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

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.
03	22 December 2006	• 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.

SECTION A. General description of small-scale project activity

A.1 Title of the small-scale project activity:

>> American Israel Paper Mill (AIPM) Natural Gas Fuel Switch
Version 1
12-Jul-07

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

A.2.1 Project description

The project activity reduces greenhouse gas (GHG) emissions at the American Israel Paper Mill (AIPM) plant located in Hadera. The project activity changes the primary fuel on which the factory operates from heavy fuel oil (HFO) and a very small amount of liquefied petroleum gas (LPG) to natural gas (NG). This project is a pioneering one in Israel because natural gas has not been available for industrial purposes.

The entire energy system at the factory will be retrofitted to operate on NG, except for one backup HFO boiler. The energy system retrofit includes, installing new burners in the boilers and tissue producing Machine #3 for operation on NG and installing an additional backup energy system for NG.

The boiler and turbines meet the mill's entire demand for steam and most of its demand for electricity. Additional electricity demand is supplied to the mill by the national grid. The project activity involves investment to retrofit the current energy system to operate on natural gas and to replace the HFO burners with NG burners. The project will allow the mill to meet its total steam demand from natural gas instead of HFO and LPG.

The project's sponsor and initiator is the American Israeli Paper Mills Group Ltd. (AIPM), the leading Israeli manufacturer and marketer of paper and paper products. The company was established in 1952 with a single production line for paper. The AIPM Group has since grown to approximately 3000 employees and currently manufactures and markets a wide range of paper grades for stationery, printing and various office uses, fluting paper for the corrugated cardboard industry, packaging, and a variety of household products.

The Group is also a recycling pioneer in Israel and deals in the collection and recycling of paper and cardboard, plastics, other materials and in the treatment of solid waste. AIPM shares are publicly traded on the Tel Aviv Stock Exchange and on AMEX.

A.2.2. Contributions to sustainable development

The project meets the sustainable development criteria established by Israel's Designated National Authority.

Environmental and Health: Due to the use of a low-carbon fuel such as natural gas, the project shall not only achieve reductions in GHG emissions but also result in the reduction of other air pollutants such as SO_x, NO_x and particulate matter.

Economic and Technology: The project provides essential capacity building for Israeli industry because it is the second industrial natural gas project to be implemented in the Israeli private sector. The project activity is among the first few CDM projects to be proposed in the Israeli energy sector. The project brings natural gas to Hadera, which provides other smaller industries in the area with the opportunity to switch to natural gas.

The project provides capacity-building and knowledge in Israel and makes AIPM an industry leader in switching to natural gas. AIPM's knowledge bank from the project's implementation can be tapped by other industries in Israel.

A.3. Project participants:

>>>>

Name of Party involved (*). ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicates if the Party involved wishes to be considered as project participant (Yes/No)
Israel	American Israel Paper Mill (AIPM) LTD.Private entity. Project Developer.	No
	EcoTraders LTD. Private entity. CDM project manager and consultant	No

Please see the contact information listed in Annex I.

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):

>>Israel

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

>> Haifa Region

A.4.1.3. City/Town/Community etc:

>> Hadera

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

The paper mill is located in the Hadera Industrial Zone. Hadera is a small city located in between Tel Aviv and Haifa on the Mediterranean coast. The project is to be located within the boundaries of the paper mill.

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

Type III – Other Project Activities
III.B. Switching Fossil Fuel

The paper mill's energy system will be retrofitted to operate on natural gas instead of heavy fuel oil.

The entire energy system at the factory will be retrofitted to operate on NG, except for one backup HFO boiler. The energy system retrofit includes switching the burners in the boilers and tissue producing Machine #3 for operation on NG and installing an additional backup energy system for NG.

The introduction of natural gas to the paper mill also includes the construction of a natural gas infrastructure in the plant. Pipelines for the gas along with safety valves, a new control system as well as new operating standardization for natural gas had to be introduced to the plant as part of the project activity.

A backup boiler operating today on HFO will remain as such, providing an alternative to the expensive diesel fuel option (which is the backup fuel of the natural gas energy system).

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

Year	Estimated Emission Reduction (tCO2e/yr)
2008	38,201
2009	40,100
2010	44,348
2011	44,358

2012	46,956
2013	48,582
2014	50,208
2015	54,509
2016	54,620
2017	54,734
Total	476,620
Crediting Period	10
Annual average over the crediting period	47,662

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

No public funding from an Annex I Party will be received for the project activity.

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:

“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 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.”

The proposed project activity is the first project activity proposed by the project developer (AIPM) and the first project activity proposed in the city of Hadera. AIPM is now considering the construction of a natural gas power plant which will replace electricity produced by the national grid and may be registered in the future as a large scale CDM project, but will stay consistent with the requirements of Appendix C, paragraph 2 of the Simplified Modalities and Procedures for Small-Scale CDM project activities:

Appendix C, paragraph 2 Bundling Requirements	AIPM Fuel Switch Project
"Small-scale CDM project activity with the same project participants"	✓ No other project activity has been registered by the project developer.
" Small-scale CDM project activity in the same project category and technology/measure"	✓ The proposed project activity is a small scale project activity implemented using III.B. "Switching Fossil Fuel" methodology. There is no project activity at AIPM in the same project category with or using the same technology.
" Small-scale CDM project activity registered within the previous 2 years"	✓ No other project activity small or large was registered or brought for registration by the project

Appendix C, paragraph 2 Bundling Requirements	AIPM Fuel Switch Project
	participant.
"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."	✓ No other project activity small or large has been registered or brought for registration in the city of Hadera or anywhere within 1 km of the project activity.

There is currently no registered small-scale CDM project at or near the project site. None of the above criteria are fulfilled and therefore, the AIPM Fuel Switch project meets the criteria that it is not a debundled component of a larger project.

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 will use the approved baseline and monitoring small-scale methodology Type III.B – Switching Fossil Fuels (Version 11).
As this is a single project that is not a part of any larger program, therefore the new sections of the methodology concerning "Program of Activities" do not apply to this project.

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

B.2.1 The small scale methodology III.B. states that the baseline methodology is applicable to the following cases

