

**CLEAN DEVELOPMENT MECHANISM  
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD)  
Version 03 - in effect as of: 22 December 2006**

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**Revision history of this document**

<b>Version Number</b>	<b>Date</b>	<b>Description and reason of revision</b>
01	21 January 2003	Initial adoption
02	8 July 2005	<ul style="list-style-type: none"><li>• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document.</li><li>• As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <a href="http://cdm.unfccc.int/Reference/Documents">http://cdm.unfccc.int/Reference/Documents</a>.</li></ul>
03	22 December 2006	<ul style="list-style-type: none"><li>• The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.</li></ul>

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**SECTION A. General description of small-scale project activity****A.1 Title of the small-scale project activity:**

**Title:** Fuel Switching from Mazout to Natural Gas in Misr Edfu Pulp, Writing & Printing Paper Co. (MEPPCO)

**Version:** 05

**Date of completion:** 28<sup>th</sup> of November, 2012

**A.2. Description of the small-scale project activity:****Project description:**

The project activity is located at Misr Edfu Pulp, Writing & Printing Paper Co. (MEPPCO) factory in Edfu, a town in the governorate of Aswan in Upper Egypt. Established in 1963, and privatized in 1994, MEPPCO factory produces 60,000 tons of printing and writing paper to reduce the need for importing using locally available raw materials, such as bagasse.<sup>1</sup>

There are three operating boilers at MEPPCO factory:

- 1) Main power boiler: burns heavy fuel oil (HFO), commercially known as mazout.
- 2) Secondary boiler: also burns HFO.
- 3) Recovery boiler: burns lignin as bio-fuel.

Under this project activity, a natural gas connection will be constructed to feed the main power boiler. The main power boiler is the only boiler included in the project boundary. The project boiler will remain to be connected to HFO storage tanks to be used for emergencies or if NG flow is disrupted.

The secondary boiler is near the end of its service lifetime planned to be replaced with a new one when the required finance is available. The recovery boiler in MEPPCO factory, which burns lignin (a bio-fuel by-product of paper manufacture<sup>2</sup>), will remain as such. The secondary boiler and the recovery boilers are outside the boundary of this project activity.

Steam from the boilers provides process steam and drives a turbine that generates electricity for the factory's operation. No electricity is exported from the factory.

**Purpose of the project activity:**

The project activity reduces greenhouse gas (GHG) emissions at MEPPCO factory through switching the fuel in the main power boiler from HFO to NG. There is currently no existing NG pipeline connection to Edfu town, where MEPPCO is located. The NG network will be extended over a distance of 38 km to reach the MEPPCO factory.

<sup>1</sup> Data obtained from MEPPCO website accessed on April 24, 2012 - <http://www.misredfu.com/en/index.php>

<sup>2</sup> Research article on lignin, published March 3, 2009 - <http://www.nanowerk.com/news/newsid=9480.php>

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The main power boiler has a dual-fuel burner, which is capable of burning HFO and NG. The project activity includes construction of the external NG network to bring NG to the plant, a pressure reduction station, the internal NG network, installing new piping system for the flow of NG, as well as adjusting an additional backup energy system for NG.

**Contributions to sustainable development:**

The project activity meets the sustainable development criteria established by Egypt's Designated National Authority (DNA), as evidenced by the DNA's Letter of Approval. Burning NG in place of HFO represents a clean technology demonstration to reduce the GHG emissions of the project activity.

Environmental impact: HFO contains large amounts of sulphur, while S-content in NG is insignificant.<sup>3</sup> Thus, fuel switching from HFO to NG will decrease the SOx emissions considerably, as well as decrease large portion of NOx and PMs, which are not considered under Kyoto protocol but are harmful pollutants. The project activity also reduces the risk of water contamination caused by possible HFO leakage during transportation from refineries to factory and discharging from tankers to storage tanks, in addition to reductions in pollution from tankers that are presently used for transporting the HFO.

Social impact: Decreased air pollutants will generally improve the health conditions in Edfu town. Potential risks of skin contact during maintenance and handling of HFO, and fire and explosion risks of HFO tankers and storage tanks will be prevented creating social benefits for labour conditions. The introduction of piped NG will remove the need for these deliveries and help reduce heavy truck traffic in the area.

Economic and technological impact: The project activity will create the first NG connection to the town by financing the extension of the NG grid to Edfu town. The project makes it possible for smaller industries in the area to switch to NG, and – eventually – residential households.

**A.3. Project participants:**

Name of Party involved (*). ("host" indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Party involved and wishes to be considered as project participant (Yes/No)
Egypt (host)	Misr Edfu Pulp, Writing & Printing Paper Co. (MEPPCO) – Private Entity	No
UK	Climate Corporation Emissions Trading GmbH – Private Entity	No

Please see the contact information listed in Annex 1.

<sup>3</sup> Combustion in energy and transformation industries (Section 3.3.4. Combustion of gas/oil, Table 3), EEA Europe Publications - <http://www.eea.europa.eu/publications/EMEPCORINAIR/group01.pdf>

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**A.4. Technical description of the small-scale project activity:****A.4.1. Location of the small-scale project activity:****A.4.1.1. Host Party(ies):**

Arab Republic of Egypt (A.R.E.)

**A.4.1.2. Region/State/Province etc.:**

Aswan Governorate

**A.4.1.3. City/Town/Community etc:**

Edfu Town

**A.4.1.4. Details of physical location, including information allowing the unique identification of this small-scale project activity :**

MEPPCO factory is located in Edfu town - Aswan Governorate, as illustrated in Figure (1). Using the actual location coordinates (N 25° 02' 32.53" latitude and E 32° 51' 28.44" longitude), a satellite image of MEPPCO factory is shown in Figure (2).

**Figure 1: Egypt map showing the location of Edfu town - Aswan governorate**

**Figure 2: Satellite image of MEPPCO factory using the location coordinates<sup>4</sup>**

#### **A.4.2. Type and category(ies) and technology/measure of the small-scale project activity:**

Type III – Other project activities

Category B – Switching fossil fuel (Version 16)

Sectoral Scope 1 – Energy industries (renewable – non-renewable sources)

In MEPPCO factory, the main power boiler will undergo fuel switching to burn NG instead of HFO (mazout). The fuel switching project involves:

- Construction of infrastructure for the NG networks, both inside and outside the factory.
- Construction of pressure reduction station.
- Modification of the external connections of the boiler to allow for burning NG.
- Installation of measuring devices, safety valves, pressure control system, and other required equipment, as well as new operating standardization for NG that has to be introduced to the factory as part of the project activity.

<sup>4</sup> Actual GPS location coordinates were obtained onsite and used to obtain satellite image - <http://maps.google.com/>



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The technical specifications of the power boiler encompassed by the project are summarized in the following table.

**Table 1: Main power boiler specifications<sup>5</sup>**

Specs. Description	Baseline Scenario	Project Scenario
Main fuel used	Heavy fuel oil	Natural gas
Model (Burners)	Dual-type burners	
Maximum continuous rate	100 ton steam per hour	
Economic continuous rate	80 ton steam per hour	
Outlet steam pressure	42 kg/cm <sup>2</sup> (gauge)	
Outlet steam temperature	370°C	
Feed water temperature	120°C	

**Regular maintenance at MEPPCO:**

MEPPCO is an ISO 9001:2008 certified company and has a record of following the appropriate quality and environmental management system (QMS and EMS) procedures.

Hence, MEPPCO maintains internal maintenance guidelines in accordance with ISO 9001 EP-730 (procedure for design and development), whose purpose is to plan, implement and follow up on the periodical maintenance work based on the preventive maintenance plan set for all production lines with the objective of increasing the efficiency of the equipment and instrumentation, as well as the operation and overall process efficiency.

According to EP-730, the maintenance manager is responsible for the planning and coordination of the periodical preventive maintenance plan (monthly and annual maintenance schedules), in addition to monitoring and evaluation of the implementation and recording system. Maintenance engineers and technicians are responsible for carrying out the maintenance regularly and keeping a thorough record of the equipment operation. A record of the stoppage (date, cause, solution and duration) is also kept in the company records.

**Regular training at MEPPCO:**

MEPPCO also maintains internal training guideline in accordance with ISO 9001 QP-622 (procedure for the competence awareness and training), where department heads are responsible for specifying the training needs of their staff and providing the management with their annual training requirements (using the appropriate forms).

Once the annual training plan is decided, the department heads are notified and asked to nominate staff members to attend each of the training sessions/workshops scheduled.

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<sup>5</sup> Technical specifications of the power boiler as listed in the boiler's manual.

**A.4.3 Estimated amount of emission reductions over the chosen crediting period:**

The project will result in average emissions reduction of approximately 346886 tCO<sub>2</sub>e in the 10 years crediting period. The annual average emissions reductions are shown in the following table.

