PROJECT INFORMATION DOCUMENT (PID)
CONCEPT STAGE

<table>
<thead>
<tr>
<th>Project Name</th>
<th>KENYA: Lake Turkana Wind Project</th>
</tr>
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<tr>
<td>Region</td>
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</tr>
<tr>
<td>Sector</td>
<td>Other Renewable Energy (100%)</td>
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<td>Borrower(s)</td>
<td>GOVERNMENT OF KENYA</td>
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<td>[X] A   [ ] B   [ ] C   [ ] FI [ ] TBD (to be determined)</td>
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<td>October 31, 2011</td>
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<tr>
<td>Estimated Date of</td>
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<tr>
<td>Appraisal Authorization</td>
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<tr>
<td>Estimated Date of</td>
<td>September 27, 2012 (or in parallel with financial closure)</td>
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<td>Board Approval</td>
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I. Introduction and Context

1. Following a Government of Kenya (GoK) request, the World Bank Group (WBG) intends to provide risk guarantees that will enable the realization of the Lake Turkana Wind Project, a 300 MW wind power generation facility expected to represent 17 percent of Kenya’s installed capacity at completion. An IDA Partial Risk Guarantee will cover the risk of payment default under the Power Purchase Agreement (PPA) and the risks associated with a delay in completion of the transmission infrastructure. A Multilateral Investment Guarantee Agency (MIGA) guarantee will provide insurance with respect to breach of contract caused by political events. WBG support will help make the renewable power project bankable and attractive to commercial lenders and investors and contribute to Kenya’s economic growth and development indicators.

A. Country Context

2. Kenya has a population of nearly 40 million people and a 2009 per capita Gross National Income (GNI) of US$760. Kenya’s economy grew strongly between 2003 and 2007 (peaking at 6.9 percent in 2007), although economic growth contracted to 1.7 percent in 2008 and remained weak in 2009 at 2.5 percent. This decline was primarily attributable to the violence triggered in the aftermath of disputed presidential elections in 2007, the global financial crisis, high fuel prices and a drought, which led to food shortages and high food prices. Driven by strong public investments and improved business confidence, Kenya’s economy rebounded in 2010, with 5.6 percent growth.

B. Sector Context

3. Kenya’s total installed power generation capacity as of June 2010 was 1,473 MW, which is estimated to serve under 25 percent of the population, with 5 percent penetration in rural areas. Access to reliable electricity is an important driver of economic growth and quality of life improvements. Kenya’s growth is constrained due to power shortages and low access to
electricity -- the lack of reliable energy costs the country 1.5 percent of GDP growth.\textsuperscript{1} In financial terms, the disruption of public power supply costs Kenyan firms about 7 percent of their annual sales revenues. Power sector expansion is a key element of Vision 2030, the Government’s national development strategy. The plan identifies poor energy infrastructure as a key constraint on Kenya’s economic growth. To achieve Vision 2030, the Government has established ambitious targets for scale-up and supply expansion with a goal of achieving 40 percent electrification by 2030. Intermediate targets include electrifying a million new customers in the next five years and extending electricity service to priority loads.\textsuperscript{2}

\textit{Challenges of Investment in the Sector}

4. Investment in the sector has not kept pace with the economy’s requirements and expansion of the existing power infrastructure is necessary. Kenya’s power sector fuel mix is comprised of hydropower (52 percent), diesel (22 percent), geothermal (10 percent), thermal (5 percent), and the balance (11 percent) of wind, gas, emergency plants and co-generation assets. A key issue for Kenya’s electricity supply is its dependence on hydropower, making the system vulnerable to serious shortages, especially during periods of drought. This occurred in 2009 when nearly half of the hydro capacity was not available for part of the year. As a result, extensive load shedding in the capacity-constrained electricity system occurred between August and October of 2009 with the expected negative impact across the industrial and other productive sectors. When hydropower is unavailable, the system must depend on expensive emergency power, which places a heavy economic burden on households and industries.

