JACO CDM

CDM Executive Board

May 25, 2007

Re: Request for review
"Zafarana Wind Power Plant Project, Arab Republic of Egypt" (0740)

JACO CDM has been informed that the request for registration for the CDM project "Zafarana Wind Power Plant Project" (Ref. no. 0740) (hereinafter "the Project") is under consideration for review because three requests for review have been received from members of the Board.

JACO CDM would like to provide an initial response to the issues raised by the request for review.

Reviewer 1:
Reason No.1 *The application of the methodology is not transparent: Data provided for the plants on the grid is not clear; it does not state which plants use oil and which use gas, it is not clear what ST stands for, and the operating margin is not calculated for each of the three years and then an average determined. Instead, an average over the 3 years is applied using a weighted average of the CEF for all fuels and a weighted average of the oxidation factor. These calculations should be done for each fuel used in each plant on the grid using the CEF, oxidation factors, and NCV's for each fuel, and not weighted averages of these values for all fuels – this is not transparent and it is not possible to tell if they are conservative. The fuels used for each plant should be provided, unless they is not available in which case it should be stated and validated that disaggregated fuel data is not available by plant.*

JACO CDM Response:

JACO CDM acknowledges that more transparency is needed in the PDD. The PDD section E and Annex 3 has been revised to provide information indicating which plants use oil and which plants use gas.
The explanation of acronyms such as ST, CC and GT was added to the revised PDD.
As for the operating margin calculation, the PDD has been revised to indicate the average for each of the 3 years according to the requirement of ACM0002 / Version 06.

[Fuel use in each plant]:
The quantitative information about the fuel use for each plant was not publicly available. JACO CDM confirmed during on-site assessment by visiting the Egyptian Electricity Holding Company (EEHC) that there is no disaggregated fuel consumption data which is made publicly available.
Instead, the following information is publicly available in the annual report of EEHC.

- Individual fossil fuel consumption for each plant in the grid (tones of oil equivalent (toe) basis)
- Aggregate percentage of natural gas and fuel oil use on a toe basis

Considering the unavailability of more disaggregated data, JACO CDM confirmed and added to the validation report that it is appropriate to use aggregated generation and fuel consumption data as stated in ACM0002 / version 06 foot note 4.

[Usage of CEF, Oxidation factor and NCV]

In the revised PDD, calculation was made transparent using the CEF values for each year for the fuel oil and the natural gas, oxidation factors and toe based fuel consumption instead of NCV values for each fuel. Toe based fuel consumptions are made publicly available in the annual reports pf EEHC.
JACO CDM confirms that the application of the methodology is transparent in the revised PDD.

Reason No.2 *Also, IPCC default values are used throughout but there is no explanation why local, or country specific values are not used. Also it is not clear why the CEF for crude oil is used instead of for fuel oil.*

JACO CDM Response:
Country specific values for CEF and oxidation factors for fuel oils and natural gas were not available in Egypt. Therefore IPCC default values were used in the PDD. As for this situation, explanation was added to the revised PDD section E.
Also, JACO CDM confirmed during the on-site assessment and this is explained in the revised validation report.

In the original PDD, the IPCC default value of CEF for crude oil (= 20.0 tC/TJ) was applied.
At that time JACO CDM could not get the information of country specific value of toe for Egyptian fuel oil used in power plants. Therefore, JACO CDM took the CEF=20.0 (the minimum value among IPCC default values for fuel oils and crude oil) is appropriate from the conservative viewpoint.

This time, the project participants revised the PDD based on the country specific values of each fuel toe[1] and the country specific Emission Factors of CO2 for fuel oil and gas. JACO CDM got the evidence information “Energy in Egypt 2000 – 2001”. The relevant page is attached as Appendix 1.
According to this information, the TOE and Emission Factors of CO2 for Egyptian fuel oil and natural gas (NG) are as follows:

Fuel Oil:	[TOE]	1 ton fuel oil = 0.972 TOE
	[Emission Factor of CO2]	3.1094 (T-CO2/T)
Natural Gas:	[TOE]	1 ton natural gas = 1.111 TOE
	[Emission Factor of CO2]	2.6115 (T-CO2/T)

Using these values the CEF values arecalculated as 20.8 for fuel oil and 15.3 for natural gas in the PDD. JACO CDM confirmed that this calculation is appropriate.