**Table 2: Estimated amount of emissions reduction**

Year	Estimation of annual emissions reduction in tonnes of CO <sub>2</sub> e (tCO <sub>2</sub> e/yr)
Oct to Dec 2013	8672.16
2014	34688.63
2015	34688.63
2016	34688.63
2017	34688.63
2018	34688.63
2019	34688.63
2020	34688.63
2021	34688.63
2022	34688.63
Jan to Sept 2023	26016.47
<b>Total estimated emission reductions (tCO<sub>2</sub>e)</b>	<b>346886.3</b>
<b>Crediting Period (years)</b>	<b>10</b>
<b>Annual average estimated emissions reduction over the crediting period (tCO<sub>2</sub>e/yr)</b>	<b>34688</b>

**A.4.4. Public funding of the small-scale project activity:**

Under the Egyptian Environmental Affairs Agency (EEAA), and supported by KfW (German development bank), Private Public Sector Industry Project (PPSI) is established to enhance pollution abatement projects for industrial facilities in Upper and Lower Egypt. PPSI project is operational from 2008 to 2012, providing a grant of 20% of the required investment to eligible applicants, which can be received only after one year of successful implementation of a project.<sup>6</sup>

To date, MEPPCO has not received grants for the fuel switching project activity. MEPPCO would be eligible to receiving the PPSI grant, given that successful implementation of the project activity is achieved. PPSI funding, if and when received, does not result in a diversion of Official Development Assistance (ODA). See Annex 2 of this document.

**A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity:**

Appendix C, paragraph 2 of the Simplified Modalities and Procedures for Small-Scale CDM project activities states that:

*“A proposed small-scale project activity shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another*

<sup>6</sup> Information on PPSI as published on EEAA website accessed on April 24, 2012 - <http://industry.eeaa.gov.eg/>



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*small-scale CDM project activity: with the same project participants; in the same project category and technology/measure; registered within the previous 2 years; and whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point”*

**Table 3: Demonstration that the project is not a debundled component of a large scale project activity**

Appendix C, paragraph 2 Bundling Requirements	MEPPCO Fuel Switch Project
"Small-scale CDM project activity with the same project participants"	✓ There is no other CDM project that has been registered or has applied for registration by the project participants.
"Small-scale CDM project activity in the same project category and technology/measure"	✓ There has been no project activity that has been registered or applied for registration by the project participants in the same project category and technology/measure.
"Small-scale CDM project activity registered within the previous 2 years"	✓ There has been no project activity registered, or applied for registration, by the same project participants within the last two years.
"Small-scale CDM project activity whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point."	✓ There has been no project activity that have been registered or applied for registration within 1 km of this project activity.

**SECTION B. Application of a baseline and monitoring methodology****B.1. Title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity:**

The project activity applies the approved baseline methodology as defined in Appendix – B of the Simplified Modalities & Procedures for Small-Scale CDM Project Activities:

AMS-III.B. Switching Fossil Fuels (Version 16)

**B.2 Justification of the choice of the project category:**

As stated in AMS-III.B methodology, the baseline methodology is applicable to projects where:

**Table 4: Demonstration of applicability of the chosen methodology**

Applicability clauses of AMS-III.B (Version 16) methodology	Applicability of the clauses to the small scale project activity
1. "This methodology comprises fossil fuel switching in industrial, residential, commercial, institutional, or electricity generation applications."	✓ The project involves switching the fuel used to operate the main power boiler at MEPPCO factory from HFO to NG. HFO will be used only in case of emergency disruption of NG.
2. "Fuel switch may be in a single element process or may include several element processes within the	✓ The fuel switch will be in a single element process (please refer to B.3. Description of

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<i>facility. Multiple fossil fuel switching in an element process however is not covered under this methodology.”</i>	<i>Project Boundary</i> ). The switch will be from only one type of fuel (mazout) to one type of fuel (NG).
3. <i>“This methodology is applicable for new facilities as well as for retrofit or replacement of existing installations.”</i>	✓ The project involves fuel switching in an existing power boiler.
4. <i>“Fuel switching may also result in energy efficiency improvements. If the project activity primarily aims at reducing emissions through fuel switching, it falls into this methodology. If fuel switching is part of a project activity focussed primarily on energy efficiency, the project activity falls under a Type II methodology.”</i>	✓ The project activity primarily aims at reducing emissions through fuel switching from HFO to NG.
5. <i>“New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the general guidelines to SSC CDM methodologies. The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the general guidelines to SSC CDM methodologies. If the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the absence of the project activity”</i>	✓ The project is neither a new facility nor will it involve any capacity additions to the baseline scenario.
6. <i>“This methodology is not applicable to project activities that propose switch from fossil fuel use in the baseline to renewable biomass, bio-fuel or renewable energy in the project scenario. A relevant Type I methodology shall be used for such project activities that generate renewable energy displacing fossil fuel use. This methodology is also not applicable to project activities involving the use of waste gas; these project activities might be eligible under AMS-III.Q”</i>	✓ Renewable biomass, bio-fuel, renewable energy, or waste gas will not be used to replace HFO combustion in MEPPCO factory.
7. <i>“The facility may involve grid connected elemental processes however this methodology does not cover emission reductions on account of shift from use of a grid electricity or electricity exported to a grid”</i>	✓ No emissions reduction due to shift from use of grid electricity or electricity exported to a grid are claimed under the project activity.
8. <i>“This category is applicable to project activities where it is possible to directly measure and record</i>	✓ It is possible to directly measure energy output of steam generated by the boiler and

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<i>the energy use/output (e.g., heat, steam and electricity) and consumption (e.g., fossil fuel) within the project boundary.”</i>	the consumption of HFO and NG within the project boundary.
9. <i>“Heat, steam or electricity produced under the project activity shall be for on-site captive use or and/or export to other facilities included in the project boundary.”</i>	✓ The steam produced under the project activity will be only for on-site captive use. ✓ There will not be exporting of energy to other facilities.
10. <i>“In case energy produced by the project activity is delivered to another facility, or facilities, within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into specifying that only the facility generating the energy can claim emission reductions from the energy displacement.”</i>	✓ The energy produced by the project activity will be utilized by the factory itself.
11. <i>“Regulations do not constrain the facility from using the energy sources cited in paragraph 1 before or after the fuel switch. Regulations do not require the use of low carbon energy source (e.g. natural gas or any other fuel) in the element processes.”</i>	✓ The regulations do not constrain the facility from using the energy sources cited in paragraph 1. ✓ There are no legislative requirements in Egypt for the use of low carbon energy sources (e.g. NG).
12. <i>“The project activity does not result in integrated process change. The purpose is to exclude measures that affect other characteristics of the process besides switch of energy sources e.g. operational conditions, type of raw material processed, use of non-energy additives, change in type or quality of products manufactured etc.”</i>	✓ The project activity will not result in integrated process change in MEPPCO factory. No change in operational conditions, type of raw materials, or type or quality of products will occur.
13. <i>“Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO<sub>2</sub> equivalent annually.”</i>	✓ The project activity will result in emissions reduction of less than 60 kt CO <sub>2</sub> eq annually.

Therefore, the AMS-III.B methodology is applicable to the project activity.

**B.3. Description of the project boundary:**

As stated in AMS-III.B:

*“The project boundary is the physical, geographical site where the switching of energy source takes place. It includes all installations, processes or equipment affected by the switching. In case energy produced by the project activity is delivered to another facility, the boundary also extends to the industrial, commercial facilities consuming energy generated by the system.”*

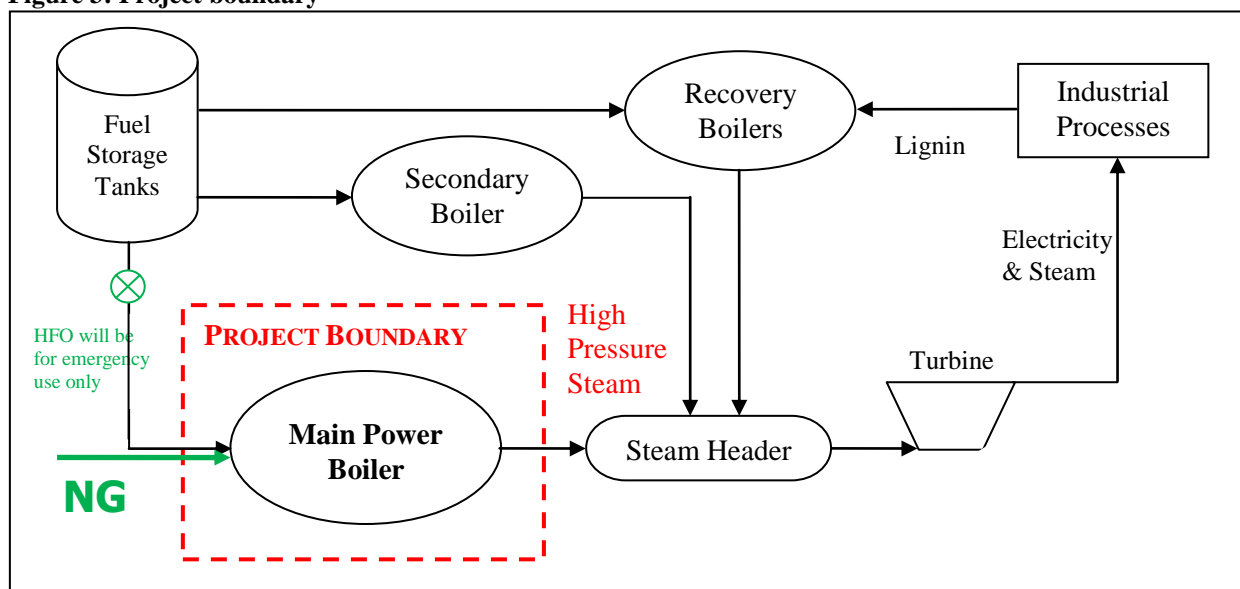
For the fuel switching project activity at MEPPCO, the project boundary (presented in the figure below) is taken as the main power boiler in MEPPCO factory, since the fuel combustion and place where the fuel

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switch is to be applied is in the main power boiler, while the secondary and recovery boilers will remain operating as in the baseline (please refer to A.2.1. *Project Description*).