\textit{Least Cost Power Development Plan}

5. With Vision 2030 as a background, the Ministry of Energy in 2010 developed the country’s Least Cost Power Development Plan (LCPDP), as a planning program for the power sector for the next 20 years. The LCPDP forecasts an increase in power demand (expressed as Peak Load Factor) from 1,227 MW in 2010 to 4,220 MW in 2020 and 11,510 MW in 2030 in a Low Case Scenario, and 4,755 MW in 2020 and 15,026 MW in 2030 in a Base Case Scenario, representing average energy growth rates of 14.5 percent for the period from 2010 to 2020, and 13.4 percent for the entire period. It emphasizes the need to expand Kenya’s current installed power generation capacity in order to secure the sustainability of the current growth rate, to support future economic growth, and to improve the quality of life of the population. Government strategy calls for diversification of electricity supply and the Prime Minister has established a task force on accelerating development of green energy. Much of the medium- and long-term generation options are captured through a development program utilizing Kenya’s strong geothermal and wind resources.

\textsuperscript{1} Africa Infrastructure Country Diagnostic (AICD, 2008).
\textsuperscript{2} Vision 2030, the country’s economic blue print through 2030 aspires to transform the country from a low income, agrarian economy into a newly industrialized middle income country providing a high quality life to all its citizens by the year 2030 anchored on three pillars: political stability, social development and economic growth. Rehabilitation and modernization of physical infrastructure, with the power sector at the forefront, is a key element to achieving sustainable economic growth rates of 10 percent by the year 2012/2013, which are essential for the long-term growth plan.
Power sector expansion: Large Investment Needs in Short- and Medium-term

6. The Short-Term Implementation Plan (2010 – 2015) developed by the Ministry of Energy as a result of the LCPDP provides for the addition of 1,815 MW of new power generation capacity by 2015 with a required investment of approximately USD$3.9 billion. This strategy involves development by the public sector as well as encouraging investment by the private sector in those assets that can be brought to development urgently. In addition to thermal options being pursued, Kenya currently has 175 MW of geothermal capacity, and 440 MW of wind capacity under development or construction. Kenya’s strategy to achieve this ambitious and urgent goal includes tapping local capital markets, Kenyan diaspora bond investors as well as global investors from private and concessional sources. In this context, GoK recognizes the need to attract substantial amounts of private capital investments to the country, and has recognized the importance of providing comfort to engage IPPs and commercial bank financing in a sustainable manner. In parallel, the Government has designed a program of investments to strengthen and expand the national transmission and distribution grids to improve supply reliability and measures to increase demand side efficiency (such as energy saving light bulbs). This program includes the construction of 5,937 km of transmission lines with an investment cost of approximately USD$3.0 billion between 2010 and 2015.

Regional Strategy

7. Through the East African Power Pool Program, Kenya is committed to future power trade opportunities with its neighbors. The strategy includes constructing transmission interconnection with neighboring countries to take advantage of regional energy trading opportunities. Kenya is currently considering transmission interconnections with Ethiopia and Tanzania that would allow trading (both power import and export) with EAPP member countries. The interconnector will allow the country to be linked to the future interconnection between Kenya and Ethiopia, and various interconnections between Kenya, Uganda, Rwanda, Burundi, and Eastern DRC.

Strong sector institutions

8. As a result of comprehensive power sector reforms over the past decade, Kenya has strong institutions in the sector. These include the Kenya Electricity Generating Company Ltd. (KenGen) for power generation and the Kenya Power and Lighting Company (KPLC or Kenya Power) for electricity distribution. Both companies are majority owned by the government with private minority shareholders and operate on a sound commercial basis. Their creditworthiness is enabled both by their professional management as well as their ability to benefit from cost-reflective tariffs established by the autonomous Energy Regulatory Commission (ERC). In

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3 EAPP countries include Kenya, Ethiopia, Sudan, Egypt, Uganda, Burundi, DRC, Rwanda and Djibouti.
4 The Energy Regulatory Commission (ERC), an autonomous regulator, is mandated by the Energy Act of 2006 to govern the sector.
5 The ERC is empowered to autonomously set, review and adjust tariffs and tariff structures at levels that enable licensees to recover their costs. The Energy Act of 2006 mandates the Energy Regulatory Commission (ERC) to “set, review and adjust electric power tariffs and tariff structures, and investigate tariff charges.” The Act maintains that all tariffs charged for electricity supplied shall be “just and reasonable,” and established at a level that enables an electricity supply license holder to (i) maintain its financial integrity, (ii) attract capital, (iii) operate efficiently, and (iv) fully compensate investors
2008, the government created the Kenya Electricity Transmission Company (Ketraco) with a mandate to develop, build and operate new transmission assets.