The PDD was revised, validated and submitted with this response.
Also, the validation report was revised and submitted with this response.

Reviewer 2:
Reason No.1 *The Common Practice analysis is not convincing and there is no evidence that it was adequately validated. There are several other wind projects in the same region (Zafarana) that are not CDM projects. The PDD states that these were financed with ¨soft loans and other incentives¨ that are no longer available; hence it is not common practice. The validation report states that this argument is acceptable, but does not indicate that it was validated or confirmed.*

[1] Energy in Egypt 2000/2001 by Organization for Energy Planning, p36

This project activity is also receiving a loan, from the Japan Bank for International Cooperation – but no information has been provided regarding how this loan is different from those provided to the other projects by Denmark, Germany and Spain.

JACO CDM Response:

JACO CDM accepted the Common Practice Analysis of the PDD based on the following background information at the time of validation (October end of 2006).

- Wind power projects that had been already commissioned In the region of zafarana:
  - Zafarana 1 - 30MW by Denmark (Commissioning: Dec. 2000)
  - Zafarana 2 - 33MW by Germany (Commissioning: March 2001)
  - Zafarana 3 - 30MW by Denmark (Commissioning: Dec. 2003)
  - Zafarana 4 - 47MW by Germany (Commissioning: June 2004)

- Wind power project that was under construction In the region of zafarana:
  - Zafarana 5 - 85MW by Spain

- Wind power projects which are to be commissioned In the region of zafarana in future:
  - **Zafarana 6 - 120MW by Japan ("the Project", UNFCCC reference 0740)**
  - Zafarana 7 - 80MW by Germany
  - Zafarana 8 - 120MW by Denmark

Zafarana 1 project was financed through a grant covering all foreign works (i.e. equipment, design, packing, international transportation, etc.)

In case of Zafarana 2 to Zafarana 4, the projects depend on NREA's investments as well as a mix of soft loans and substantial grants. The percentages of grants in the finance for Zafarana 2, 3, 4 Projects are approximately 30%, 16%, 25% respectively.[2,3]

Please refer to Appendix 2 and 3 attached to this response.

On the other hand, in case of Zafarana - 5, 6, 7, and 8 Projects which have been planned after Zafarana - 4 are not receiving any grants.

Under this serious change of circumstance, these projects of Zafarana - 5, 6, 7 and 8 have been planned as CDM projects to compensate the financial gap caused by the lack of grants.[2,4] (Ref. Slide no. 16 of the NREA's document "Zafarana Wind Farm" (Appendix 2 to this response), page 22 of NREA's Annual report 2004/2005. (Appendix 4 to this response))

Therefore, the Project (Zafarana – 6) cannot be implemented by NREA without CDM.

JACO CDM confirms that the Project is not a part of common practice.

However, JACO CDM agrees that the validation report does not provide the evidences for its validation of Common Practice Analysis. Explanation was included in the revised validation report which is submitted with this response.

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[2] WEC "Financing Large Scale Wind Farms in Developing Countries: Zafarana Wind Farm" by Dr. Sherif Aboulnasr (NREA); April, 2006
http://www.uneptie.org/energy/act/fin/ECA/docs/ws5/Aboulnasr%20Sherif%20-%20Zafarana%20Wind%20Farm%20(4).pdf

[3] Energy Efficiency and Renewable Energy, Egypt - National Study (Final Report) by Eng. Rafik Youssef Georgy (NREA), Dr. Adel Tawfik Soliman (Power Transmission): Mediterranean and National Strategies for Sustainable Development March, 2007
http://www.planbleu.org/publications/atelier_energie/EG_National_Study_Final.pdf

[4] NREA's website:
http://www.nrea.gov.eg/english1.html

Also, the project participant revised the Common Practice analysis of the PDD to make it more convincing. The revised PDD also is submitted with this response.