The energy produced by the project activity is all used by MEPPCO and is not delivered to any other facility. The project boundary, accounting for all emissions emitted by the project activity, is illustrated as red-dotted-lines in Figure (3).

**Figure 3: Project boundary**



The following table shows the sources and types of gases included in the project boundary:

**Table 5: Sources and types of gases included in the project boundary**

Phase	Source	Gas	Included/Not	Justification/Explanation
Baseline	Heavy fuel oil combustion	CO <sub>2</sub>	Yes	Main emission source in the baseline scenario.
		CH <sub>4</sub>	No	Considered as minor source.
		N <sub>2</sub> O	No	Considered as minor source.
Project activity	Natural gas combustion	CO <sub>2</sub>	Yes	Main emission source in the project scenario.
		CH <sub>4</sub>	No	Considered as minor source.
		N <sub>2</sub> O	No	Considered as minor source.

#### **B.4. Description of baseline and its development:**

As stated in AMS-III.B:

*“In case of existing facilities historical information (detailed records) on the use of fossil fuels and the plant output (e.g. heat or electricity) in the baseline captive energy generation plant from at least three years prior to project implementation shall be used in the baseline calculations.”*

The baseline scenario is the continuation in HFO combustion in the main power boiler at MEPPCO factory as evident from the historical fuel consumption records for this boiler. In compliance with the methodology, emissions reduction will be determined using actual data which will also be monitored

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during verification. Historical records - from Jan 2006 until Aug 2011 - for fuel use and steam output by the project boiler are used to calculate the baseline emissions.<sup>7</sup> The key variables and parameters used to calculate the emissions reduction are listed in the following table.

**Table 6: Key variables and parameters**

Variables and Parameters *	Data Source
Quantity of HFO combusted in the boiler (before project implementation)	MEPPCO historical data
Quantity of steam generated by the boiler (before project implementation)	MEPPCO historical data
Quantity of NG to be combusted in the boiler (after project implementation)	Calculated
Quantity of steam to be generated by the boiler (after project implementation)	Calculated
Net calorific value of HFO	National data
CO <sub>2</sub> emission factor of HFO	National data
Net calorific value of NG	National data
CO <sub>2</sub> emission factor of NG	National data
* Each parameter is described in more details in sections B.6.2 and B.7.1	

**B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:**

In accordance with the requirements of the small-scale CDM PDD, barriers that would prevent the implementation of the project activity in absence of CDM will be determined according to the options provided in the “Guidelines on The Demonstration of Additionality of Small Scale Project Activities”<sup>8</sup>, , which state that:

*Project participants should provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers: (a) Investment barrier; (b) Technological barrier; (c) Prevailing practice barrier; and (d) Other barriers.*

The applicable barriers for this project activity are within the “other barriers” category, defined as:

*(d) Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher*

The barrier applicable to MEPPCO is the limited financial resources, and is demonstrated below in accordance with the “Guidelines for the Objective Demonstration and Assessment of Barriers”<sup>9</sup>, which state the following in paragraph 14:

**Guideline 1:** *While demonstrating barriers related to the lack of access to capital, technologies and skilled labour, the project proponents shall provide information on the nature of the*

<sup>7</sup> See Annex 3 for details on the historical baseline information used.

<sup>8</sup> Guidelines on The Demonstration of Additionality of Small Scale Project Activities (EB 68, Annex 27, Ver. 09.0) - [http://cdm.unfccc.int/Reference/Guidclarif/meth/methSSC\\_guid05.pdf](http://cdm.unfccc.int/Reference/Guidclarif/meth/methSSC_guid05.pdf)

<sup>9</sup> Guidelines for the Objective Demonstration and Assessment of Barriers (EB 50, Annex 13, Ver. 01) - [http://cdm.unfccc.int/EB/050/eb50\\_repan13.pdf](http://cdm.unfccc.int/EB/050/eb50_repan13.pdf)

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*companies and entities involved in the financing and implementation of the project. More specifically:*

- *While demonstrating barriers related to the lack of access to capital, information should include nature of company, organization and its ownership and, financial information.*

The financial information provided to demonstrate the lack of access to capital, in accordance with the Guidelines for the Objective Demonstration and Assessment of Barriers, are discussed in details below:

a) Information on the nature of company (MEPPCO) and its ownership (shareholders)<sup>10</sup>:

Misr Edfu fo Pulp and Writing Paper Co. (MEPPCO) is an Egyptian Joint Stock Company (SAE) established on 31/07/1995 according with Act No. 230 of 1989 and its implementing regulations and amendments thereto, as amended by Law No. 8 of 1997 Promulgating the Law on Investment Guarantees and Incentives and its executive the decision of the President of the Council of Ministers No. 2108 of 1997. The company's capital is 675.541 million pounds, and the investment is 767 million pounds.

The shareholders in MEPPCO are: Egyptian Sugar and Integrated Industries Co. (ESIIC), National Investment Bank, Banque Misr, Misr Insurance Co., and National (Al-Ahleya) Insurance Co.

b) Financial information on the large capital investment required:

In addition to the internal connections and other accompanying installations, the extension of the NG grid network requires considerable capital cost, in particular as the NG network has not yet reached Edfu town, where the factory is located. The following table summarizes the construction costs required for the project activity.

**Table 7: Construction costs required for the project activity**

Description	Cost (as contracted)	Costs in EUR*
Construction of external NG network	EGP 68,195,000 + EUR 464,380	9,207,328
Construction of the internal NG network	EGP 4,197,154	538,096
<b>Total construction costs</b>		<b>9,745,424</b>
* Based on an exchange rate of 1 EUR = 7.8 EGP <sup>11</sup>		

c) Financial information on the company (MEPPCO):

As demonstrated by the company's financial documents, MEPPCO has posted a loss of EGP 66,959,716 (EUR 8.5 million) in 2009 and EGP 72,961,720 (EUR 9.3 million) in 2010. The company holds debts of 611,740,319 EGP and has been unable to repay these debts leading to the company's

<sup>10</sup> MEPPCO website - <http://www.misredfu.com/en/view.php?id=6>

<sup>11</sup> Exchange rate obtained from XE, an online provider of foreign exchange services – Rate dated 20 Jan 2012 - [http://www.xe.com/ict/?basecur=EGP&historical=true&month=1&day=20&year=2012&sort\\_by=name&image.x=21&image.y=14](http://www.xe.com/ict/?basecur=EGP&historical=true&month=1&day=20&year=2012&sort_by=name&image.x=21&image.y=14)



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borrowing privileges being suspended by Egyptian banks. A large portion of MEPPCO's debt is denominated in US dollars, with the result that it is very vulnerable to fluctuations in the currency market. Since the revolution in January 2011, Egypt's credit rating and currency outlook have been downgraded several times, most recently reaching B+ by Standard and Poor's <sup>12</sup>, and BB- by Fitch <sup>13</sup>. The Egyptian Pound has fallen against the US dollar with the result that MEPPCO's debt has ballooned.

As a result of its financial situation, MEPPCO is not able to obtain external financing. Hence, in December 2009, MEPPCO board of directors came out with a recommendation to increase the company capital in order to obtain the necessary finance for the fuel switching project activity. The board's request was rejected by some of the shareholders and unanimous shareholder approval could not be obtained. In May 2011, the board concluded another recommendation that the shareholders approving to increase the capital investment for financing the fuel switching project are requested to cover the outstanding amount on behalf of those rejecting to contribute in the increase, in return of adjusting their respective shares in the company capital. Still, some of the shareholders refused the board's request and unanimous approval, once again, could not be reached.

In October 2011, and until the outstanding value is covered, the board requested to release some of the amount paid by the approving shareholders in order to move forward with project implementation. To urge the shareholders to approve, MEPPCO provided the shareholders with updated information regarding the steps taken to register the fuel switching project as a CDM project, and explained the benefits of obtaining carbon credits to cover for part of the investment required. MEPPCO highlighted that revenues from carbon credits can only be obtained after the implementation of the project to emphasize that the prompt release of the advance payment is crucial.