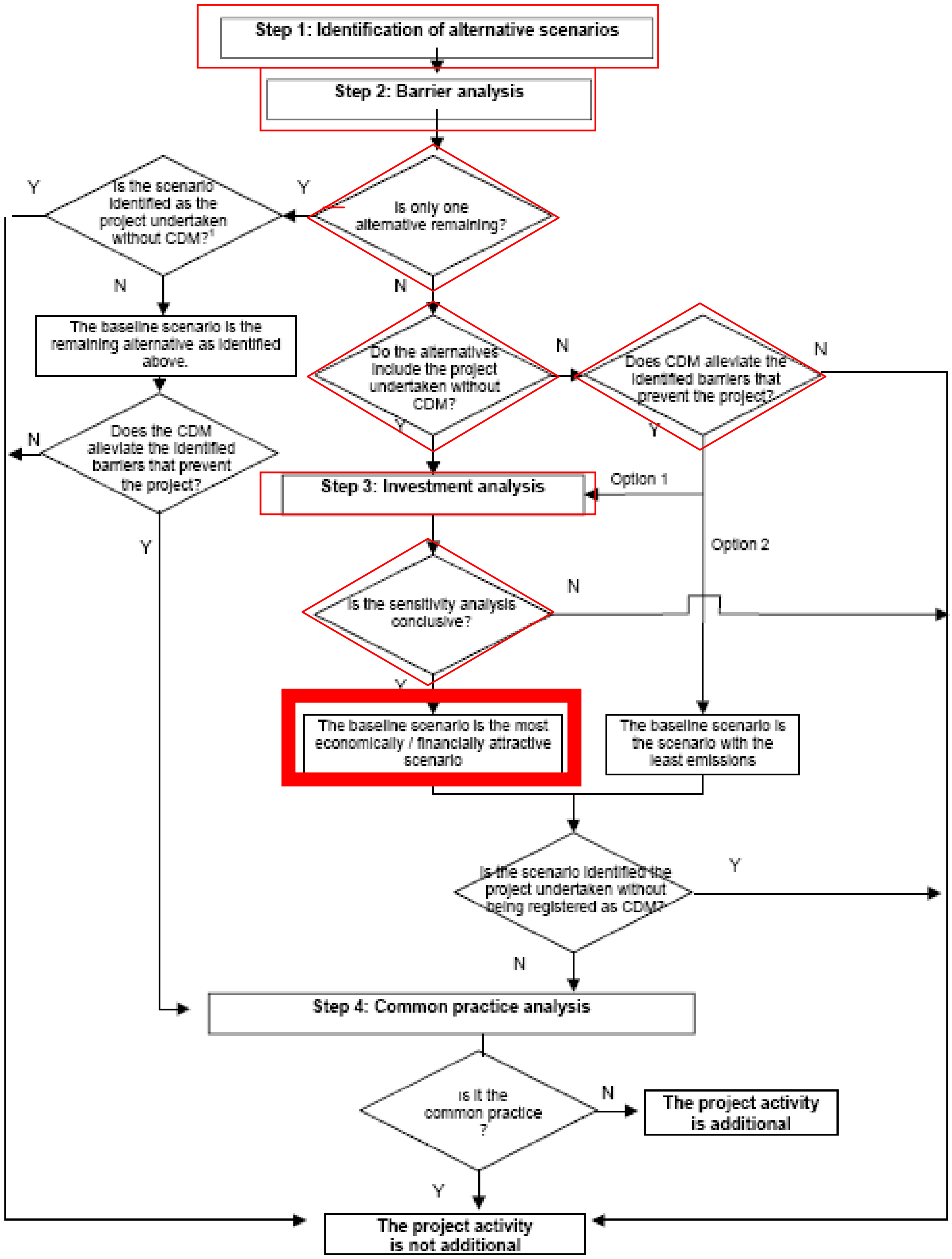
Applicability Clause	Applicability of the clause to the small scale project activity
"…comprises fossil fuel switching in existing, industrial, residential, commercial, institutional or electricity generation applications."	✓ The project switches the fuel used to operate boilers at the AIPM plant from HFO and LPG to natural gas.
"Fuel switching may change efficiency as well. If the project activity primarily aims at reducing emissions through fuel switching, it falls into this category. If fuel switching is part of a project activity focused primarily on energy efficiency, the project activity falls in category II.D or II.E."	✓ The project aims at reducing emissions by switching from HFO and LPG to natural gas. No significant improvements to the energy system's efficiency are expected.
"Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO2 equivalent annually."	✓As is shown in the calculations, the project will reduce an estimated 51,593 tCO_2e (51.5 kt) annually.

B.3. Description of the project boundary:

The methodology states that "the project boundary is the physical, geographical site where the fuel combustion affected by the fuel-switching measure occurs." The fuel combustion and place where the fuel switch is going to take place is in the boilers and Machine 3. In order to account for all emissions emitted by the plant in its energy production process, the project boundary is defined as all energy (steam and electricity) producing equipment – boilers and tissue machine (#3).

B.4. Description of baseline and its development:

The "Combined tool to identify the baseline scenario and demonstrate additionality" was used to determine the baseline scenario. The chart below illustrates the steps conducted to determine the appropriate baseline scenario for this project:



Sub-step 1a. Define alternative scenarios to the proposed CDM project activity:
Consultations with industry experts have identified the following scenarios as those that will provide energy output of the same quality and quantity as is provided in the current practice scenario. Alternatives to the proposed project activity include:

1. Continuation of current practice – Combustion of HFO and LPG.
2. Current practice with low-NO_x burner - Combustion of HFO and LPG
3. Fuel Switch – Diesel.
4. Fuel Switch – Natural gas without CDM.
5. Project scenario – Fuel Switch to natural gas with CDM.

Sub-step 1b. Consistency with mandatory applicable laws and regulations.
At present there are no environmental standards or regulations in Israel relating to GHGs that restrict the continuation of HFO and LPG use at the factory. Israel has ambient air quality standards in place relating to SO_x, NO_x and particulate matter. In addition, each industrial plant must maintain a business license where strict environmental standards are applied specifically to the plant. The paper mill meets the common environmental standards and the specific standards as detailed in the mill's business license, with the exception of NO_x emissions. To meet the NO_x-emissions standard, the factory would continue to operate its systems using HFO and would install a low-NO_x burner to address emissions. A letter from "LADEMCO Consulting & Enterprising" AIPMs consultants confirms this as well as outlines the project.

To meet applicable laws and regulations, scenarios (2) through (5) are possible.

1. ~~Continuation of current practice – Combustion of HFO and LPG.~~
2. Current practice with low-NO_x burner - Combustion of HFO and LPG
3. Fuel Switch – Diesel.
4. Fuel Switch – Natural gas without CDM.
5. Project scenario – Fuel Switch to natural gas with CDM.

Step 2: Barriers Analysis
Sub-step 2a: Identify barriers that would prevent the implementation of alternative scenarios:

Technological Barriers
Because natural gas is a relatively new fuel in Israel and few facilities have experience in using it, the country does not contain a knowledge base of developing natural gas delivery and usage systems or skilled and properly trained labor to operate and maintain facilities operating on natural gas. AIPM found it necessary to contract Annex I country expertise to support the development of its internal natural gas system, which included technical problems concerning the transfer of the gas, pressure protection and stress analysis. The plans were initially developed jointly by AIPM and an Israeli company, Ludan Engineering. AIPM and Ludan contracted J.P.Kenny, an American firm specializing in pipeline and sub sea engineering and management, to approve the plans that they developed. The final review and approval for AIPM's plans was given by the British consulting company, Parsons Brinckerhoff Ltd (which is the consulted of the NGA (Natural Gas Authority).

Scenarios (4) and (5) face technological barriers.

Barriers due to Prevailing Practice
This project is one of the first of its kind to be implemented in Israel in the private sector, as is attested to by the letter from the Israel Natural Gas Lines company, which may be found in Annex 5.

To appreciate the pioneering characteristics of this project it is necessary to understand the energy situation of Israel's industrial sector. Israeli industry relies mainly on petroleum oils (heavy-fuel oil, diesel and naphtha) for industrial production. In general, energy generation in Israel relies almost entirely on coal and oil products (please see diagram Annex 5). Up until now, natural gas has not been available widely for energy generation, including in the industrial sector.

Scenarios (4) and (5) face prevailing practice barriers.

Other Barriers – Institutional

The AIPM fuel-switch project had to overcome endless institutional difficulties. Firstly, the national project to diversify the fuel-mix in Israel by bringing natural gas to the market, has been in the development process for more than a decade, with gas still unavailable to most users.

Secondly, Hadera, where AIPM is located, was not included in the government's original National Plan 37 (1999) that specified where the undersea and inland natural gas pipeline was to be built and effectively determined which parts of the country would have access to natural gas. After it became clear in 2003-2004 that Hadera would not be connected to the natural gas pipeline, AIPM had to specially request that the National Plan for natural gas distribution (National Plan 37) be altered to include a connection to the pipeline that would run inland to Hadera's industrial zone. AIPM submitted the request in February 2004 to Israel Natural Gas Lines Ltd (INGL); in May 2004, INGL agreed to construct the requested natural gas pipeline that would reach Hadera. AIPM approached the director of the Ministry of National Infrastructure for his support for the speedy fulfilment to connect AIPM to the natural gas pipeline.