Reason No.2 Same as Reason No.1 of Reviewer No.1

Reason No.3 Same as Reason No.2 of Reviewer No.1

Reviewer 3:

Reason No.1 Same as Reason No.1 of Reviewer No.1

Reason No.2 Same as Reason No.2 of Reviewer No.1

We sincerely hope that the Board accepts our aforementioned explanations and we look forward to the registration of the project activity.

Yours faithfully,
For JACO CDM

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Appendixes:

Appendix 1: Toe and emission factor of fuel
Appendix 2: Zafarana Wind Farm (NREA)
Appendix 3: Evolution of Wind Power Plants Projects at Zafarana
Appendix 4: NREA Annual Report 2004/2005 P22

Conversion Units

TOE	Million British Thermal Units	Giga Calori	MWh	Giga Joule
1	39.69	10	11.63	41.87
0.025	1	0.25	0.29	1.05
0.1	3.97	1	1.16	4.19
0.086	3.41	0.86	1	3.6
0.024	0.95	0.24	0.28	1

1 ton crude oil	=	0.995 TOE
1 ton natural gas (NG)	=	1.111 TOE
1 ton liquid propane gas (LPG)	=	1.125 TOE
1 ton fuel oil	=	0.972 TOE
1 ton kerosene	=	1.086 TOE
1 ton gasoline	=	1.103 TOE
1 ton gas oil	=	1.066 TOE
1 ton crude oil	=	7.3 barrels crude
1 ton coal	=	0.670 TOE
1 kWh (hydro)	=	223.5 Gr.O.E. (2000/2001)
1 barrel equivalent natural gas	=	5,000 cubic feet natural gas
1 cubic meter	=	35.315 cubic feet
1 metric ton	=	1,000 kilograms
kilo (K)	=	10^3
mega (M)	=	10^6
giga (G)	=	10^9
tera (T)	=	10^{12}

Emission Factors Of CO_2 By Fuel Type

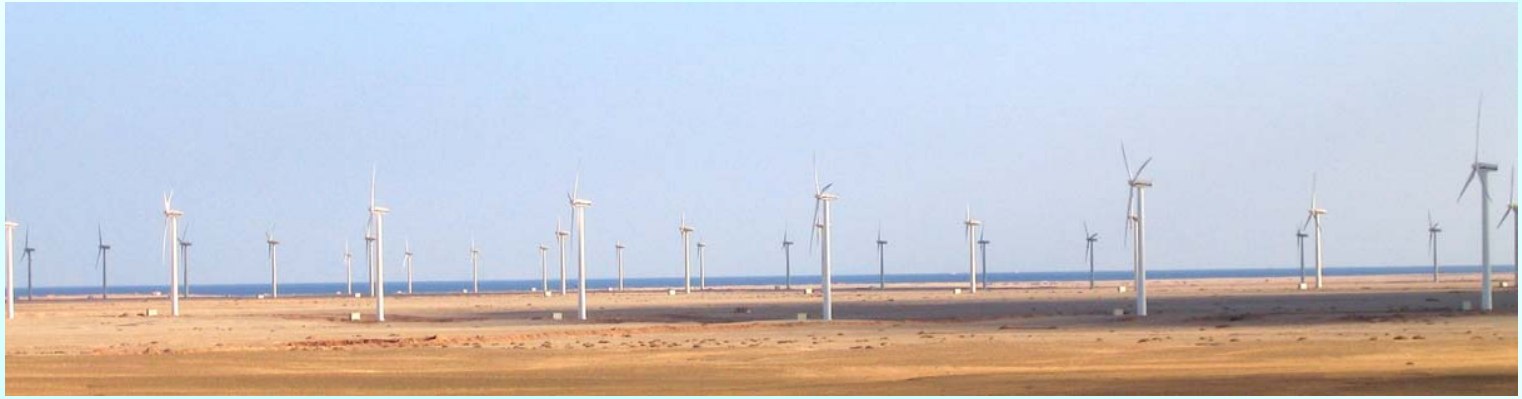
Fuel Type	Ton Carbon Dioxide/ Ton
LPG	2.9837
Gasoline	3.1046
Kerosine	3.216
Gas Oil	3.2093
Diesel	3.2093
Fuel Oil	3.1094
Others	2.9473
Natural Gas	2.6115