*KPLC is a credit-worthy off-taker*

9. Over a seven-year period (FY2004 to FY2010), KPLC has been able to expand its customer base, increase its profitability, improve its operational performance, and maintain a healthy financial position. Between 2004-2010, KPLC has doubled the number of its customers from under 0.6 million to over 1.2 million. The company’s return on total assets has grown from 1.4 percent in FY2004 to 4.9 percent in FY2010, which is stronger than some electric utilities (e.g., ESKOM in South Africa: 2.2 percent in 2010; Meralco in the Philippines: 3.7 percent in FY2009). KPLC’s net income over this period has grown at a compound annual growth rate (CAGR) of 42 percent and its operating profit at 38 percent. This remarkable performance is attributable to the following factors: (i) the volume of sales has steadily increased by a CAGR of 5.2 percent; (ii) the average tariff yield has continued to improve, especially after the tariff review of 2008, increasing by 2.3 times; (iii) the increase in power purchase costs was kept relatively low compared to the average tariff yield; and (iv) system losses have been constantly reduced. Development partners, including the World Bank and European Investment Bank (EIB) are supporting the upgrading of KPLC’s Supervisory Control and Data Acquisition/Energy Management System (SCADA/EMS) solutions to optimize management of distribution systems and further reduce system losses.

*Recent experience with IPPs in Kenya*

10. Kenya’s experience with Independent Power Producers (IPPs) has been positive. Kenya has gained 347 MW in installed capacity through the IPPs that would otherwise have required the Government and donors to divert these resources from other priority needs. There has been no default on payments by the well-managed and creditworthy KPLC and investors have achieved expected returns on the five existing IPP projects. Despite this success, attracting new private sector investment in the sector remains challenging due to risk perceptions of international investors and opportunities elsewhere. While there is a peaceful power sharing arrangement between the two major parties within the Government, investors remain wary of civil disturbance, and require some form of risk mitigation for further involvement in the sector.

*Rationale for World Bank involvement*

11. The 2010-2013 World Bank/MIGA/IFC Country Partnership Strategy (CPS) states that adequate and reliable supply of affordable electricity is key to economic growth, security, and delivery of social services. It also states that large scale private sector investments in generation and transmission will be needed. The CPS envisages that the Bank Group will mobilize concessional and private sector financing to expand electricity generation, with a preference for renewables and IPPs, as well as transmission and distribution. This will help to meet the Government’s ambitious on- and off-grid connection targets. In all areas, guarantees and IBRD for assumed risks. The existing tariff structures as well as its adjustment mechanisms were designed following a tariff study supported by the World Bank, and broadly allows KPLC to cover the full cost of service provision.
enclave financing will be considered. In addition, the Bank will seek to advance the regional interconnection of power systems of East African countries.

Specific Context of Lake Turkana Wind Project

12. The Lake Turkana Wind Project should be viewed in the context of the sector as described above, where it offers Kenya multiple benefits, such as increased power generation capacity, production of clean energy and improvement of Kenya’s fuel mix. The project also presents certain specific challenges: (i) variable and interruptible nature of wind; (ii) first utility scale wind project in Kenya; (iii) large scale wind project for any market standard; (iv) sizeable payment obligations for KPLC when compared to those for other IPPs; (v) new environment in terms of overall construction and operating activities; (vi) significant transmission infrastructure requirements with the associated risks of completion and delay.

13. As a result of the above challenges, the project’s risk perception is higher than it would be for more traditional IPPs in Kenya and the support of the World Bank Group is critical to enable bankability attracting commercial lenders on competitive terms and conditions. It is also anticipated that the African Development Bank’s private sector group, which is currently engaged as Mandated Lead Arranger (MLA) for the project, will invite other Development Finance Institutions (DFIs) such as International Finance Corporation (IFC), European Investment Bank (EIB), etc. to explore financing the Project.