To have National Plan 37 changed to include a gas pipeline to Hadera, AIPM was in contact with the Ministry of National Infrastructure in late 2002 to investigate the possibility of including Hadera in the natural gas pipeline, particularly to reduce the air pollution in Hadera from the city's industrial zone. Only two years later, following correspondence with a number of government ministries, was a change made to National Plan 37 that was published in September 2004.

Thirdly, in May 2004 INGL agreed to construct a natural gas pipeline to the Hadera industrial zone. A number of months later, INGL requested that AIPM agree to and sign a declaration indicating the company's obligation to reimburse INGL for the cost of the pipeline and its construction, in the event that AIPM decided not to use natural gas into its operations. In October 2005, AIPM signed an agreement committing to reimbursing INGL to the amount of over US$4,000,000 if it chose not to use natural gas.

Other Barriers – Uncertainty

AIPM faces significant uncertainty regarding the availability of the natural gas it has purchased, which may affect its production schedule and/or economic viability:

1. In the initial timetable (December 2004), INGL committed to AIPM that natural gas would reach the factory in December 2005. By June 2005, INGL informed AIPM that gas would not be available until March 2006. Following a meeting in December 2005, INGL committed to supplying gas by the end of July 2006, which was delayed again, a month later, to October 2006. As of July 2007, natural gas is still not available to AIPM or any part of the Hadera industrial zone.

In anticipation of the natural gas' arrival, AIPM has had to invest in a natural gas delivery and safety system and boilers. The uncertainty surrounding the timetable of the availability of the natural gas requires the capital investment to be made, despite the fact that there may be an additional lag time between the infrastructure installation and its actual use; this represents a loss of revenue to AIPM because additional interest would have accrued to the capital used for the infrastructure's development.

2. AIPM contracted to purchase gas from the Yam Tetis gas field, the only Israeli supplier of natural gas. This type of contract presents a number of potential problems for AIPM. If Yam Tetis is unable to supply the contracted amount of gas in the short term, AIPM must purchase diesel as a backup fuel for the boilers that operate on natural gas. Due to the high cost of diesel, this solution is only reasonable for a period of a few days. For longer breaks in gas availability, AIPM must order HFO with which to operate its HFO backup boiler. If Yam Tetis is unable to supply the contracted amount of gas in the long term, AIPM must enter into negotiations with another natural gas supplier, which presents additional problems. A new contract will provide natural gas at market prices, which will increase AIPM's fuel purchase costs. Furthermore, the other supplies of gas in the region present distribution challenges. British Gas, located off the coast of Gaza, has not yet developed its wells and it is estimated that gas will not be available for another four years. Additionally, conflict between Israeli and the Palestinian governments in Gaza make it unlikely that a deal will be brokered unless there are significant political changes in the region. Eastern Mediterranean Gas (EMG) in Egypt is potentially the significant supplier to the region but the pipeline from its source has not yet been constructed and gas from EMG is not expected to be available until some time in 2008.

3. Gas contracts are signed on a take-or-pay basis, which mean that the consumer and the supplier are locked into a contract for a specific amount of quantity. This creates two disadvantages for AIPM compared to the current HFO consumption.

   a. Fuel becomes a fixed cost, as opposed to the variable costs when purchasing HFO or diesel, which are ordered according to fluctuating on site demand.. Once AIPM's fixed costs increase, there is less flexibility for the company to reduce its operating margin due to competition.
   b. In the event that AIPM opts not to use the gas, for whatever reason, it must still pay Yam Tetis for 70% of the contracted amount. Petroleum fuels, like HFO, allow the company flexibility in creating its fuel mix and placing fuel orders consistent with current fuel demand.

Scenarios (4) and (5) face institutional and uncertainty barriers.

1. ~~Continuation of current practice – Combustion of Heavy Fuel Oil.~~
2. Current practice with low-NO_x burner - Combustion of HFO and LPG
3. Fuel Switch – Diesel.
4. ~~Fuel Switch – Natural gas without CDM.~~
5. ~~Project scenario – Fuel Switch to NG with CDM~~

Impact of CDM Revenues

Revenues from the CDM component of the project were taken into account when AIPM developed its factory fuel-switch from HFO to natural gas. The DOE will be presented with the price proposal for CDM development submitted by EcoTraders to AIPM in September 2004. The financial support from the CDM is considered by AIPM to be a sound and stable source of income, which greatly helped to decrease the high uncertainty levels associated with a project in a new energy sector that is in developing stages.

AIPM was also willing to confront the technological difficulties and face problems raised by the involved government bodies and the uncertainty caused by the immature gas market in order to publicize in the local Israeli market as well as among its European clients, the commitment and involvement AIPM has taken upon itself by taking a leadership role in the Israeli industry on the issue of global warming and climate change mitigation.

Step 3. Financial Analysis
A financial analysis was conducted for the two remaining alternatives, scenarios (2) and (3). It should be noted that the small steam boilers that operate on LPG cannot be switched to diesel. If the project activity is not undertaken they must continue to use LPG. Therefore, the analysis below will only compare the costs of HFO and diesel.

The Ministry of Infrastructure regulates fuel prices and provides a monthly price update according to international oil prices in Europe and the Mediterranean basin as well as currency changes. The prices shown in the comparison bellow are the official prices for HFO and diesel as is regulated by the state and sent monthly by the Israeli Oil Refineries Ltd. (a state-owned enterprise until August 2006 when it was sold through a tender) to AIPM:

Table 1: Twelve months of pricing data for HFO and diesel. Data provided by Fuel Refinery.

Date	HFO (Price in NIS per kilolitre)	Diesel (Price in NIS per kilolitre)	HFO (Price in $ per kilolitre)	Diesel (Price in $ per kilolitre)	HFO (Price in $ per TJ)	Diesel (Price in $ per TJ)
Mar-06	1,643	3,484	391	829	10,469	22,963
Apr-06	1,657	3,558	395	847	10,556	23,454
May-06	1,654	3,558	394	847	10,533	23,454
Jun-06	1,570	3,685	374	877	10,000	24,290
Jul-06	1,666	3,694	397	880	10,615	24,353
Aug-06	1,574	3,701	375	881	10,027	24,397
Sep-06	1,252	4,027	298	959	7,973	26,544
Oct-06	1,278	3,542	304	843	8,142	23,350
Nov-06	1,241	3,546	295	844	7,905	23,373
Dec-06	1,234	3,602	294	858	7,863	23,743
Jan-07	1,139	3,499	271	833	7,253	23,065
Feb-07	1,243	3,351	296	798	7,916	22,089
Average	**1,429**	**3,604**	**340**	**858**	9,104	23,756
Price difference HFO and diesel (%)	**252%**				**261%**	

The analysis of the prices listed in the chart above clearly indicates that there is a difference between the price of HFO and diesel of over 200%, which is sufficient for any reasonable sensitivity analysis. It should also be noted that diesel prices have always been higher than HFO prices in Israel.

