AFRICAN DEVELOPMENT BANK GROUP

LAKE TURKANA WIND POWER

The Lake Turkana Wind Power project

Part I

General Information

Presented by Henk Hutting

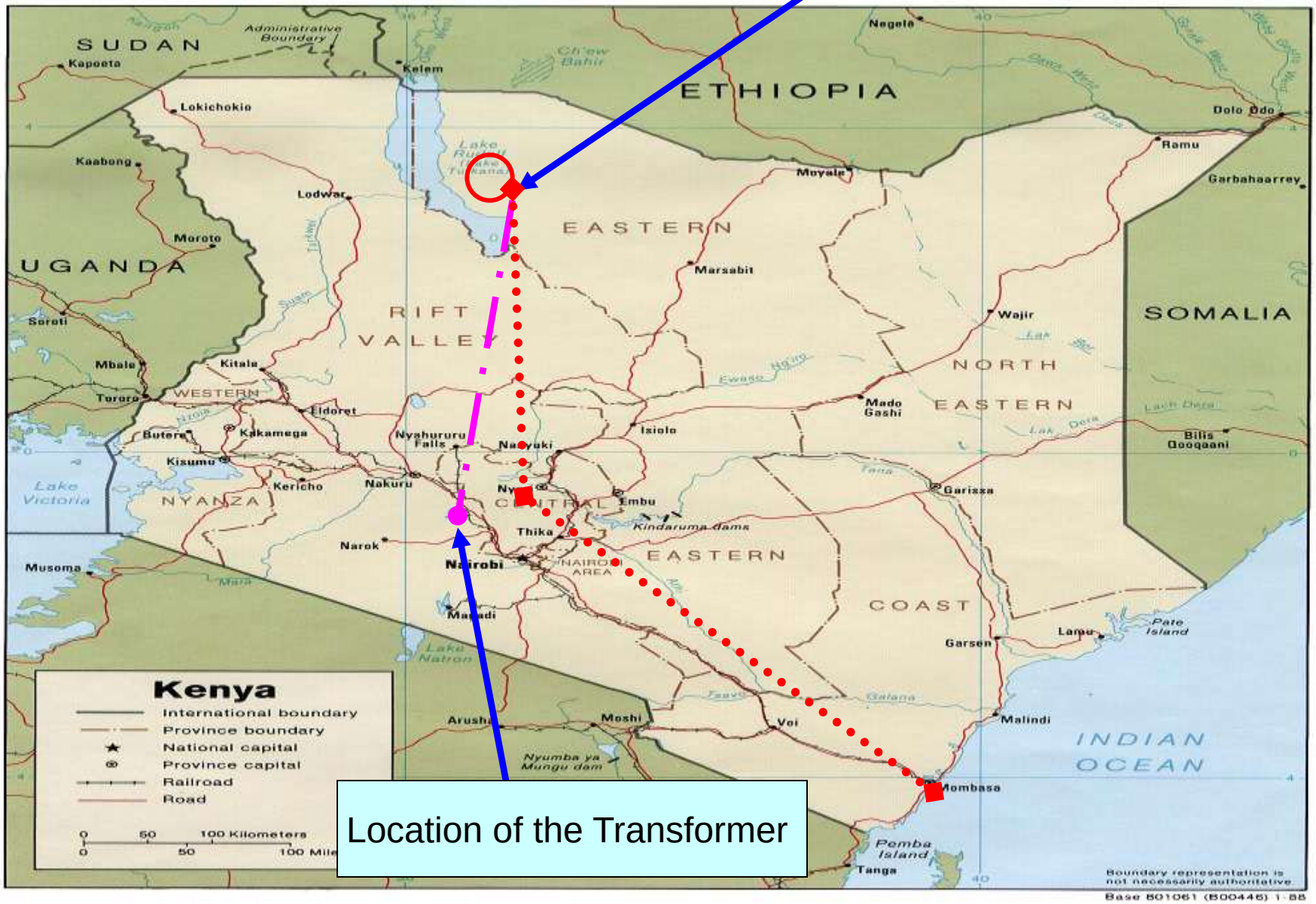
OUTLINE

- Where will we build and what
- Does the wind blow up there
- How do we connect to the grid
- Can 300 MW be fed into the system of Kenya
- What are the social and environmental impact
- When will it happen