WBG Structure as key part of IPP Package

14. In previous IPPs, KPLC provided Letters of Credit in order to support payments under the PPA and the GoK has been willing to provide Projects with comprehensive guarantees. Given KPLC’s successful track record complying with its payment obligations and the overall improvement in the company’s financial condition during the past 7 years, KPLC and the GoK decided to explore new options with IDA to extend support to private investors in an efficient yet less burdensome manner. As a result the Ministry of Finance (MoF) selected the proposed PRG structure as a part of the IPP program design offered to all project sponsors to properly mitigate key risks.

15. For the Lake Turkana Wind Project, this package consists of (i) an IDA PRG to support the payment obligations of KPLC under the PPA and the payment obligations of the GoK associated with lost revenues caused by a delay in completion of the transmission infrastructure for the project, along with (ii) complementary MIGA guarantees to cover termination payments arising from breach of contract triggered by political events. The MLA group has clearly indicated that obtaining Bank Group cover is critical for their ability to bring the project to financial closure.

Proposed IDA/MIGA Cover

16. IDA cover will reduce GoK’s financial burden by limiting contingent liabilities to the amount of the PRG instead of requiring a letter of credit from KPLC for the entire payment flow
due under the PPA. The proposed project intends to provide partial risk guarantee coverage estimated at US$78 million (corresponding to a US$19.5 million IDA allocation). MIGA would offer complementary support in the form of termination guarantees to commercial lenders and equity investors. MIGA has been requested by potential financiers to the Project to provide Breach of Contract Coverage to the Power Purchase Agreement between LTWP and KPLC and in addition to provide Breach of Contract Coverage to the GoK Support Letter. The coverage will specifically support the termination payments that become due and payable under the contractual documents.

II. Proposed Development Objective(s)

17. The development objective of the proposed Project is to increase clean electricity generation capacity in Kenya.

18. The PDO indicators will be the quantity of electricity generated from the LTWP (GWh/year). The Project’s intermediate outcomes relate to the commissioning of the Project on time and budget. The following intermediate outcome indicators will be monitored:

- Generation capacity constructed under the Project (MW).
- Commissioning of the Project completed on schedule (yes/no).
- Trial run results of the Project meet owner’s performance targets (yes/no).
- Indirect Project beneficiaries (number, of which % female).

III. Preliminary Description

19. The proposed 300 MW wind project is located at a remote location near Loyangalani in Marsabit County, approximately 12 km east of Lake Turkana in north-eastern Kenya. The closest deep-sea port is Mombasa, 1,200 km southeast of the site. The Project site is located on the southeast border of Lake Turkana between two high ranging mountains in the “Turkana Corridor” where a low level jet stream originating in the Indian Ocean creates favorable wind conditions. The Project area falls within a valley between Mount Kulal and Mount Nyiru that produces a venturi effect (effectively serving as a funnel) in which wind streams are accelerated to high speeds. The site covers an area of 165 km/sq with unique geographical conditions in which daily temperature fluctuations generate strong, predictable wind streams between the lake and the desert hinterland.

20. The Project will comprise of 365 Vestas Wind Systems A/S V52 wind turbine generators, each of 850 kW generating capacity, a Siemens-supplied and built 33 kV electrical collection network and 33/200 kV substation, and an ABB dynamic reactive power system. The renewable power generated will be fed into Kenya’s national grid and make up approximately 17 percent of the country’s installed power supply in the first year of operation (expected in late 2014). The transmission infrastructure required for the Project is the responsibility of Ketraco, with its timely completion to be guaranteed by the GoK. The works will include a 428 km, 400 kV overhead transmission line and a sub-station at Suswa, 90 km north of Nairobi. This infrastructure is scheduled to be completed 3 months prior to the commissioning of the first phase (the first 72 MW) of the Project. The transmission infrastructure is proposed to be
financed with a combination of funds from the Government of Spain and the GoK as well as other potential DFIs.

IV. Safeguard Policies that might apply

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* The team is exploring the project footprint and its potential impact on or proximity to Indigenous Peoples.

1. Tentative financing

Source: ($m.)
Borrower 0
IDA Guarantee 78
Total 78

V. Contact point

World Bank

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Borrower/Client/Recipient

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* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas
VI. For more information contact:

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