The acquisition and implementing of a low-NOx burner is estimated by AIPM's consultants to be between US$400,000-700,000. Even if the higher end of that estimation is taken, at the current rate of fuel consumption this investment is smaller than the cost of one month's production using diesel, as is demonstrated by the following table:

HFO Used in an average baseline year	[Ton]	59,052
HFO Used in an average baseline year	[TJ]	2,373
Amount of diesel that would be used in one year	[TJ]	2,373

Cost of HFO per year	[$]	21,607,121
Cost of Diesel per year	[$]	56,373,349
Price difference over the course of 1 year	**[$/year]**	**34,766,229**
Average price difference per month	**[$/month]**	**2,897,186**

Furthermore, switching from HFO to diesel would not necessarily have resolved the issue of NO_x emissions. It is likely that AIPM would have had to install a low-NOx burner for the use of diesel, as well. Therefore, the diesel option is unrealistic due to the high costs it poses.

The investment analysis of the combined tool requires that the baseline be the most financially attractive one. Scenario (3) is eliminated.

1. ~~Continuation of current practice – Combustion of Heavy Fuel Oil.~~
2. **Current practice with low-NO_x burner - Combustion of HFO and LPG**
3. ~~Fuel Switch – Diesel.~~
4. ~~Fuel Switch – Natural gas without CDM.~~
5. ~~Project scenario – Fuel Switch to NG with CDM~~

The financial analysis clearly indicates that the baseline scenario is Scenario (2), the continuation of current practice (HFO and LPG) with low-NO_x burners. **Therefore, the baseline scenario for the project is the continuation of current practice – combustion of HFO and LPG – with a low-NO_x burner.**

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:

To determine the project's additionality, the SSC-PDD requires that the project activity be assessed using the options in Attachment A to appendix B of the simplified modalities and procedures for small-scale CDM projects.

The baseline scenario is the continued use of HFO at AIPM together with the installation of low-NO_x burners. Therefore, it is not the project activity undertaken without CDM.

In order to fully understand the difficulties the AIPM project faces, it is necessary to give some background on the Israeli energy sector. Israeli industry relies mainly on petroleum oils for energy generation. Up until now, natural gas has not been available for use in the energy and industrial sectors.

Since the mid-1980s, the Israeli government has wished to introduce natural gas to the industrial sector. In 1995, the government established the Natural Gas Authority to promote the development of a natural gas infrastructure in Israel. The national plan for the installation of a natural gas pipeline (National Plan 37) was completed in 1999. The plan was to be implemented immediately upon its finalization, although actual implementation encountered many unforeseen obstacles. The government published a tender with the intention that a single private body to construct maintain and operate the pipeline. After the tender failed in 2003, the government realized that only a governmental body could undertake a project of this magnitude. Israel Natural Gas Lines Ltd was established to construct the natural gas pipeline and received a license to do so in 2004.

Construction of the pipeline began in 2004.[1] Today, only a minor part of the natural gas pipeline as planned has been installed, delaying further the arrival of natural gas to Israel. The yellow highlights on the map below illustrate the part of the natural gas pipeline that has been laid down. As of July 2007, the sections of the pipeline from Ashkelon to Tsafit and Gezer and to Hadera and Hagit have been completed. However, as of July 2007 the infrastructure is still lacking to actually deliver the natural gas in the existing pipeline and no gas is yet available in Hadera and Hagit.

No pipeline yet is available from the EMG gas fields.

The planned pipeline is to be constructed as an offshore route that shall cross in land to an onshore route in four locations. The constant delay in the supply of natural gas has caused endless difficulties for industries wishing to plan ahead and include natural gas in their fuel mix.

[1] Survey of the Natural Gas Sector in Israel. Conducted by Ma'a lot (the Israeli Company for Ranking Bonds). Accessed July 10, 2007. http://www.maalot.co.il/content.asp?PageId=229.

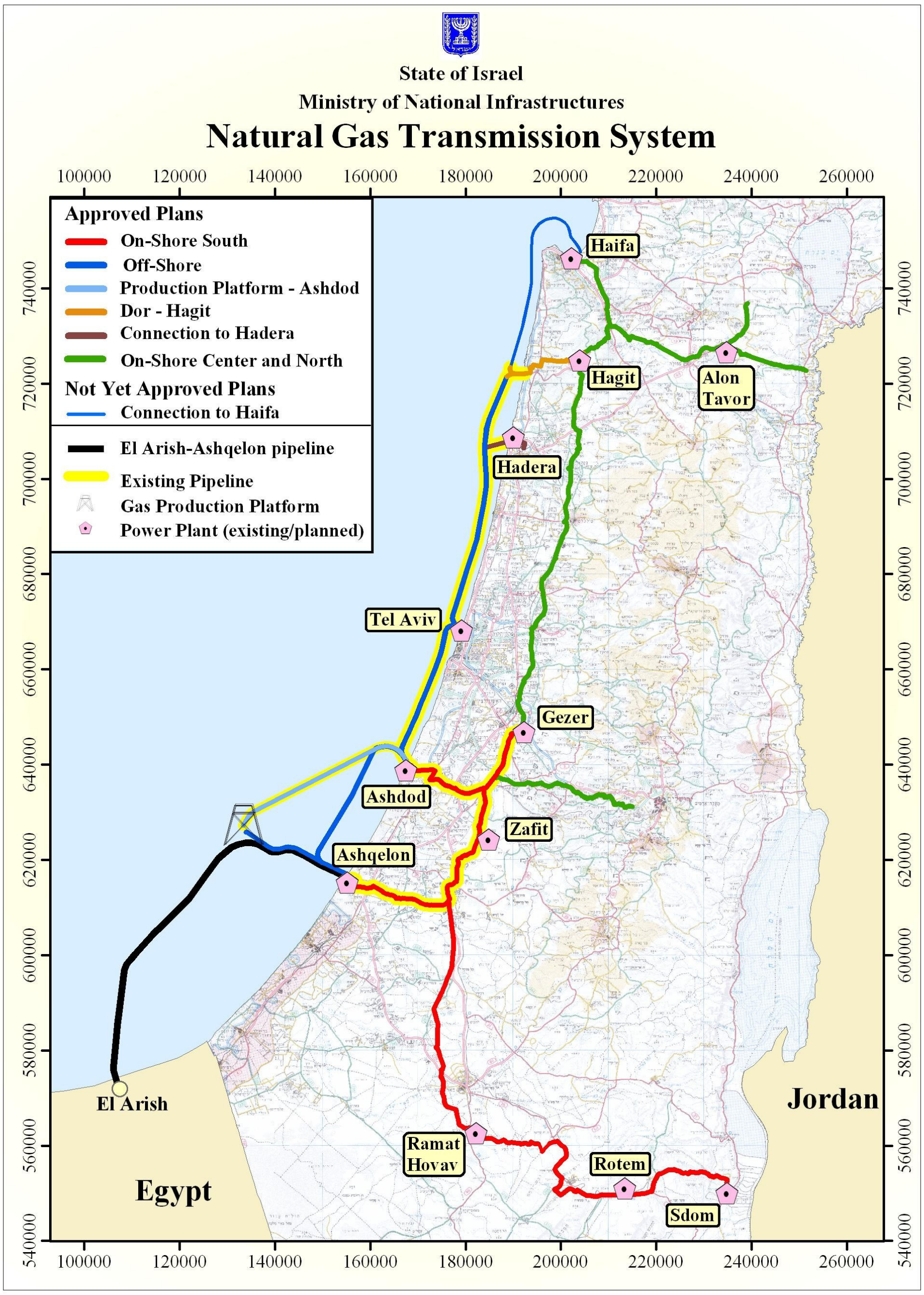


Figure 1: Natural Gas Transmission System in Israel, July 2007

Barriers:

1) Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;

This project is one of the first of its kind to be implemented in Israel in the private sector. There are only two other users of natural gas in Israel, the Israel Electric Company (a government company) and the Ashdod Refineries, which although privatized in August 2006, began using natural gas in November 2005 when it was still a government-owned company. AIPM was one of the first non-government owned industrial companies in Israel to investigate the potential of and develop a natural gas fuel-switch. Furthermore, the existing government policy, as laid out in the original National Plan 37, was to construct a natural gas pipeline that would not enter the Hadera industrial zone. AIPM had to petition the government to alter its plans so that natural gas would be made available.