Based on the signed ERPA and after reviewing the work done to register the project at MEPPCO and generate credits, the CDM became a key factor in allowing MEPPCO to convince the shareholders to release the advance payment and start the construction work of the NG network.

The following table shows the sequence of events relevant to increasing the capital investment of MEPPCO to finance the project activity.

**Table 8: Sequence of events for increasing MEPPCO capital investment**

Activity	Date
MEPPCO board meeting recommendation: Request from the shareholders increasing the company capital investment to cover the fuel switching project activity	21 Dec 2009
MEPPCO board meeting recommendation: Request from the approving shareholders to cover the outstanding amount of the financing required for the fuel switching	12 May 2011

<sup>12</sup> S&P lowers ratings on Egypt to 'B+' – Reuters Africa – Article dated 24 Nov 2011 -

<http://af.reuters.com/article/commoditiesNews/idAFWLB919120111124>

<sup>13</sup> Fitch cuts Egypt to 'BB-': Outlook Negative – Ahram Online from Reuters – Article dated 30 Dec 2011 -

<http://english.ahram.org.eg/NewsContent/3/12/30578/Business/Economy/Fitch-cuts-Egypt-to-BB-Outlook-Negative.aspx>

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project activity	
MEPPCO board meeting recommendation: Request to release a value equivalent to the advance-payment amount for the project activity from the finance obtained by the approving shareholders	16 Oct 2011
Letter from MEPPCO to one of the shareholders requesting the release of the advance payment for the NG network construction based on the benefits and steps taken to register the project as a CDM project	07 Feb 2012

In light of the barriers explained above accompanying the project activity, the baseline scenario (continuing to burn HFO) is the most viable option. As further evidence, the main power boiler at MEPPCO factory has had dual-type burners since installation; however, it has been burning HFO since its commissioning.

**Early consideration of the CDM component:**

In May 2010, members of the CDM Awareness and Promotion Unit (CDM-APU), under the EEAA Climate Change Unit, carried out a site visit and started working on a the due diligence for the fuel switching project activity, and assisting MEPPCO in studying the feasibility of registering it as a CDM project. Since that time, MEPPCO management has taken all the necessary steps towards project's registration, in parallel to the efforts exerted to implement the project.

In order to accentuate how MEPPCO management considered CDM an essential tool for undertaking the project, the timeline of project implementation together with CDM implementation timeline are illustrated in the following table, where the chronology of events show that the CDM potential has been assessed and considered in the early stages of planning and executing the project.

**Table 9: Timeline of the project implementation, including the CDM component development**

Event Description	Date
<i>Due diligence and PIN development</i>	<i>May 2010</i>
Letter to the Egyptian Natural Gas Holding Company (EGAS) approving the budget set for the external NG network construction	07 Jul 2010
Meeting between EGAS, the Egyptian Natural Gas Company (GASCO) and ESIIC discussing budget amendments for the sugar and paper factories in Edfu (ESIIC and MEPPCO, respectively)	10 Jan 2011
Letter sent from GASCO to EGAS indicating the amended budget as the conclusion of January 10 <sup>th</sup> meeting	18 Jan 2011
Letter from EGAS confirming the amended budget set for the project	20 Jan 2011
<i>Submission of prior consideration form to the UNFCCC secretariat</i>	<i>20 Feb 2011</i>
<i>Call for tenders requesting consulting services from a CDM developer</i>	<i>29 Mar 2011</i>
<i>Issuance of letter of no objection by the Egyptian DNA</i>	<i>25 May 2011</i>
Meeting between GASCO and ESIIC to discuss the specific scope of work	28 Jun 2011
<i>ERPA signing with a CDM developer</i>	<i>28 Jun 2011</i>
Letter from ESIIC confirming the amended budget and payment terms as agreed upon with GASCO, as per the signed contract for external NG network construction	02 Jul 2011

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Letter from Egypt Gas confirming the budget set for the internal NG network construction	27 Jul 2011
<i>Letter to the Egyptian DNA requesting the issuance of LoA</i>	<i>25 Sept 2011</i>
<i>Local stakeholder consultation announcement in newspaper and EEAA website</i>	<i>19 Oct 2011</i>
Internal NG network construction contract signed by MEPPCO and Egypt Gas	26 Oct 2011
<i>Local stakeholder consultation meeting held at MEPPCO factory - Edfu</i>	<i>31 Oct 2011</i>

As shown in the above table, MEPPCO has considered the incentives from CDM along with all other aspects of the project activity, e.g. financial, environmental, etc, and has taken continuous and real actions to ensure the CDM registration requirements are met.

**B.6. Emission reductions:****B.6.1. Explanation of methodological choices:**

In accordance with what is stated in the methodology AMS-III.B (Version 16), the following is an explanation for the equations involved, and a description of the applicable variables and parameters for this project activity.

**Baseline emissions:**

*The emission baseline is the current emissions of the facility expressed as emissions per unit of output. Baseline emissions shall be determined as follows:*

$$BE_y = EF_{BSL} * Q_{PJ,y} \quad (1)$$

Parameter	Description	Unit
$BE_y$	Baseline emissions in the project activity in year y	tCO <sub>2</sub> e
$EF_{BSL}$	Emission factor for the baseline situation	tCO <sub>2</sub> /MWh
$Q_{PJ,y}$	Net energy output in the project activity in year y	MWh

*The emission factor in the baseline situation ( $EF_{BSL}$ ) is the coefficient for the fossil fuel used in the baseline expressed as emissions per unit of output (e.g. kg CO<sub>2</sub>e/kWh).*

$$EF_{BSL} = \sum FC_{i,j,BL,y} * NCV_j * EF_{CO_2,j} / Q_{BSL,j} \quad (2)$$

Parameter	Description	Unit
$EF_{BSL}$	Emission factor for the baseline situation	tCO <sub>2</sub> /MWh
$FC_{i,j,BL,y}$	Amount of fuel j consumed by the element process i during the year y operating at the baseline energy scenario	Mass or Volume Unit
$NCV_j$	Net calorific value of the fuel type j	kJ/Mass or Volume Unit
$EF_{CO_2,j}$	CO <sub>2</sub> emission factor of the fuel type j	tCO <sub>2</sub> /kJ
$Q_{BSL,j}$	Net energy generated in the element process i in the baseline situation during the corresponding period of time for which the total fuel consumption was taken	MWh

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Only one element process is included in this project activity operating on only one type of fuel in the baseline scenario. Therefore,

$$j = 1 \text{ (heavy fuel oil)} \quad \text{and} \quad i = 1 \text{ (main power boiler)}$$

**Project emissions:**

*Project emissions from on-site consumption of fossil fuel should be calculated as follows:*

$$PE_y = FC_{PJ,y} * EF_{FF,CO_2,PJ} * NCV_{FF,PJ,y} \quad (4)$$

Parameter	Description	Unit
$PE_y$	Project emissions in the project activity in year y	tCO <sub>2</sub> e
$FC_{PJ,y}$	Amount of fossil fuel consumed in the project activity during year y	Mass or Volume Unit
$EF_{FF,CO_2,PJ}$	CO <sub>2</sub> emission factor of project fuel combusted in the project activity	tCO <sub>2</sub> /TJ
$NCV_{FF,PJ,y}$	Net calorific value of the fossil fuel used in the project activity	TJ/Mass or Volume Unit

**Leakage:**

*No leakage calculation is required.*

**Emission reductions:**

*The emission reduction achieved by the project activity will be calculated as the difference between the baseline emissions and the project emissions:*

$$ER_y = BE_y - PE_y \quad (5)$$

Parameter	Description	Unit
$ER_y$	Emission reductions in the year y	tCO <sub>2</sub> e

**B.6.2. Data and parameters that are available at validation:**

<b>Data / Parameter:</b>	<b>FC<sub>BL,HFO</sub></b>
Data unit:	Tonne
Description:	HFO consumption in the project boiler in the baseline scenario (total sum for baseline years)
Source of data used:	Flow meter readings from MEPPCO factory historical data
Value applied:	221805
Justification of the choice of data or description of measurement methods and procedures actually applied :	- Daily HFO inlet to the main power boiler is monitored by flow meter (totalizer) readings, which are recorded in factory log-books at the beginning and end of each of the three daily shifts (8 hours each) by the technician responsible for observing the boiler operation. These records of meter readings are signed off by the factory supervisor each morning.
Any comment:	Data described above will be archived for the duration of the project activity, plus two additional years.