Transmission Line

Transport Road

Location of the Site



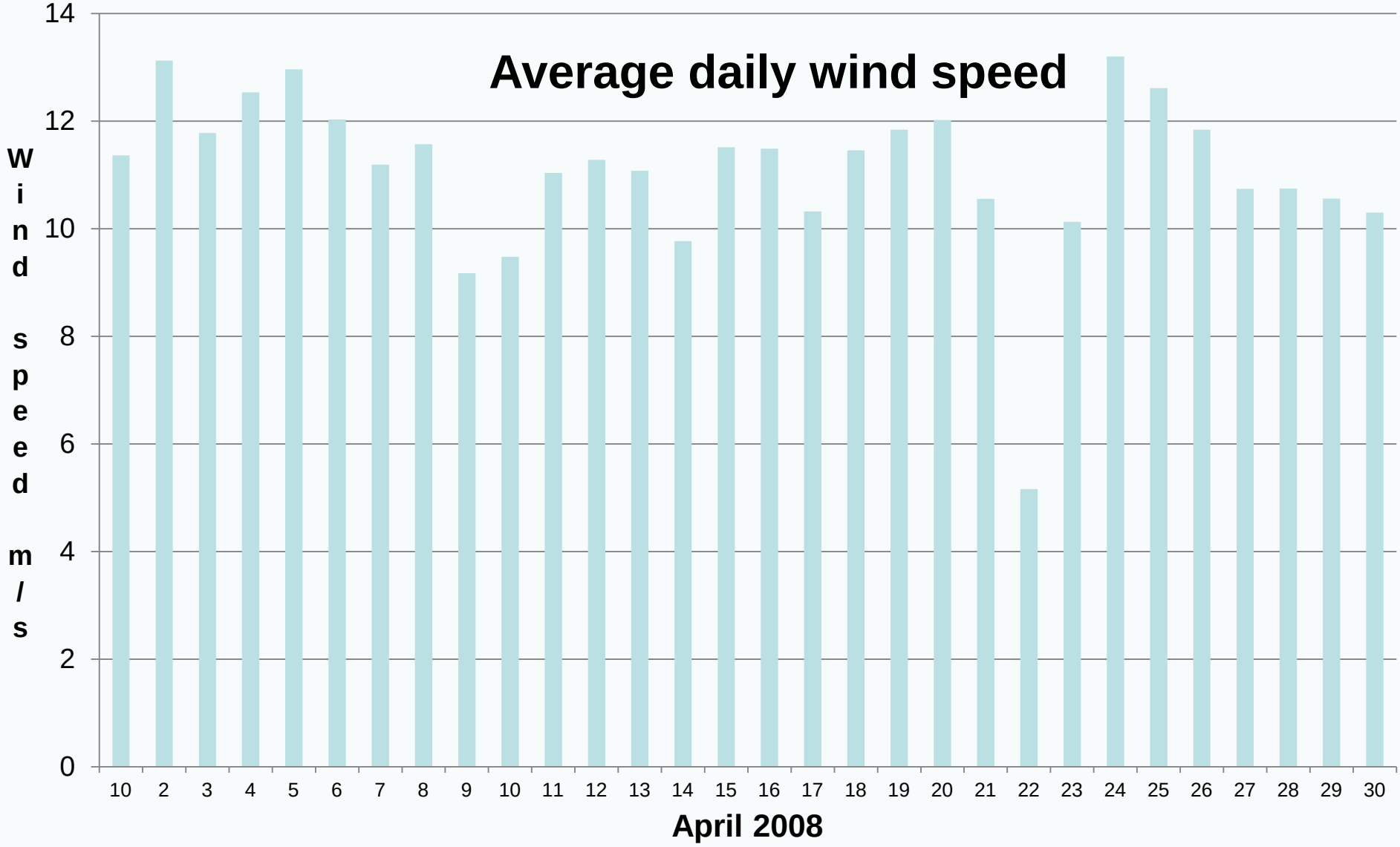
Location of the Transformer

Landscape of wind farm area

What else do we need besides 365 wind turbines

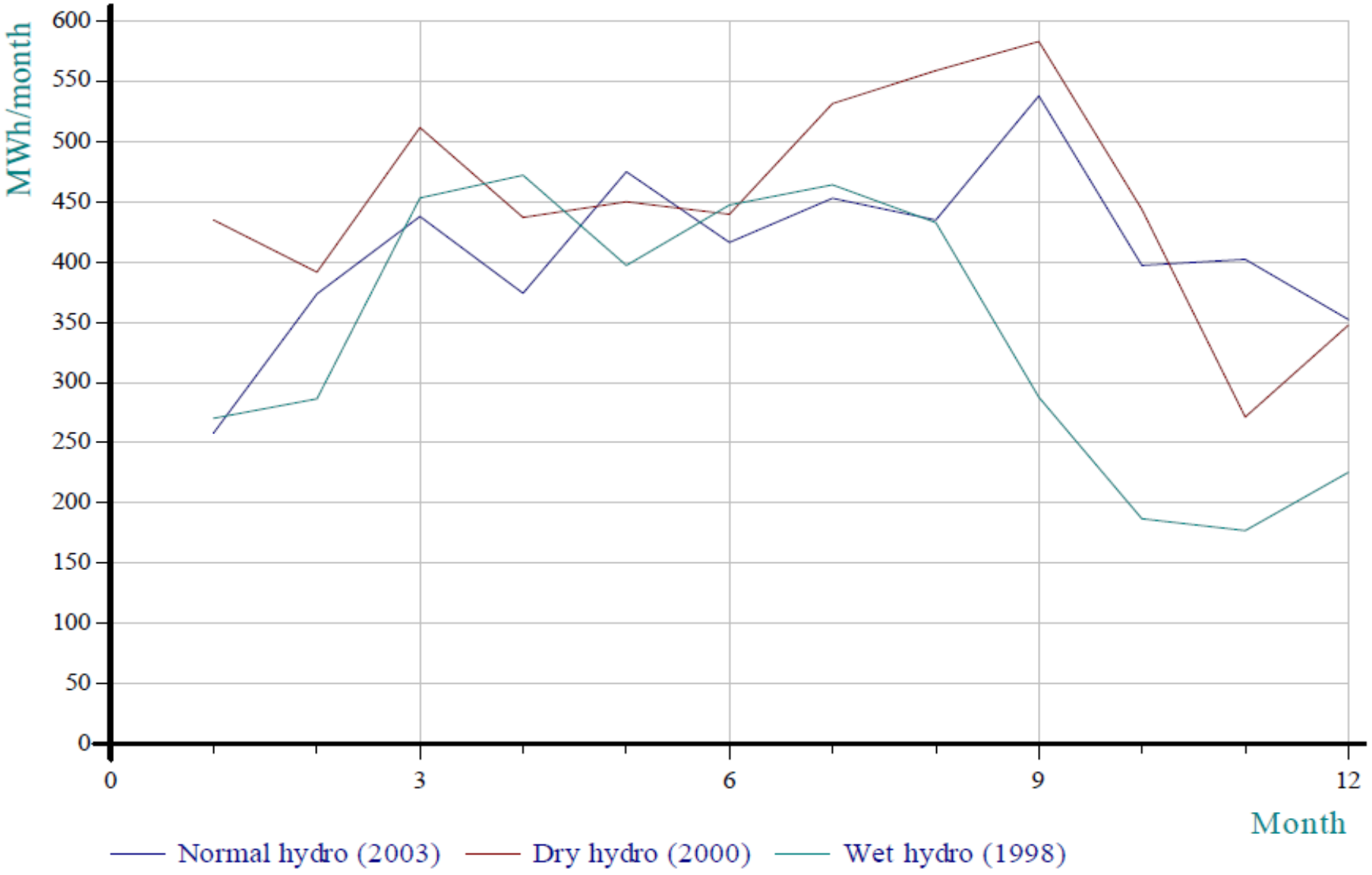
- Power collection system
- 100 km of site roads
- Control room, workshop, warehouse, workers rest facilities and canteen
- Camp for 600 people during construction
- Permanent housing for 100 staff members: a full fledged village
- A Lodge

Available almost every day



Yearly profile wind energy

And throughout the year



Can 300 MW be fed into the system of Kenya

The total installed capacity in Kenya is ~ 1200 MW

- Integration study by VTT of Finland demonstrated:
  - Thanks to large amounts of hydro power including storage basins, large amount of wind power can be integrated
  - Avoided capacity by the wind farm: 97 MW in dry years
  - Avoided costs more than 10 cents/kWh up to 20 cents/kWh in dry years
  - Both Hydro and diesel units can respond quick enough to cope with fluctuations from the wind farm