To appreciate the pioneering characteristics of this project it is necessary to understand the energy situation of Israel's industrial sector. Israeli industry relies mainly on petroleum oils for energy generation (see diagram in Annex 5). Up until now, natural gas has not been widely available for use in the energy and industrial sectors.

2) 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.

Other Barriers - Institutional
The AIPM fuel-switch project had to overcome endless institutional difficulties. Firstly, the national project to diversify the fuel-mix in Israel by bringing natural gas to the market, has been in the development process for more than a decade, with gas still unavailable to most users.
Today, over ten years since the establishment of the Natural Gas Authority, the natural gas pipeline planned has not been completely installed, delaying further the arrival of natural gas to Israel. The constant delay in the supply of natural gas has caused endless difficulties for industries wishing to plan ahead and include natural gas in their fuel mix.

Secondly, Hadera, where AIPM is located, was not included in the government's original National Plan 37 (1999) that specified where the undersea and inland natural gas pipeline was to be built and effectively determined which parts of the country would have access to natural gas. After it became clear in 2003-2004 that Hadera would not be connected to the natural gas pipeline, AIPM had to specially request that the National Plan for natural gas distribution (National Plan 37) be altered to include a connection to the pipeline that would run inland to Hadera's industrial zone. AIPM submitted the request in February 2004 to Israel Natural Gas Lines Ltd (INGL); in May 2004, INGL agreed to construct the requested natural gas pipeline that would reach Hadera. AIPM approached the director of the Ministry of National Infrastructure for his support for the speedy fulfilment to connect AIPM to the natural gas pipeline. To have National Plan 37 changed to include a gas pipeline to Hadera, AIPM was in contact with the Ministry of National Infrastructure in late 2002 to investigate the possibility of including Hadera in the natural gas pipeline, particularly to reduce the air pollution in Hadera from the city's industrial zone. Only two years later, following correspondence with a number of government ministries, was a change made to National Plan 37 that was published in September 2004.

Thirdly, in May 2004 INGL agreed to construct a natural gas pipeline to the Hadera industrial zone. A number of months later, INGL requested that AIPM agree to and sign a declaration indicating the company's obligation to reimburse INGL for the cost of the pipeline and its construction, in the event that AIPM decided not to use natural gas into its operations. In October 2005, AIPM signed an agreement committing to reimbursing INGL to the amount of over US$4,000,000 if it chose not to use natural gas.

Other Barriers – Uncertainty
AIPM faces significant uncertainty regarding the availability of the natural gas it has purchased, which may affect its production schedule and/or economic viability:

1. In the initial timetable (December 2004), INGL committed to AIPM that natural gas would reach the factory in December 2005. By June 2005, INGL informed AIPM that gas would not be available until March 2006. Following a meeting in December 2005, INGL committed to supplying gas by the end of July 2006, which was delayed again, a month later, to October 2006. As of July 2007, natural gas is still not available to AIPM or any part of the Hadera industrial zone.

In anticipation of the natural gas' arrival, AIPM has had to invest in a natural gas delivery and safety system and boilers. The uncertainty surrounding the timetable of the availability of the natural gas requires the capital investment to be made, despite the fact that there may be an additional lag time between the infrastructure installation and its actual use; this represents a loss of revenue to AIPM because additional interest would have accrued to the capital used for the infrastructure's development.

2. AIPM contracted to purchase gas from the Yam Tetis gas field, the only Israeli supplier of natural gas. This type of contract presents a number of potential problems for AIPM. If Yam Tetis is unable to supply the contracted amount of gas in the short term, AIPM must purchase diesel as a backup fuel for the boilers that operation on natural gas. Due to the high cost of diesel, this solution is only possible for a few days. For longer breaks in gas availability, AIPM must order HFO with which to operate its HFO backup boiler. If Yam Tetis is unable to supply the contracted amount of gas in the long term, AIPM must enter into negotiations with another natural gas supplier, which presents additional problems. A new contract will provide natural gas at market prices, which will increase AIPM's fuel purchase costs. Furthermore, the other supplies of gas in the region present distribution challenges. British Gas, located off the coast of Gaza, has not yet developed its wells and it is estimated that gas will not be available for another four years. Additionally, conflict between Israeli and the Palestinian governments Gaza make it unlikely that a deal with be brokered unless there are significant political changes. Eastern Mediterranean Gas (EMG) in Egypt is potentially the significant supplier to the region but the pipeline from its source has not yet been constructed and gas from EMG is not expected to be available until some time in 2008.

3. Gas contracts signed are take-or-pay contracts, which mean that the consumer and the supplier are locked into contract for a specific amount of time. This creates two disadvantages for AIPM compared to the current HFO consumption.

a. Fuel becomes a fixed cost, as opposed to the variable costs that are purchasing HFO or diesel, which are only ordered on an as-need basis. Once AIPM's fixed costs increase, there is less flexibility for the company to reduce its operating margin due to competition.
b. In the event that AIPM opts not to use the gas, for whatever reason, it must still pay Yam Tetis for 70% of the contracted amount. More traditional fuels, like HFO, allow the company flexibility in creating its fuel mix and ordering what is needed as it is needed.

Continuing to use HFO and installing low-NO_x burners would not have required the time and effort that AIPM has invested in the project and the barriers that it has faced and may face in the future:

- Being one of the first private companies in Israel to develop plans to switch to natural gas (prevailing practice barrier);

- Petitioning the Israeli government to change its National Plan 37 to include a natural gas pipeline to Hadera (prevailing practice and institutional barriers);
- Dealing with delays in the timetable of when the natural gas will be available in Hadera (uncertainty barrier);
- Being limited to one gas supplier, in the event that a new contract must be negotiated due to supply problems, and problems with other suppliers in the region (uncertainty barrier);
- Increase in company's fixed costs in a competitive industry, which will make it difficult to reduce its operating margin (uncertainty barrier).

Therefore, the project is additional because the baseline scenario, use of HFO and LPG with low-NO_x burners, would not have faced the above barriers and would have led to higher emissions.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

>> The approved methodology "III.B. Switching fossil fuels" demands the following in terms of emission reduction (ER) calculations:

Project Emissions:

"Project activity emissions consist of those emissions related with the use of fossil fuel after the fuel switch."

No equations are contained in the approved methodology and therefore, project emission shall be calculated according to the methodology's instructions as follows:

$$PEy = \sum FC_i \times COEF_{i,y}$$

Eq. 1

Where:

Parameter	Description	Unit
PEy	Project Emissions in year y.	tCO_2e/yr
FC_i	Fuel consumption in project scenario, mostly natural gas, but other backup fuels might be used, in year y.	MMBTU
$COEF_{i,y}$	Emission Coefficient of each fuel i considering both the net calorific value and oxidation factor.	tCO_2/TJ

In this manner, each ton of CO_2 emitted to the atmosphere in the project scenario and within the project boundary due to the consumption of any type of fuel is accounted for.

Fuel consumption of natural gas in project scenario will be measured according to the procedures described in the following section of the PDD. The estimations given in section B.6.3 for the ex-ante calculations are derived from internal demand projections of the plant.

The ex ante calculation of PE_y bases the parameter FC_i on the amount of energy required to produce the forecasted demand for paper for the years 2007-2016. The demand for paper determines the amount of energy (steam and electricity) needed for the production process, which then determines the amount of fuel required. Actual fuel consumption throughout the project activity will be monitored by flow meters and weight meter, as described in section B.7.1.