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Data / Parameter:	<b>NCV<sub>HFO</sub></b>
Data unit:	GJ/Tonne HFO
Description:	Net calorific value for HFO
Source of data used:	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value applied:	41.08
Justification of the choice of data or description of measurement methods and procedures actually applied :	As stated in the methodology, <i>project participants may use accurate and reliable local or national data where available.</i>
Any comment:	

Data / Parameter:	<b>EF<sub>CO<sub>2</sub>,HFO</sub></b>
Data unit:	tCO <sub>2</sub> /GJ
Description:	CO <sub>2</sub> emission factor for HFO
Source of data used:	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value applied:	0.076
Justification of the choice of data or description of measurement methods and procedures actually applied :	<ul style="list-style-type: none"> <li>- As stated in the methodology, <i>project participants may use accurate and reliable local or national data where available.</i></li> <li>- This value is calculated based on nationally reported carbon content of 86% for the Egyptian mazout.</li> </ul>
Any comment:	

<b>Data / Parameter:</b>	<b>Q<sub>BSL</sub></b>
Data unit:	MWh
Description:	Net energy generated in the baseline situation (total sum of baseline years)
Source of data used:	Measured MEPPCO factory historical data
Value applied:	1838262
Justification of the choice of data or description of measurement methods and procedures actually applied :	<ul style="list-style-type: none"> <li>- Quantities of generated steam are recorded as readings of flow meters installed on the steam outlet pipes of the project boiler.</li> <li>- Given that the operating pressure and temperature of both feed-in water and output steam are known, the net energy generated in the baseline scenario can be calculated.</li> <li>- The total value used represents the summation of the monthly recorded values for the duration starting January 2006 (listed in Annex 3 of this document).</li> </ul>
Any comment:	-

<b>Data / Parameter:</b>	<b>NCV<sub>NG</sub></b>
Data unit:	GJ/Tonne NG
Description:	Net calorific value for NG per unit mass
Source of data used:	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value applied:	49.83
Justification of the	As stated in the methodology, <i>project participants may use accurate and</i>

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choice of data or description of measurement methods and procedures actually applied :	<i>reliable local or national data where available.</i>
Any comment:	

<b>Data / Parameter:</b>	<b>EF<sub>CO<sub>2</sub>,NG</sub></b>
Data unit:	tCO <sub>2</sub> /GJ
Description:	CO <sub>2</sub> emission factor for the NG
Source of data used:	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value applied:	0.055
Justification of the choice of data or description of measurement methods and procedures actually applied :	<ul style="list-style-type: none"> <li>- As stated in the methodology, <i>project participants may use accurate and reliable local or national data where available.</i></li> <li>- This value is calculated based on nationally reported carbon content of 75% for the Egyptian natural gas.</li> </ul>
Any comment:	

<b>Data / Parameter:</b>	<b>ρ<sub>NG</sub></b>
Data unit:	gm/lit (kg/m <sup>3</sup> )
Description:	Density of NG
Source of data used:	The Egyptian General Petroleum Corporation (EGPC)
Value applied:	0.84
Justification of the choice of data or description of measurement methods and procedures actually applied :	<i>As stated in the methodology, project participants may use accurate and reliable local or national data where available.</i>
Any comment:	-

**B.6.3 Ex-ante calculation of emission reductions:****Baseline emissions:**

Net energy generated in the baseline situation during the corresponding period of time for which the total baseline HFO consumption was taken, Q<sub>BSL</sub>, is calculated using historical data of steam generation at MEPPCO factory and other boiler operating parameters, e.g. pressure and temperature of feed-in water and output steam.

From equation (2):

$$\begin{aligned}
 EF_{BSL} &= \sum FC_{BL,HFO} * NCV_{HFO} * EF_{CO_2,HFO} / Q_{BSL} \\
 &= 221805 \text{ (Ton HFO)} * 4.11 * 10^7 \text{ (kJ/Ton HFO)} * 7.68 * 10^{-8} \text{ (tCO}_2\text{/kJ)} / 1838262 \text{ (MWh)} \\
 &= 0.38 \text{ (tCO}_2\text{/MWh)}
 \end{aligned}$$



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By substitution in equation (1):

$$\begin{aligned} BE_y &= EF_{BSL} * Q_{PJ,avg} \\ &= 0.38 \text{ (tCO}_2\text{/MWh)} * 324399 \text{ (MWh/yr)} = 123427 \text{ (tCO}_2\text{/yr)} \end{aligned}$$

**Project emissions:**

Quantity of NG to be consumed in the project scenario,  $FC_{NG}$ , is estimated using historical data of HFO consumption at MEPPCO factory, and the net calorific values of both types of fuel; HFO and NG.

To calculate the NCV per unit volume:

$$\begin{aligned} NCV_{NG} &= NCV_{NG} * \rho_{NG} = 4.98 * 10^7 \text{ (kJ/Ton NG)} * 8.4 * 10^{-4} \text{ (Ton NG/m}^3\text{)} \\ &= 4.19 * 10^4 \text{ (kJ/m}^3\text{)} = 4.19 * 10^{10} \text{ (kJ/Million m}^3\text{)} \end{aligned}$$

By substitution in equation (4):

$$\begin{aligned} PE_y &= FC_{NG,avg} * NCV_{NG} * EF_{CO_2,NG} \\ &= 38.42 \text{ (Million m}^3 \text{ NG/yr)} * 4.19 * 10^{10} \text{ (kJ/Million m}^3 \text{ NG)} * 5.52 * 10^{-8} \text{ (tCO}_2\text{/kJ)} \\ &= 88739 \text{ (tCO}_2\text{/yr)} \end{aligned}$$

**Emission reductions:**

Using the values obtained from equations (1) and (4) and substituting in equation (5):

$$ER_y = BE_y - PE_y - LE_y = 123427 \text{ (tCO}_2\text{/yr)} - 88739 \text{ (tCO}_2\text{/yr)} - 0 = 34688 \text{ (tCO}_2\text{/yr)}$$

<b>B.6.4 Summary of the ex-ante estimation of emission reductions:</b>
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The following table shows the estimated emissions reductions obtained from the substitution in the methodological equations with the parameters listed above in section B.6.2. *Data and parameters that are available at validation.*

**Table 10: Summary of ERs estimation**

Year	BE <sub>y</sub> (tCO <sub>2</sub> e/yr)	PE <sub>y</sub> (tCO <sub>2</sub> e/yr)	LE <sub>y</sub> (tCO <sub>2</sub> e/yr)	ER <sub>y</sub> (tCO <sub>2</sub> e/yr)
Oct – Dec 2013	30856.95	22184.79	0	8672.16
2014	123427.79	88739.16	0	34688.63
2015	123427.79	88739.16	0	34688.63
2016	123427.79	88739.16	0	34688.63
2017	123427.79	88739.16	0	34688.63
2018	123427.79	88739.16	0	34688.63
2019	123427.79	88739.16	0	34688.63
2020	123427.79	88739.16	0	34688.63
2021	123427.79	88739.16	0	34688.63
2022	123427.79	88739.16	0	34688.63
Jan – Sept 2023	92570.84	66554.37	0	26016.47
<b>Total estimated ERs (tCO<sub>2</sub>e)</b>	<b>1234277</b>	<b>887391</b>	<b>0</b>	<b>346886</b>

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**B.7 Application of a monitoring methodology and description of the monitoring plan:****B.7.1 Data and parameters monitored:**

<b>Data / Parameter:</b>	<b>FC<sub>NG,y</sub></b>
Data unit:	Nm <sup>3</sup> /hr NG
Description:	Flow rate of NG consumed in the project boiler for steam generation in year y
Source of data to be used:	Measured by the NG flow meter.
Value of data:	-
Description of measurement methods and procedures to be applied:	The flow rate of NG will be recorded continuously by a flow meter installed on the NG inlet pipe to the project boiler, and the records will be kept for the entire duration of the crediting period, plus two additional years.
QA/QC procedures to be applied:	The recorded values will be cross-checked with NG receipts.
Any comment:	-

<b>Data / Parameter:</b>	<b>Q<sub>PJ,i,y</sub></b>
Data unit:	MWh/year
Description:	Net energy output of the boiler's steam in year y
Source of data to be used:	Calculated based on records of generated steam in tonne per hour.
Value of data:	-
Description of measurement methods and procedures to be applied:	<ul style="list-style-type: none"> <li>- Net energy output will be calculated based on measured and monitored temperature, pressure, and steam generation. Specific enthalpy is obtained using these parameters using standard steam tables.</li> <li>- Steam measurement meters are to be read and recorded. The meters are normalized to 25° C and 1 atm.</li> <li>- Steam production correlates well with fuel consumption and paper production. The meter readings are used as part of routine monitoring of the operation of the facility.</li> </ul>
QA/QC procedures to be applied:	Energy output is compared with fuel consumption to ensure that it is within normal operating range.
Any comment:	-

<b>Data / Parameter:</b>	<b>FC<sub>HFO,y</sub></b>
Data unit:	Tonne/month
Description:	Flow rate of backup HFO consumed in the project boiler for steam generation in year y
Source of data to be used:	Measured by the HFO flow meter.
Value of data:	-
Description of measurement methods and procedures to be applied:	The consumption of backup HFO will be measured by a flow meter already installed on the HFO inlet pipe to the project boiler, and the records will be kept for the entire duration of the crediting period, plus two additional years.
QA/QC procedures to	The consumption of HFO will be limited to disruptions in NG flow. The

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be applied:	recorded values will be cross-checked with HFO daily tank records.
Any comment:	-

### B.7.2 Description of the monitoring plan:

As stated in AMS-III.B. (Version 16)

*Monitoring shall include:*

- a) *Monitoring of the fossil fuel use ( $FC_y$ ) and output of element process  $i$  after the project activity has been implemented ( $Q_{PI,y}$ ) - e.g. diesel use and steam generated by an industrial plant;*

Therefore, fuel consumption (natural gas, and HFO if and when consumed) and process output (steam generated) are to be monitored. The parameters are explained in Sections B.6 and B.7.1 of this PDD. Data acquisition, storage and processing, handling, and the QA/QC procedures for each parameter are specified below.