Source :
Intergovernmental Panel On Climate Change (IPCC) . Guidelines, 1996.

Appendix 2

Financing Large Scale Wind Farms in Developing Countries

Zafarana Wind Farm



Sherif Aboulnasr

Chairman of the WEC Financing Renewables Task Force,
Egyptian National Committee of the World Energy Council (WEC)

Financing of Zafarana Projects

Summary of Zafarana projects foreign financing

Project	Foreign Financing sources	Type			
		Grant	Soft Loan	Export Buyer Credit	
				Mixed Credit	Commercial Loan
Zafarana 1 - 30MW	Denmark: DANIDA	100%	-	-	-
Zafarana 3 - 30MW	Denmark: DANIDA (grant+mixed credit loan)	16%	-	84%	-
Zafarana 2 - 33 MW	Germany: KfW	30%	70%	-	-
Zafarana 4 - 47 MW	Germany: KfW	25%	75%	-	-
Zafarana 5 - 85 MW	Spain: Expansion Exterior	-	60%	-	40%
Zafarana 6 - 120 MW	Japan: JBIC (Soft loan)	-	100%	-	-
Zafarana 7 – 80MW	Germany: KfW	-	50%	-	50%
Zafarana 8- 120 MW	Denmark: DANIDA (mixed credit loan)	-	-	100%	-

Zafarana CDM projects

- The near economical feasibility of Zafarana wind projects is linked to get the projects approved as a CMD-project.
- NREA's planning of the projects Zafarana 5,6,7 and 8 including the financing needs and production costs was based on assuming that these projects will be registered as CDM projects.
- Consequently, the wind produced KWh will have a bonus from selling the CERs .
- NREA is preparing to qualify the a/m Zafarana projects as CDM projects, in cooperation with concerned developed countries.

Zafarana CDM projects

- **Zafarana 6 (120 MW),**
  - ✓The Egyptian DNA has issued the "No Objection" letter.
  - ✓Project Design Document (PDD) is being finalized to be submitted (along with DNA final approval) to the Executive Board (CDM/EB) for its approval, hence registration.
  - ✓An ERPA was signed with the Japan Carbon Fund (JCF) to purchase the CERs produced (about 248000 TCO2 /year) starting from 2009.
- **Zafarana 8 (120 MW)**
  - ✓ The Egyptian DNA has issued the "No Objection" letter
  - ✓Necessary CDM documents are being developed to complete the registration procedures.
  - ✓ An ERPA was signed with the Danish side, where they will purchase the major portion of the CERs produced (about 230000 T CO2/year) during 2008-2012 .
- **Zafarana 7 (80 MW)**
  - ✓NREA is preparing to qualify the project as CDM and is negotiating with the German side, to purchase the CERs produced (about 170000 T CO2/year)

Table (2.1): Evolution of Wind Power Plants Projects together with its investment schemes at Zafarana