Baseline Emissions:
As stated in methodology III.B:
"The emission baseline is the current emissions of the facility expressed as emissions per unit of output (e.g., kg CO2e/kWh)."

No equations are contained in the approved methodology and therefore, baseline emissions shall be calculated according to the methodology's instructions as follows:

$$BEy = \frac{P_{steam,PJ,y}}{P_{steam,BL,y}} * \sum_{i} FC_i * EFi$$

Eq. 2

Where:

Parameter	Description	Unit
BEy	Baseline Emissions in year y.	tCO_2e/yr
FC_i	Fuel consumption of Carbon intensive fuel in baseline scenario (HFO and LPG), average in the last 3 years prior to project implementation.	Ton
$P_{steam, BL,y}$	Steam output in baseline scenario, average in the last 3 years prior to project implementation.	Ton
$P_{steam, PJ,y}$	Steam output in project scenario in year y.	Ton
EF_i	Emission Factor for Carbon intensive fuel (HFO and LPG).	tCO_2/Ton

The baseline emissions are calculated by multiplying the sum of the petroleum fuels multiplied by their respective emission factors with a "production factor" (the project's steam output divided by the baseline's steam output). This method ensures that baseline emissions are calculated dynamically and account for changes in demand (and therefore production). The amount of fuels (HFO and LPG) used to calculate the baseline emissions are based on the average consumption of these fuels by the factory for the years 2004-2006.

The development of a dynamic baseline makes the calculation of emission reductions more conservative. In the paper mills steam accounts in the best manner for production, therefore in the event that production falls during the project's lifetime, there will be a reduction in carbon emissions. A dynamic baseline accounts for the fall in production and lowers the baseline emissions by the same amount. In this way, emission reductions are calculated solely as the changes caused by the project activity and not external influences such as supply and demand.

Leakage:
No leakage calculation is required.

Emission Reduction:
$ER_y = BE_y – PE_y$

Eq. 3

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

(Copy this table for each data and parameter)

Data / Parameter:	COEFf,y
Data unit:	tCO_2/TJ NG
Description:	Emission Coefficient of Natural Gas considering both the net calorific value and oxidation factor.
Source of data used:	IPCC.
Value applied:	56.1
Justification of the choice of data or description of measurement methods and procedures actually applied :	As the methodology states: "IPCC default values for emission coefficients may be used."
Any comment:	IPCC default emission factor values will be determined at the start of the crediting period.

Data / Parameter:	FC_{HFO}
Data unit:	Ton
Description:	Fuel consumption of Heavy Fuel Oil in baseline scenario, in the last 3 years prior to project implementation.
Source of data used:	Industrial Facility.
Value applied:	59,052 Ton
Justification of the choice of data or description of measurement methods and procedures actually applied :	The amount of HFO used by the plant is a very important parameter for the plant and is monitored carefully for the purpose of lowering production costs. For determining the baseline, the number is taken from the plants internal consumption report which is based on the weight difference of the incoming and outgoing fuel trucks measured in the plants gate. The scale in the gate was calibrated biennially by the Ministry of Industry, Trade and Labour. This measurement is also backed by receipts from the oil refinery, a very accurate and conservative data source as the weight scales in the oil refinery are periodically calibrated and maintained and measure the fuel and therefore dictate the fuel bills for the larger part of the Israeli energy sector.
Any comment:	All data will be archived for the duration of the project activity plus two additional years.

Data / Parameter:	FC_{LPG}
Data unit:	Ton
Description:	Fuel consumption of LPG in baseline scenario, in the last 3 years before project implementation.
Source of data used:	Industrial Facility.
Value applied:	2,547
Justification of the choice of data or description of measurement methods	The amount of LPG used by the plant is an important parameter for the plant and is monitored for the purpose of lowering production costs. For determining the baseline, the number is taken from the plants internal consumption report which is based on the weight difference of the incoming and outgoing fuel

and procedures actually applied :	trucks measured in the plants gate. The scale in the gate was calibrated biennially by the Ministry of Industry, Trade and Labour. This measurement is also backed by receipts from the oil refinery, a very accurate and conservative data source as the weight scales in the oil refinery are periodically calibrated and maintained and measure the fuel and therefore dictate the fuel bills for the larger part of the Israeli energy sector.
Any comment:	All data will be archived for the duration of the project activity plus two additional years.

Data / Parameter:	EF_{HFO}
Data unit:	tCO_2/Ton HFO
Description:	Emission Factor for HFO.
Source of data used:	IPCC
Value applied:	3.10937
Justification of the choice of data or description of measurement methods and procedures actually applied :	The methodology states: "IPCC default values for emission coefficients may be used."
Any comment:	IPCC default emission factor values will be determined at the start of the crediting period.

Data / Parameter:	EF_{LPG}
Data unit:	tCO_2/Ton LPG
Description:	Emission Factor for LPG.
Source of data used:	IPCC.
Value applied:	2.98305
Justification of the choice of data or description of measurement methods and procedures actually applied :	As the methodology states: "IPCC default values for emission coefficients may be used."
Any comment:	IPCC default emission factor values will be determined at the start of the crediting period.

Data / Parameter:	$P_{steam,BL,y}$
Data unit:	Ton
Description:	Ton of steam produced in the baseline scenario in year y.
Source of data used:	Industrial Facility
Value applied:	852,963
Justification of the choice of data or description of measurement methods and procedures actually applied :	The steam production is measured by steam meters mounted on each boiler which normalized the reading to 25°c and 1 atm. In the paper mills, steam correlates best with both production output and fuel input. The plants boilers produce steam, which is then mostly used by the industrial processes and partially used for electricity generation and thus account in the best manner for the energy produced.

Any comment:	All data will be archived for the duration of the project activity plus two additional years.

B.6.3 Ex-ante calculation of emission reductions:

Project Emissions:

Project emissions were calculated based on the following assumptions:

- Conversion factor from MMBTU to TJ is 0.00105506
- The amount of NG needed in the project activity was estimated by the factory based on projected production
- It is assumed that only NG will be used in the project activity. No backup fuels will be used. However ,all fuel consumption will be monitored as specified below in section B.7.1.

Year	FC_{NG} (TJ)	FC_{HFO} (t)	FC_{LPG} (t)	FC_{Diesel} (t)	EF_{NG} (tCO_2/TJ)	EF_{HFO} (tCO_2/t)	EF_{LPG} (tCO_2/t)	EF_{Diesel} (tCO_2/t)	PE_y
2008	2,486	0	0	0	56.1	3.10937	2.98305	3.18487	139,487
2009	2,589	0	0	0					145,237
2010	2,818	0	0	0					158,097
2011	2,819	0	0	0					158,126
2012	2,959	0	0	0					165,990
2013	3,047	0	0	0					170,913
2014	3,134	0	0	0					175,839
2015	3,366	0	0	0					188,857
2016	3,372	0	0	0					189,192
2017	3,379	0	0	0					189,537

Baseline Emissions:

Baseline emissions were calculated with the following assumptions:

- Baseline fuel consumption was determined by averaging historical fuel consumption from 2004-2006 for each facility and using the net calorific value (provided by the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*) to determine the amount of TJ contained by the fuel consumed.
- Baseline output was determined by averaging historical production outputs from 2004-2006 for each facility.