#### **Data Acquisition:**

- A. Steam: Steam production readings will be obtained (in tonnes/hr) from the gauges attached to the main outlet pipes of the project boiler. Readings will be recorded daily every 2 hours (4 readings/shifts) during each 8 hour shift (3 shifts/day) by the technician responsible for boiler operation. The steam production is measured by steam meters reference to 25°C and 1 atm.
- B. Natural gas: The NG consumption readings will be obtained (in m<sup>3</sup>/hour) from the fuel meters attached to the main inlet pipes to the project boiler. Readings will be recorded at the beginning and end of each 8 hour shift (3 shifts/day) by the technician responsible for boiler operation. The project entity will monitor and record these figures monthly.
- C. Backup HFO: If and when HFO is burned in the project boiler, the consumption will be monitored by means of the fuel gauges attached to the boilers. The readings will be recorded for each shift during which the HFO is used in the same way as in the baseline scenario. In addition, records will be kept for the purchase of HFO in the financial department, also the same way as in the baseline scenario.

#### **Data Storage and processing:**

- A. Steam: Records for steam production will be kept in the factory log-books during each shift as per the gauge readings. Monthly totals for steam production from each shift are continuously catalogued by the operation supervisor and kept in separate log-books. The production of steam is used to monitor overall plant operation. Records will be kept for a minimum of two years after the end of the crediting period.
- B. Natural gas: Records for NG consumption will be kept in the factory's boiler operation log-books during each shift as per the meter readings. Monthly totals for NG consumption from each shift are continuously catalogued by the operation supervisor and kept in separate log-books. The consumption of fuel is used to monitor the overall plant operation. Records will be kept for a minimum of two years after the end of the crediting period.
- C. Backup HFO: The consumption of HFO in the project boiler, when it occurs, is recorded in the factory log-books, shift-by-shift. Using HFO will signal a disruption in NG supply which is also recorded. Records will be kept for a minimum of two years after the end of the crediting period.

**Data QA/QC Procedures:**

- **Project boiler operation:**

- A. Steam: Factory log-books recording steam production are signed off each morning by the factory supervisor. Steam production expected in routine operation is regularly calculated and any abnormalities are investigated.
- B. Natural gas: Records for NG quantities are kept both by the project entity and by the gas company for billing purposes. The project entity records will be checked against gas purchase receipts. In addition, the factory log-books recording NG are signed each morning by the factory supervisor. NG consumption is used to calculate the factory energy balance for normal operation parameters. Any deviations from expected operation conditions are recorded and investigated.
- C. Backup HFO: The use of HFO recorded by the boiler flow meter is to be cross-checked against draw-down records from the fuel storage tanks. The factory log-books showing fuel consumption are signed each morning by the factory supervisor. The consumption of HFO will be limited to disruptions in NG flow. Such occasions will be recorded.

- **Calibration:**

As part of ISO 9001:2008, MEPPCO follows MP-760 (procedure for control of monitoring and measuring equipment). While internal calibrations are the responsibility of the operation managers, third party calibration of the instrument and equipment is managed by the Environment and Quality Division. After calibration the calibration certificate is kept in the equipment file, and the equipment itself is labelled with the most recent calibration data.

The gas flow meters and steam meters used for project activity monitoring will be added to this procedure for regular calibration. The meters used for monitoring and generation of CERs will be calibrated at least once every three years.

Meters will be calibrated and certified according to national or IEC standards according to paragraph 12 of annex 35 of EB 35 report<sup>14</sup> to maintain an appropriate accuracy class.

- **Internal auditing:**

ISO 9001 Procedure QP-822 (internal audit) and AP-423 (document control) are also followed at MEPPCO. QP-822 aims to insure that the QMS is being applied and the relevant procedures are followed by the respective departments. AP-423 helps MEPPCO maintain an assertive level of accuracy and consistency in documentation and record keeping.

In this area, department heads are responsible for documenting the work related to their work and reporting the events in the appropriate forms according to the ISO 9001 standards. The documents and reports are then archived by the environment and quality department after review is made and recommendations are forwarded to the departments on how to improve and develop their procedure.

<sup>14</sup> EB 35 Report, Annex 35 (Version 11) - Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories - [http://cdm.unfccc.int/EB/035/eb35\\_repan35.pdf](http://cdm.unfccc.int/EB/035/eb35_repan35.pdf)

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▪ **Additional training:**

An additional training will be added for the purpose of familiarizing MEPPCO staff of CDM project activity and the monitoring requirements. The focus of the training will be on the monitoring plan, and the compliance requirements as stated in the PDD.

AMS-III.B. also states that:

- b) For electricity/thermal energy exported to other facilities, monitoring of the use of electricity and thermal energy shall be undertaken in the recipient end.*

No electricity or thermal energy is exported to other facilities. Hence, the infrastructure for such energy export does not exist.

**B.8 Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)**

Date of completion: 28<sup>th</sup> of November, 2012

Name of responsible entity:

**Climate Corporation Emissions Trading GmbH**

Contact Person : Mr. Michael Novoszad  
 Address : Marchetstrasse 59, A-2500 Baden, Austria  
 Telephone number : +43 (2236) 8002 7000  
 Fax number : +43 (2236) 8002 7099  
 E-mail address : [office@climatecorp.com](mailto:office@climatecorp.com)

**Environmental Research & Consulting Co. (ERCC)**

Contact Person : Ms. Aya Salah  
 Address : 2 Osman Towers, Fok El-Motawasit, Nile Corniche, Maadi, Cairo, Egypt  
 Telephone number : +20 (0)2 252 41 799 - +20 (0)11 4070 5054  
 Fax number : +20 (0)2 252 85 783  
 E-mail address : [info@ercc-carbon.com](mailto:info@ercc-carbon.com)

**SECTION C. Duration of the project activity / crediting period**

**C.1 Duration of the project activity:**

**C.1.1. Starting date of the project activity:**

26/10/2011, this represents the date of contract signing with Egypt Gas for the construction of the internal NG network.

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**C.1.2. Expected operational lifetime of the project activity:**

15 years, which represents the remaining operational lifetime of the project boiler, based on the statement of an independent expert.<sup>15</sup>

**C.2 Choice of the crediting period and related information:**

The project activity will make use of fixed crediting period.

**C.2.1. Renewable crediting period****C.2.1.1. Starting date of the first crediting period:**

>> Not Applicable.

**C.2.2. Fixed crediting period:****C.2.2.1. Starting date:**

01/10/2013, or date of registration - whichever is later.

**C.2.2.2. Length:**

10 years

**SECTION D. Environmental impacts****D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:**

An environmental impact assessment (EIA) has been submitted to the Egyptian Environmental Affairs Agency (EEAA) in accordance with the national requirements. The project activity falls under category (B) of projects as specified by the Egyptian Environmental Law 4/1994 and the amendments in Law 9/2009.

**D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:**

According to the EIA prepared by MEPPCO, the following are some aspects of the project:

- The project is an extension, addition of a natural gas pipeline to the project boiler.
- The infrastructure for water, electricity, sanitation, roads/railways already exists.

<sup>15</sup> In accordance with option (b) of the tool to determine the remaining lifetime of equipment (Ver. 01) - <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-10-v1.pdf>



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- The project layout is determined based on the location of the nearest existing NG pipeline and project boiler location, as well some other technical considerations.
- Construction work has not yet started.
- The project consists of two phases:
  1. External NG network: connecting the main NG pipeline from the high pressure station to the factory location and construction of a pressure reduction station.
  2. Internal NG network: connecting the pressure reduction station to the project boiler.
- There is neither liquid nor gaseous waste generated from the implementation of this project.
- Solid waste generated during project implementation consists of asphalt and cement construction debris. To minimize environmental impact, solid waste will be re-used to help pave the streets damaged by the construction work. This will also minimize the use of new materials, further reducing environmental impact.
- Fuel switching from mazout to NG accommodates the environmental law (Law 4 for 1994) and activates the Kyoto Protocol for reducing GHG.
- The project's impact on air quality: The project will reduce the gaseous emissions and particulate matters by approximately 50% of the combustion products (NO<sub>x</sub>, CO, SO<sub>x</sub>).