Order and Name of Plant	Wind Power Plant Capacity and Cooperating Entity	Investment cost and its Currency		Foreign Financing and Currency		Conditions of Loan			Commissioning Date
							Repayment Period		
		Local Works in LE	Imported Equipment and its Currency	Grant	Loan	Interest Rate %	Total Period	Grace Period	
Zafarana (1)	30 MW phase (1) of cooperation with DANIDA	9 Million	203 Danish Krone	203 DK	-	-			Dec. 2000
Zafarana (2)	33 MW phase (1) of cooperation with kfw	22 Million	50 Million D. Mark	15 M DM	35 DM	0.75	40 years	10 years	March 2001
Zafarana (3)	30 MW phase (2) of cooperation with DANIDA	10.6 Million	183.6 DK	31.6 DK	152 DK	0	10 years	0.5 years	Dec. 2003
Zafarana (4)	47 MW phase (2 & 3) of cooperation with kfw	33.8 Million	36.6 Million Euro	10M Euro	26.6 M Euro	0.75	40 years	10 years	June 2004
Zafarana (5)	85 MW in cooperation with Spain	107 Million	58 M Euro including - soft loan 35 M Euro – 60% - Commercial loan 23 M Euro– 40%	-	58 M Euro	0.3 4.11	31 years 9 years	10 years 0.5 year	Dec. 2006

Note that for the local investment it is always supported by NREA through loans from the Egyptian National Investment Bank (NIB) with common financing conditions for loans in Egyptian Pounds (L.E) of 13% annual interest rate and 10 years repayment period including 2 years of grace period

1 US$= 5.7 LE and 1 € = 7.5 LE

2- Environmental Studies

In the context of the increasing environmental issues and climate change concerns, Egypt signed Kyoto Protocol in 1997 and ratified it in 2005. A national clean development strategy has been set up to prioritize the projects that can be implemented within the framework of that respect.
According to Kyoto Protocol, the developed countries that signed Annex 1 to the said Protocol are obliged to reduce their Green House Gases (GHG) emissions by 5.2% from that of 1990, in the period from 2008-2012. Three mechanisms were identified to realize the Protocol's goals: (1) Joint Implementation (JI) (2) Emissions Trade (ET) (3) Clean Development Mechanism (CDM).
CDM is the mechanism of growing interest for developing countries, where it was set up to enhance the mutual cooperation between both the developed and developing countries in the filed of GHG emissions reduction. The developed countries can support the projects that contribute in achieving sustainable development and protecting the environment in the developing countries. In return, the expected emissions reduction due to carrying out such projects will be accounted to the developed countries so as to fulfill their obligations under Kyoto protocol. The required steps to qualify a project within CDM are:

1- Preparing Project Idea Note (PIN).
2- Preparing Project Design Document (PDD).
3- Letter of No Objection on the project from the Designated National Authority (DNA).
4- Submitting the PDD to the Executive Board (CDM/EB) by the benefiting parties.
5- Accepted project will be registered in EB as a CDM one within 8 weeks, against paying fees for registration, follow up, monitoring and verification.

NREA is preparing to qualify some of Zafarana wind farm projects to be carried out within CDM, in cooperation with concerned developed countries, such as:

a – 120 MW wind farm in cooperation with Japan
- The Egyptian DNA has issued the No Objection letter based on PIN document.
- Currently, PDD is being finalized to be submitted (along with DNA final approval) to the CDM/EB for its approval, hence registration.
- An Emission Reduction purchase Agreement (ERPA) was signed with the Japan Carbon Fund (JCF) to purchase the Certified Emissions Reductions (CERs) that will be produced by the project (about 248000 Ton Carbon Dioxide –T CO_2 /year) starting from 2009.

b – 120 MW wind farm in cooperation with Denmark
- The Egyptian DNA has issued the No Objection letter.
- Both the Danish and Egyptian sides will developed the necessary CDM documents to complete the registration procedures.
- An emission reduction purchase agreement was signed with the Danish side, where they will purchase the major portion of the CERs produced from the project (about 230000/T CO_2/year) during 2008-2012) .

c – 80 MW wind farm project in cooperation with Germany
- NREA is negotiating with the German side, who had previously expressed the intention to purchase the CERs produced by the project (about 170000 T CO_2/year), to register the project within CDM.

d – 85 MW wind farm project in cooperation with Spain :-
- NREA has started qualifying the project to be implemented within CDM.