Parameter	2004	2005	2006	Average
FC_{HFO} (t)	59,177	59,677	58,302	**59,052**
FC_{LPG} (t)	2,578	2,512	2,551	**2,547**
$P_{steam,BL,y}$	858,040	856,942	843,907	**852,963**

The ex ante calculation of baseline emissions for the purpose of determining emission reductions resulting from the project activity follows. The assumptions made are:

- The amount of steam used in the ex ante calculation for baseline emissions comes from the amount of steam needed to generate the amount of paper that will be produced according to projections by the factory.
- The average steam production for the baseline calculation was calculated using historical steam production data from 2004-2006
- The average consumption of HFO and LPG for the baseline calculation was calculated using historical steam production data from 2004-2006

Year	$P_{steam,PJ,y}$ (t)	$P_{steam,BL,y}$ (t)	FC_{HFO} (t)	FC_{LPG} (t)	EF_{HFO} (tCO_2/t)	EF_{LPG} (tCO_2/t)	BE_y
2008	792,635	852,963	59,052	2,547	3.10937	2.98305	177,689
2009	826,757						185,338
2010	903,072						202,446
2011	903,244						202,485
2012	949,912						212,946
2013	979,126						219,495
2014	1,008,339						226,044
2015	1,085,614						243,367
2016	1,087,599						243,812
2017	1,089,647						244,271

B.6.4 Summary of the ex-ante estimation of emission reductions:

Year	Estimation of project activity emissions (tCO2e)	Estimation of baseline emissions (tCO2e)	Estimation of Leakage (tCO2e)	Estimation of overall emission reductions (tCO2e)
2008	139,487	177,689	0	38,201
2009	145,237	185,338	0	40,101
2010	158,097	202,446	0	44,348
2011	158,126	202,485	0	44,358
2012	165,990	212,946	0	46,956
2013	170,913	219,495	0	48,582
2014	175,836	226,044	0	50,208
2015	188,857	243,367	0	54,509
2016	189,192	243,812	0	54,620
2017	189,537	244,271	0	54,734
Total (tCO2e)	1,681,273	2,157,894	0	476,620

B.7 Application of a monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	FC_{NG}
Data unit:	MMBTU
Description:	Fuel consumption of Natural Gas in project scenario, year y.
Source of data to be used:	Industrial Facility
Value of data	2008: 2,486; 2009: 2,589; 2010: 2,818; 2011: 2,819; 2012: 2,959; 2013: 3,047; 2014: 3,134; 2015: 3,366; 2016: 3,372; 2017: 3,379
Description of measurement methods and procedures to be applied:	Natural gas consumption by the factory will be calculated using the accounting method, i.e. the amount of gas consumed will be taken from the receipts for the amount of gas that AIPM purchases from Natural Gas Lines Ltd.
QA/QC procedures to be applied:	NG lines have a system of two pipelines running to the plant with a Turbine meter and an Ultrasonic meter installed on each pipeline. In addition, all four flow meters will be subject to calibrations and on going maintenance operations as dictated by law in the Natural Gas purchase agreement moderated by the Ministry of Infrastructure. Appendix 3 of the natural gas purchase agreement discussing the measurement procedures can be found in Appendix 4 of this document. The full agreement will be presented to the DOE.
Any comment:	All data will be archived for the duration of the project activity plus two additional years.

Data / Parameter:	FC_{HFO}
Data unit:	Ton
Description:	Consumption of HFO in project scenario, year y.
Source of data to be used:	Industrial Facility
Value of data	2008: 0; 2009: 0; 2010: 0; 2011: 0; 2012: 0; 2013: 0; 2014: 0; 2015: 0; 2016: 0; 2017: 0
Description of measurement methods and procedures to be applied:	The amount of HFO used by the plant is a very important parameter for the plant and is carefully monitored for the purpose of lowering production costs. The plant calculates the weight difference of the incoming and outgoing fuel trucks measured in the plants gate.
QA/QC procedures to be applied:	The scale in the gate is subject to biennial calibration by the Ministry of Industry, Trade and Labour. This measurement is also backed by receipts from the oil refinery, a very accurate and conservative data source as the weight scales in the oil refinery are periodically calibrated and maintained and measure the fuel and therefore dictate the fuel bills for the larger part of the Israeli energy sector.

Any comment:	All data will be archived for the duration of the project activity plus two additional years. For ex ante calculation it is assumed that the use of this back up fuel shall not be necessary. Should this fuel be used it shall be monitored according to the above procedures.

Data / Parameter:	FC_{LPG}
Data unit:	Ton
Description:	Consumption of LPG in project scenario, year y.
Source of data to be used:	Industrial Facility
Value of data	2008: 0; 2009: 0; 2010: 0; 2011: 0; 2012: 0 2013: 0; 2014: 0; 2015: 0; 2016: 0; 2017: 0
Description of measurement methods and procedures to be applied:	The amount of LPG used by the plant is a very important parameter for the plant and is thoroughly monitored for the purpose of lowering production costs. The plant calculates the weight difference of the incoming and outgoing fuel trucks measured in the plants gate.
QA/QC procedures to be applied:	The scale in the gate is subject to biennial calibration by the Ministry of Industry, Trade and Labour. This measurement is also backed by receipts from the oil refinery, a very accurate and conservative data source as the weight scales in the oil refinery are periodically calibrated and maintained and measure the fuel and therefore dictate the fuel bills for the larger part of the Israeli energy sector.
Any comment:	All data will be archived for the duration of the project activity plus two additional years. For ex ante calculation it is assumed that the use of this back up fuel shall not be necessary. Should this fuel be used it shall be monitored according to the above procedures.

Data / Parameter:	FC_{diesel}
Data unit:	TJ
Description:	Consumption of diesel in project scenario, year y.
Source of data to be used:	Industrial Facility
Value of data	2008: 0; 2009: 0; 2010: 0; 2011: 0; 2012: 0 2013: 0; 2014: 0; 2015: 0; 2016: 0; 2017: 0
Description of measurement methods and procedures to be applied:	The amount of diesel used by the plant is a very important parameter for the plant and is thoroughly monitored for the purpose of lowering production costs. The plant calculates the weight difference of the incoming and outgoing fuel trucks measured in the plants gate.
QA/QC procedures to be applied:	The scale in the gate is subject to biennial calibration by the Ministry of Industry, Trade and Labour. This measurement is also backed by receipts from the oil refinery, a very accurate and conservative data source as the weight scales in the oil refinery are periodically calibrated and maintained and measure the fuel and

	therefore dictate the fuel bills for the larger part of the Israeli energy sector.
Any comment:	All data will be archived for the duration of the project activity plus two additional years. For ex ante calculation it is assumed that the use of this back up fuel shall not be necessary. Should this fuel be used it shall be monitored according to the above procedures.

Data / Parameter:	$P_{steam, PJ,y}$
Data unit:	Ton.
Description:	Ton of steam produced in the project scenario in year y.
Source of data to be used:	Industrial Facility.
Value of data	2008: 792,635; 2009: 826,757; 2010: 903,072; 2011: 903,244; 2012: 949,912 2013: 979,126; 2014: 1,008,339; 2015: 1,085,614; 2016: 1,087,599; 2017: 1,089,647
Description of measurement methods and procedures to be applied:	The steam production is measured by steam meters mounted on each boiler which normalized the reading to 25°c and 1 atm. The data is stored electronically in the plants computerized systems and can be viewed through plant reports.
QA/QC procedures to be applied:	Flow meters are subject to continuous maintenance and yearly calibrations.
Any comment:	All data will be archived for the duration of the project activity plus two additional years.