**Conclusion:**

According to the EIA submitted to the EEAA, no significant negative environmental impacts are expected as a result of the project. Several positive impacts are expected, including the reduction of pollutants as products of combustion due to the cleaner combustion of natural gas.

**SECTION E. Stakeholders' comments****E.1. Brief description how comments by local stakeholders have been invited and compiled:**

A stakeholders meeting was held at MEPPCO factory on the 31<sup>st</sup> of October 2011. Public announcement of the meeting's time and date was published in the second biggest national newspaper in Egypt (Al-Akhbar newspaper) dated 19/10/2011. The announcement was also published on EEAA website on 21/10/2011. In addition, personal invitations were sent to the following organizations by fax and/or email:

- Governor of Aswan
- Head of the City Council – Edfu town
- Head of the City Council – West El-Kalh town
- Former members of the Citizen's Council
- Head of the Egyptian Environmental Affairs Agency (EEAA)
- Head of the Central Department for Climate Change, EEAA
- General Manager of CDM and Mitigation Unit, Climate Change Unit, EEAA
- Executive Manager of CDM Awareness and Promotion Unit (CDM APU), EEAA
- Project Engineers from the CDM APU, EEAA
- Neighbouring industries, i.e. Egyptian Sugar and Integrated Industries Company (ESIIC)
- Media (local journalists)

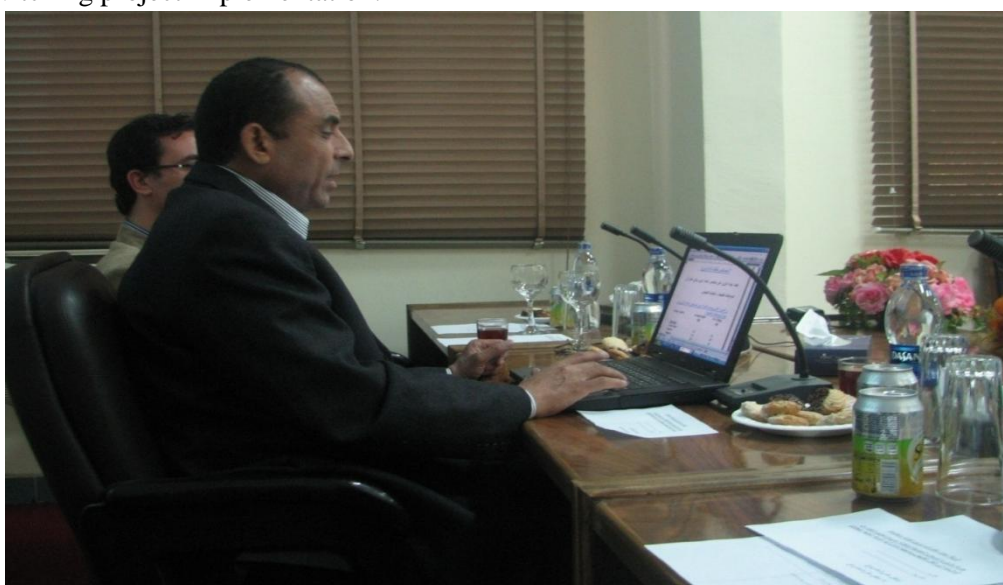
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The meeting was held on the scheduled time and date in the conference room at the administrative building at MAPPCO factory in Edfu - Aswan. It started with an overview of the company's activities, presented by the Factories' Head at MEPPCO Company, which included a summary of the factory's operation, the environmental aspects considered by MEPPCO since commissioning, and the financial difficulty the company is facing in implementing the project activity. He also renewed MEPPCO's commitment to environmental improvement, and introduced the attendees to the representatives of the CDM APU and the project consultant (ERCC), to explain the CDM component of the project.

The executive manager of the CDM APU gave an introductory presentation explaining some aspects of climate change, greenhouse gases, Kyoto protocol, and the typical CDM project life cycle. A representative from Environmental Research & Consulting Co. (ERCC), the CDM consultant, followed by a description of the project activity and how CDM would help MEPPCO achieve its goals regarding the fuel switching project implementation.



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After the presentations, questions and answers session was held where discussions about the project activity started. MEPPCO, CDM APU and ERCC representatives replied to the attendees' questions. A questionnaire was distributed afterward, where all the attendees responded positively to the question; "Do you agree to the implementation of this project activity?"

**E.2. Summary of the comments received:**

Most of the questions received were related to the project's technicalities and timeline. A highlight of the comments is presented below:

- In response to a question regarding NOx emissions, and how the project activity affects it, the CDM APU representative explained that the EEAA is taking the necessary measures to ensure that new projects are based on low-NOx technologies as appropriate, and that the fuel switching project activity should not result in higher NOx emissions than the baseline scenario. He added that in presence or absence of the project activity, MEPPCO is obliged to maintain the NOx emissions level within the regulatory emission limits.
- In response to a question regarding expected time duration for project implementation and the expected date of credits issuance, MEPPCO representative indicated that project implementation is expected to consume the coming 18 months. The consultant representative added that the issuance of credits would start with the project's operation.
- One of the attendees asked if registering the project activity under an international umbrella (CDM) would increase the company exports proving it to be environmental friendly. MEPPCO Factory Head explained that the barrier facing local paper manufacturing in exporting is the high production price compared to international benchmarks. He added that the government used to subsidize the local paper manufacturers allowing them to compete internationally and export their products. However, since the revolution in January 2011, this subsidy has been suspended and MEPPCO could not continue exporting their products. MEPPCO is expecting to receive this subsidy again within a couple of days and they would need to study the feasibility of exporting afterward. But in response to the question, CDM does not directly influence the rate of exporting.
- Finally, one of the attendees asked whether the amounts of carbon dioxide emitted is measured or calculated. The consultant representative explained how emissions are calculated in the baseline and project scenarios, according to the applicable methodology, and identified the parameters that are measured (fuel consumption in the baseline, quantity of steam generated, etc).

**E.3. Report on how due account was taken of any comments received:**

There have been no concerns identified related to the project activity.

CDM – Executive Board

**Annex 1****CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY***Project owner:*

Organization:	Misr Edfu Pulp, Writing & Printing Paper Co. (MEPPCO)
Street/P.O.Box:	Gawad Hosny street
Building:	Building No. 14
City:	---
State/Region:	Cairo Governorate
Postfix/ZIP:	---
Country:	Egypt
Telephone:	+20 (0) 239 52 940/2
FAX:	+20 (0) 239 52 941
E-Mail:	<a href="mailto:chairman@misredfu.com">chairman@misredfu.com</a>
URL:	<a href="http://www.misredfu.com">www.misredfu.com</a>
Represented by:	Abd El-Rahman Ahmed
Title:	---
Salutation:	Eng.
Last Name:	Ahmed
First Name:	Abd El-Rahman
Department:	---
Mobile:	---
Direct FAX:	+20 (0) 97 479 0909
Direct tel:	+20 (0) 97 479 0905/6/7/8
Personal E-Mail:	<a href="mailto:factoryhead@meppco.com">factoryhead@meppco.com</a>



*CDM project developer:*

Organization:	Climate Corporation Emissions Trading GmbH
Street/P.O.Box:	Marchetstrasse 59
Building:	A-2500
City:	Baden
State/Region:	---
Postfix/ZIP:	---
Country:	Austria
Telephone:	+43 2236 8002 7000
FAX:	+43 2236 8002 7099
E-Mail:	<a href="mailto:office@climatecorp.com">office@climatecorp.com</a>
URL:	<a href="http://www.climatecorp.com">www.climatecorp.com</a>
Represented by:	Michael Novoszad
Title:	---
Salutation:	Mr.
Last Name:	Michael
First Name:	Novoszad
Department:	---
Mobile:	---
Direct FAX:	+43 2236 8002 7099
Direct tel:	+43 2236 8002 7001
Personal E-Mail:	<a href="mailto:mn@climatecorp.com">mn@climatecorp.com</a>

CDM – Executive Board

Annex 2**INFORMATION REGARDING PUBLIC FUNDING**

The project activity does not result in the diversion of any ODA.