What are the social and environmental impacts

Positive impacts on:

- CO2 emissions
- Local employment
- Economic growth
- Rural electrification
- Access Communications (ICT)
- Road Accessibility

Minor negative impact on:

- Visual intrusion
- Cultural contamination
- Loss of habitat
- Ponding conditions

When will be build the farm

Strongly depends on planning transmission line

- Start road construction: January 2010
- Start building facilities: July 2010
- Start building wind turbines: May 2011
- Operation first wind turbine: July 2011
- Final take over: July 2012

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Part II

In Partnership with AfDB

Presented by Hela Cheikhrouhou

Outline

- Rationale for banks involvement
- Role of AfDB
- Project features
- Project cost and financing
- Project processing plan
- Key considerations
- Contact details

Rationale for the banks involvement

- At 300 MW, it will be high impact, high visibility for Kenyan economy
- Increase Kenya's installed capacity by 25%
- It will represent about 12.5% of additional capacity needed by 2020
- Least cost, clean and renewable energy
- Diversify Kenya's hydro and substitute diesel based generation
- Good demonstration of PPP co-operation by concurrent development of the transmission line
- The evacuation route will encourage geothermal power development along its path

Role of AfDB

- AfDB is the mandated lead arranger **(MLA)**
- The Bank will be responsible for facilitating the entire debt tranche of about €300m from DFI and commercial sources
- The Bank is interested in providing upto €100m for its own account.
- DFI loan tenor of upto 12 years and 9 years from commercial sources
- The bank along with the sponsors held a DFI seminar in Tunis where participants indicted level of interest in the project
- The bank continues to hold bi-monthly DFI meetings to discuss project updates and financing terms

Project Features

- Power to be sold to KPLC on take or pay basis

- Negotiated Tariff rate:

Tariff (€ cents/KWh)	**Load Factor**	**Comments**
7.22	55%	Annually calculated
3.61	> 55%	Annually calculated

- PPA duration: 20 years

- Plan for first turbine installation – July 2011

- End of construction – July 2012

Project Cost and financing

	2009	2010	2011	2012	Total
Total investment	**8.8**	**156.9**	**258.7**	**9.4**	**433.8**
Financing Structure					
Equity (30%)	8.8	87.3	34	0	130.1
Debt (70%)	0	69.7	224.6	9.4	303.7
Total sources of funds	**8.8**	**156.9**	**258.7**	**9.4**	**433.8**

Revenue Analysis

Average Number of turbines installed	**365**
Average Farm capacity (MW)	**303**
Average expected Load factor	**55%**
Average Energy at Load factor of 55%, GWh	**1,388**
Tariff – At 55% load factor, Eur Cts/ KWh	**7.22**
Average Revenue (Euro - Millions)	**104.1**

Summary of Project outputs

Annual Ratios	Minimum
Historic Senior DSCR	1.48x
Forward Senior DSCR	1.48x
Senior LLCR	1.70x

Project Returns

Project Returns	Discount Rate	Result
Project FIRR, nominal		**16.81%**
Project FIRR, real		**14.52%**
Equity Returns		
Equity FIRR, nominal	24.00%	**20.37%**
Equity FIRR, real	21.57%	**18.01%**
Equity FNPV, nominal	24.00%	**(18.7) EUR million**
Equity FNPV, real	21.57%	**(18.7) EUR million**

Project processing plan

- Operating Committee (OpsCom) – End May 2009
- Joint Lender's appraisal mission – Mid June 2009
- Board date – End July 2009

Key Considerations

- Structure and financing for the 400kv transmission line needs to be developed in tandem with the Genco.
- Equity partners with track record in executing similar projects in developing countries.
- IPP license and execution of PPA nearing conclusion
- Finalization of Vestas quotation and negotiation for full EPC wrap in May 2009
- GoK proposed letter of comfort to lenders for KPLC payment will need to be strengthened with full government guarantee.

Contacts

Hela Cheikhrouhou

Manager

Infrastructure Finance Division

h.cheikhrouhou@afdb.org

+216 71102140

Youssef Arfaoui

Investment Officer - RE Expert

Infrastructure Finance Division

y.arfaoui@afdb.org

+216 71102308

Obiora Okoye

Investment Officer

Infrastructure Finance Division

o.okoye@afdb.org

+216 71103816