situation would continue until Djibouti installs some form of low-cost generation utilizing indigenous resources, most probably geothermal [...]”. The proposed project aims to support the development of the least cost geothermal base load capacity using indigenous resources.

III. Project Development Objectives

The Global Environment Objective is to promote renewable (geothermal) energy and reduce GHG emissions in Djibouti.

The Project Development Objective is to assess the commercial viability of the geothermal resource in Fiale Caldera (located in the Lake Assal region). Achieving this objective could lead to unlocking Djibouti’s geothermal potential – something that would help reduce domestic electricity generation costs, increase the country’s energy security of supply and foster private sector participation in the energy sector.

IV. Project Description

Component Name

Component 1 - Exploratory Drilling

Component 2 - Technical Assistance

Component 3 - Program Management Unit

V. Financing (*in USD Million*)

For Loans/Credits/Others	Amount
BORROWER/RECIPIENT	0.50
International Development Association (IDA)	6.00
Global Environment Facility (GEF)	6.04
African Development Bank	2.34
African Development Fund	5.00
Energy Sector Management Assistance Program	1.10
FRANCE French Agency for Development	3.25
OPEC FUND	7.00
Total	31.23

VI. Implementation

The project will fall under the technical oversight of the MoE and the administrative and financial oversight of the Ministry of Finance. A Steering Committee consisting of the Secretary General of the Government (Head of the Committee), the Secretary General of the MoE, the Secretary General of the Ministry of Finance, the Secretary General of the Ministry of Environment, the Secretary General of the Ministry of Agriculture and the directors of the Centre d’Etudes et de Recherches de Djibouti (CERD) and EDD will be established to resolve issues that arise during the project design and implementation phase. A sub-steering committee composed of EDD and the CERD will be established to provide technical support as deemed necessary by the Project Management Unit (PMU).

The PMU will be headed by a Director who will be in charge of all project management decisions including fiduciary responsibilities. The Local Project Coordinator (LPC) will deliver capacity in the form of effective contract development, negotiation and administration. The LPC will also be in charge of the coordination with local authorities, government officials, and technical authorities. The Deputy Local Project Coordinator (DLPC) will second the LPC on all tasks, in addition to being the focal point for Environmental and Social Safeguards. In addition, as with most projects in Djibouti, an accountant will be hired for the financial management and reporting aspects of the project, and a specialist will be hired to take charge of procurement aspects, following World Bank guidelines. Finally, two safeguards specialists, one social, one environmental will be hired to support the work of the PMU and an assistant will provide administrative help to the whole team.

To support the PMU, a Geothermal Consulting Company (GCC) will be hired to design a detailed exploratory program including drilling and testing. It will provide technical support to the PMU Director in the preparation of tender documents for the drilling program. The GCC will ensure the technical oversight over drilling contractors and field-based activities to ensure compliance with the drilling program and with agreed safeguards documents.

In addition, the PMU will prepare a comprehensive Operations Manual for the project before effectiveness outlining implementation arrangements, project costs and parallel/co-financing arrangements, disbursement, financial management and procurement arrangements, internal controls, etc. This Operations Manual will be used by all donors co-financing or parallel financing the project.

VII. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	x	
Natural Habitats OP/BP 4.04	x	
Forests OP/BP 4.36		x
Pest Management OP 4.09		x
Physical Cultural Resources OP/BP 4.11		x
Indigenous Peoples OP/BP 4.10		x
Involuntary Resettlement OP/BP 4.12		x
Safety of Dams OP/BP 4.37		x
Projects on International Waterways OP/BP 7.50		x
Projects in Disputed Areas OP/BP 7.60		x

VIII. Contact point

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