 <p>Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung</p>	 <p>Freiheit Einheit Demokratie</p>
<p>Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung Postfach 12 03 22, 53045 Bonn</p> <p>Kreditanstalt für Wiederaufbau <b>Rainer.suennen@kfw.de</b> Palmengartenstrasse 5 - 9 60325 Frankfurt</p>	<p>POSTANSCHRIFT Postfach 12 03 22 53045 Bonn</p> <p>ZUGANG Dahlmannstraße 4 53113 Bonn</p> <p>TEL +49 (0)228 - 99 535 - 3553 FAX +49 (0)228 - 99 535 - 3515 Peter.Schlemminger@bmz.bund.de www.bmz.de</p> <p>BEARBEITET VON RA Peter Schlemminger GZ: 222 K1034 EGY-0084/006 Bonn, 13.10.2009</p>

**Finanzielle Zusammenarbeit mit der Arabischen Republik Ägypten**

hier: **Letter of non diversion** für das FZ – Projekt „Förderung von  
Umweltschutzinvestitionen in der privaten Industrie III“,  
BMZ Nr. 2000.6622.5

Bezug: Ihr Schreiben vom 05.10.2009

To whom it may concern

The German Federal Ministry of Economic Co-operation and Development (BMZ)  
supports the „ Förderung von Umweltschutzinvestitionen in der privaten Industrie III“  
Projekt in the Arab Republic of Egypt“. The BMZ herewith affirms that the funding of  
this CDM project does not result in a diversion of Official Development Assistance and  
that this funding is separate from and is not counted towards the financial obligation of  
concerned parties“.

Mit freundlichen Grüßen

Im Auftrag  
elektronisch unterzeichnet Peter Schlemminger

<p>ZENTRALE VERMITTLUNG: VERKEHRSANBINDUNG: DIENSTSITZ BERLIN:</p>	<p>Tel +49 (0)228 99 535 - 0; Fax +49 (0)228 99 535 - 3500; E-Mail: Poststelle@bmz.bund.de Stadtbahn-Linien 16, 63 und 66; Haltestelle Heussallee Stresemannstr. 94, Europahaus, 10963 Berlin</p>
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2009/0249147

**Annex 3****BASELINE INFORMATION**

- Historical HFO (mazout) consumption data for the power boiler, Tonne

	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>Jan</b>	3733	9166	3985	3762	4175	4136
<b>Feb</b>	3637		14438	975	2974	3339
<b>Mar</b>	3733	2142		1653	1630	4033
<b>Apr</b>	3943	3316		3625	1546	2761
<b>May</b>	3473	3921		2677	3716	3914
<b>Jun</b>	3543	3210	4326	433	3471	3908
<b>Jul</b>	3729	3253	4212	3670	3821	4029
<b>Aug</b>	3795	3323	4121	1010	3649	3337
<b>Sep</b>	3245	3049	4002		3497	
<b>Oct</b>	3776	6504	3611	3218	3863	
<b>Nov</b>	3580		4113	3835	3744	
<b>Dec</b>	0	3728	0	3935	2861	
<b>Annual Total</b>	<b>40188</b>	<b>41611</b>	<b>42808</b>	<b>28793</b>	<b>38948</b>	<b>29456</b>
<b>Total</b>	<b>211805</b>					
<b>Average</b>	<b>39142</b>					

- Historical steam generation data for the power boiler, Tonne

	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>Jan</b>	42496	101775	43825	41390	47466	44790
<b>Feb</b>	40960		160750	11305	33685	37644
<b>Mar</b>	41695	24810		18995	18893	45015
<b>Apr</b>	43570	38241		43405	17530	29461
<b>May</b>	38785	45739		30260	42580	44076
<b>Jun</b>	38725	37603	49698	5035	39572	43274
<b>Jul</b>	41560	37992	48572	43261	43881	44500
<b>Aug</b>	42515	39010	46674	12754	41278	35713
<b>Sep</b>	36170	35836	45450		39384	
<b>Oct</b>	41465	74999	42100	38931	43915	
<b>Nov</b>	38655		46241	44494	42368	
<b>Dec</b>	0	42585	0	45311	31767	
<b>Annual Total</b>	<b>446596</b>	<b>478590</b>	<b>483310</b>	<b>335141</b>	<b>442319</b>	<b>324473</b>
<b>Total</b>	<b>2510429</b>					
<b>Average</b>	<b>443017</b>					



## CDM – Executive Board

- Summary of fuel consumption and steam generation data obtained from MEPPCO factory:

Parameter	FC <sub>HFO</sub>	Steam generation	Q <sub>BSL</sub>	Q <sub>BSL</sub>
Unit	Ton HFO/yr	Ton Steam/yr	GJ/yr	MWh/yr
2006	40188	446596	1177272	327020
2007	41611	478590	1261611	350448
2008	42808	483310	1274053	353904
2009	28793	335141	883465	245407
2010	38948	442319	1165997	323888
- Aug 2011	29456	324473	855343	237595
<b>Total</b>	<b>221805</b>	<b>2510429</b>		<b>1838262</b>
<b>5.67 yr avg.</b>	<b>39142</b>	<b>443017</b>		<b>324399</b>

- Feed-in water and output steam properties:

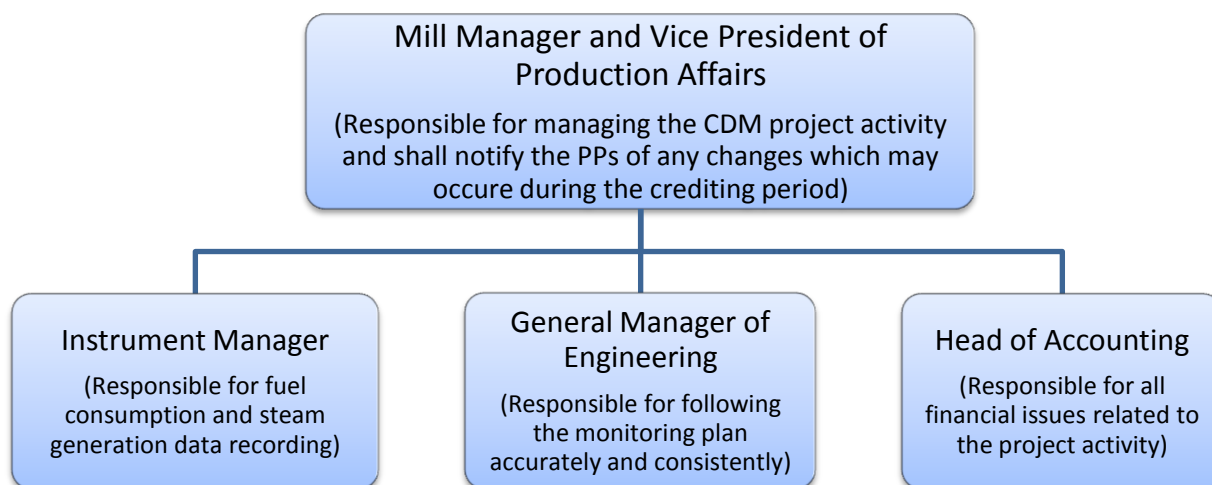
Parameter	Unit	Value	Source of Data
Water Temp	°C	120	MEPPCO Data
Enthalpy	GJ/ton steam	0.5040	<a href="http://www.efunda.com/materials/water/steamtable_general.cfm">www.efunda.com/materials/water/steamtable_general.cfm</a>
St. Pressure	Kg/cm <sup>2</sup>	42	MEPPCO Data
St. Temp.	°C	370	MEPPCO Data
Enthalpy	GJ/ton steam	3.140	<a href="http://www.efunda.com/materials/water/steamtable_general.cfm">www.efunda.com/materials/water/steamtable_general.cfm</a>

**Annex 4****MONITORING INFORMATION**

The methodology specifies the parameters needed to be monitored. These are fuel consumption and product output for both baseline and project scenarios, of the energy generation process. As explained in the PDD, these parameters are monitored and cross-checked as a normal part of the monitoring of the plant's routine operation. The QA/QC procedures for data processing and record keeping are an integral part of the plant's ISO 9001 management system which is certified by a third party auditor on regular basis. In particular, the following are considered integral parts of the monitoring:

- 1) Operation and maintenance of the monitoring equipment: The plant conducts routine checks on monitoring equipment. As part of its normal operation, the plant engineers compare consumption and production figures for the boilers and plant equipment. Any errors in monitoring equipment or operation appear in this calculation. Any deviations are investigated and corrected immediately.
- 2) The factory supervisor and shift supervisor are updated daily on the plant consumption and production and sign the plants log books showing this consumption and production each morning. This ensures that monitoring is occurring on a regular basis and that monitored parameters are within expected values.
- 3) The meters are will be calibrated once every three years at a minimum.
- 4) Liquid fuels are purchased against receipts, and the incoming fuels are weighed. Fuels are stored in tanks with meters for tank level and are recorded and their recordings checked again meters.
- 5) QA/QC procedures: the plant maintains QA/QC procedures for data collection, processing, and storage. These are part of its normal operation and part of its ISO 9001 certified management system. Meter readings are checked against purchase receipts and plant operation data. In the case of natural gas in particular, the meter is installed by the natural gas company and calibrated to ensure accurate operation. The meter is used for purchase and billing with the result that each party is interested in maintaining its accuracy.
- 6) As part of the implementation of this project, plant staff involved in monitoring will receive training and procedures to ensure the appropriate monitoring and archiving of data for review and verification for each monitoring period. The CDM training will follow the ISO 9001 procedures already implemented by MEPPCO.

The organization chart for the CDM project activity, including the personnel responsible for implementing the monitoring plan, is shown in the following figure:



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