

May 4, 2010

**IBRD Response to Japan**  
**Egypt: Wind Power Development Project (IBRD)**

Dear Keisuke,  
Thank you for your e-mail of April 30. Our responses to your comments are provided below.  
Best regards  
Rohit

**1. The CTF aims to finance transformational investments for the development of low-carbon technologies, while the CTF funding component of this Project is a construction of conventional 500kV transmission line. Although we understand that this Project will support the development of wind power projects, we would like to see if there are any new transmission systems/components using energy-efficient technologies. Appreciate your explanation in the project document.**

The CTF Investment Plan for Egypt highlighted the critical importance of transmission infrastructure for scaling-up wind power development in Egypt. Support for the proposed transmission line mitigates the up-front infrastructure risk related to implementing one of the largest private sector-based wind programs in the region and addresses the additional costs associated with the transmission necessary to evacuate wind power from the region with the best wind potential to the load centers. In view of the intermittent nature of renewable energy, the infrastructure risks are even greater compared to development of conventional power plants. This lack of adequate transmission capacity continues to hamper wind power development even in developed markets to date - see for example a recent article on the situation in the U.S. (<http://journalrecord.com/2010/04/13/as-wind-power-grows-transmission-bottlenecks-loom/>).

On the issue of the technology choice for the transmission line, we would like to confirm that the proposed technology for the 500 kV line will use efficient technologies whereby losses in the line and substations will not exceed 3%.

**2. We have a concern on the large share of the CTF funding in the Project cost (\$150mil CTF out of \$345mil of transmission project) since its purpose is to cover the identifiable and additional cost of the investment to make the investment financially viable with maximizing limited CTF resource. As stipulated in the para 25, 26 of the Investment Criteria, we would like to request an additional information (i.e. financial analysis of the transmission project) to justify the amount of \$150mil by showing with and without CTF resource cases ("without case" will be based on IBRD financing for CTF portion) in addition to the current economic analysis. In order to see the financial viability of the transmission components, transmission charge would be taken into consideration to cover the capital costs.**

The CTF funding request for the transmission line is broadly in line with the estimate presented in with the Egypt CTF Investment Plan in January 2009 (which had estimated a CTF contribution of \$100-120 million for a total project cost of \$250 million for the transmission component). The CTF financing has been justified on the basis of an economic analysis in the Project Document, because the financial analysis is complicated by uncertainty over the transmission margin rate, which would affect the revenue impacts of the incremental power generated by the project. The "with" and "without" CTF cases were therefore done on the basis of economic rather than

financial benefits and costs.

Nevertheless, we have conducted a financial analysis of the project (summary below). The assessment is based on the estimated investment value of US\$ 345.6 million, including price and physical contingencies. The estimated useful life of the transmission asset is assumed to be 40 years. Since EETC's transmission margin rate is not published, an estimate of US\$ 0.0059 per kWh is derived based on the available partial financial statements for the latest fiscal year 2009. However, "transmission margin" in this context actually refers to "margin for transmission, dispatch, and market operations", because EETC does all these three functions. Thus, pure "transmission margin" would be somewhat lower and in that case the rate of 0.0055 \$/kWh would be closer to the base case than 0.0059 \$/kWh. The revenue projections thus contain a substantial degree of uncertainty. Sensitivity assessment shows that the financial results are highly sensitive to the assumed transmission margin rate. The sensitivity analysis is illustrated in the table below.

Furthermore, the intermittent nature of wind power and load factors that are lower than fossil fuel power plants mean that transmission costs per MWh could be higher for wind power. In such a situation, the risk-adjusted rate of return will be lower than the hurdle rate. In the absence of CTF funding that adequately makes up potential losses due to wind intermittency, the Government of Egypt and EEHC would proceed on a slower track, with transmission lines for one or two wind farms at a time connecting to the existing 220 kV from Zafarana, rather than the ambitious plan to provide transmission infrastructure for the full 2,500 MW competitive tender program.

It is also important to note out that this financial analysis only reflects the financial impacts of EETC's role as the developer of the transmission line. It ignores the financial impacts associated with the company's role as the single buyer and wholesaler of electricity, and its consequent commitment to purchase wind energy at prices that will significantly increase its average cost of supply.

	Transmission margin US\$ 0.0059 / kWh		Transmission margin US\$ 0.0055 / kWh	
Financing Scenarios	Project NPV @ 8% financial discount rate	Project nominal FIRR	Project NPV @ 8% financial discount rate	Project nominal FIRR
A. US\$ 150m CTF ; US\$ 71.5m other concession loans ; US\$ 70m IBRD loan ; US\$ 54.1m base counterpart funding and US\$ 11.8m interest during construction	US\$ 70.9 million	10.6%	US\$ 36.5 million	9.4%
B. No CTF ; No other concession loans, US\$ 291m IBRD loan ; US\$ 54.1 base counterpart funding and US\$ 28.9m interest during construction	US\$ 16.5 million	8.6%	US\$ (17.8) million	7.3%