Value of data:

2008	2009	2010	2011	2012
792,635	826,757	903,072	903,244	949,912

2013	2014	2015	2016	2017
979,126	1,008,339	1,085,614	1,087,599	1,089,647

B.7.2 Description of the monitoring plan:

The monitoring demands in the methodology are:

"Monitoring shall involve:
(a) Monitoring of the fuel use and output for an appropriate period (e.g., a few years, but records of fuel use may be used) prior to the fuel switch being implemented - e.g. coal use and heat output by a district heating plant, liquid fuel oil use and electricity generated by a generating unit (records of fuel used and output can be used *in lieu* of actual monitoring);
(b) Monitoring fuel use and output after the fuel switch has been implemented - e.g. gas use and heat output by a district heating plant, gas use and electricity generated by a generating unit."

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 was explained thoroughly in the PDD, these are the parameters to be monitored, stored and used for the purpose of calculating the emission reductions generated by the project. The method of obtaining each parameter and the QA procedures aimed at insuring data integrity are discussed in the PDD.
The DOE at the time of validation will be presented with internal work processes specifying in detail the actions and procedures that are employed in regards to:

1. Maintenance and operation of the monitoring equipment.
2. Work safety procedures.

3. Data gathering, storing and analyzing techniques.
4. Troubleshooting procedures.
5. Training procedures.

Further detail regarding the monitoring procedures is provided in Annex 4.

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

12/07/2007
Completed by Omer Tamir, Engineering and Monitoring Manager, EcoTraders (Contact details provided in Annex 1).

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:

1/8/07

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

10 years

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

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

>>

C.2.1.2. Length of the first crediting period:

>>

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

1/10/07

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:

The AIPM was not required to conduct an environmental impacts analysis report for the fuel-switch project. The project will, however, benefit environmental quality and the population's general health.

The project's elimination of HFO at the factory will improve air quality and reduce emissions of SO_x, NO_x and particulate matter in Hadera. Furthermore, the HFO is delivered to the plant by trucks, while the natural gas will be delivered via pipeline. The fuel switch will reduce the number of trucks that must enter Hadera to deliver fuel to the factory, thereby reducing an additional source of air pollution. The reduction in SO_x, NO_x and particulate matter will improve the air quality and therefore, the health and quality of life of the residents of Hadera as well as the plant's employees. The reduction in air pollution resulting from the heavy fuel oil and from the trucks that deliver the fuel to the factory will reduce the deposition of soot on the surrounding property and vegetation.

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:

>>

The environmental impacts of the project are not considered to be significant. No EIA was required by the Host Country.

SECTION E. Stakeholders' comments

>>

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

>>On the 12/7/07, a brochure explaining the NG fuel switch project was sent to the following list of stakeholders:

1. Mr. Haim Avitan – Mayor of the town of Hadera.
2. Mr. Etay Enbaar – CEO of the Hadera Municipality.
3. Mr. Beni Memka – Head Engineer of Hadera.
4. Mr. Roman Gisher – Vice Mayor of Hadera.
5. Dr. Pessah – Member of the city counsel.
6. Mr. Giora Shahar - Member of the city counsel.
7. Mr. Yeruham Lakritz – CEO of the City Union of Environmental Protection.
8. Mrs. Gloria Efrati – Head of Industries and Business license (City Union of Environmental Protection).
9. Mr. Arie Yogev – Head of Radiation and Noise (City Union of Environmental Protection).
10. Mrs. Ofra Livne – Planner (City Union of Environmental Protection).
11. Mr. Roman Shumayev – Representative of the neighbourhood committee.
12. Mr. Rotery – President of the Hadera Bureau.
13. Mr. Rami Zilbershtein – CEO of the Sharon Region New Workers Union. Adjacent region.
14. Mr. Yossi Anglister – CEO Alliance- Adjacent factory
15. Mr. Israel Osobitzki – CEO Comba- Adjacent factory
16. Mr. Ilan Sade – CEO Menashe Regional Counsel. Adjacent region.
17. Mr. Arie Leybowitz – CEO AIPM Workers Union.
18. Local Representatives of the surrounding neighbourhoods.

The brochure, which will be presented to the DOE during validation, explains the problem of global warming and the international solutions presented by the Kyoto protocol and the CDM mechanism. The brochure describes the NG fuel switch project in Hadera, its environmental benefits and contribution to sustainable development in Israel.

The brochure invited the stakeholders to submit comments over the internet regarding the project via the e-mail address provided in the brochure. The web site was open for public comments for a period of 30 days. All questions received responses from the CDM advisor; all questions and comments received via the webpage were collected by the CDM advisor.

E.2. Summary of the comments received:

To date, no comments have been received. The project is welcomed by all relevant parties as it contributes to the sustainable development criteria in the region and to the environmental aspects, therefore posing no opposition.

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

>> No comments or questions were received.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

There is no public funding from an Annex I Party provided for this project.

Annex 3

BASELINE INFORMATION

Data used to calculate the baseline:

Parameter	Desc.	Units	Data Source	2004	2005	2006	Average	Average yearly tCO_2 emission
FC_{HFO}	Baseline HFO consumption	Ton	LTA (internal factory) Report	59,177	59,677	58,302	59,052	183,614
FC_{LPG}	Baseline LPG consumption	Ton	Paper Machine #3 report	2,578	2,512	2,551	2,547	7,598
$P_{steam,BL,y}$	Ton Steam Produced	Ton	Steam Report - Main Meter	858,040	856,942	843,907	852,963	--

Parameter	Desc.	Units	Data Source	2008	2009	2010	2011	2012
FC_{NG}	Project NG consumption	mmbtu	Forecast energy demand	2,356,646	2,453,791	2,671,061	2,671,551	2,804,415
FC_{NG}	Project NG consumption	TJ		2,486	2,589	2,818	2,819	2,959
FC_{HFO}	Project HFO consumption	Ton	Forecast energy demand	-	-	-	-	-
FC_{LPG}	Project LPG consumption	Ton	Forecast energy demand	-	-	-	-	-
FC_{Diesel}	Project Diesel consumption	Ton	Forecast energy demand	-	-	-	-	-
PEy	Project Emissions	tCO2e/yr		139,487	145,237	158,097	158,126	165,990
$P_{steam, PJ,y}$	Project steam production	Ton	Forecast energy demand	792,635	826,757	903,072	903,244	949,912
BEy	Baseline Emissions	tCO2e/yr		177,689	185,338	202,446	202,485	212,946
ERy	Emission Reductions	tCO2e/yr		38,201.62	40,100.94	44,348.86	44,358.46	46,956.13

Parameter	Desc.	Units	Data Source	2013	2014	2015	2016	2017

FC_{NG}	Project NG consumption	mmbtu	Forecast energy demand	2,887,587	2,970,758	3,190,760	3,196,413	3,202,243
FC_{NG}	Project NG consumption	TJ		3,047	3,134	3,366	3,372	3,379
FC_{HFO}	Project HFO consumption	Ton	Forecast energy demand	-	-	-	-	-
FC_{LPG}	Project LPG consumption	Ton	Forecast energy demand	-	-	-	-	-
FC_{Diesel}	Project Diesel consumption	Ton	Forecast energy demand	-	-	-	-	-
PEy	Project Emissions	tCO2e/yr		170,913	175,836	188,857	189,192	189,537
$P_{steam, PJ,y}$	Project steam production	Ton	Forecast energy demand	979,126	1,008,339	1,085,614	1,087,599	1,089,647
BEy	Baseline Emissions	tCO2e/yr		219,495	226,044	243,367	243,812	244,271
ERy	Reductions Emission	tCO2e/yr		48,582.25	50,208.36	54,509.70	54,620.23	54,734.21

Conversion Factors

MMBTU -> TJ	0.00105506
COEFf,y	56.1
EFBL,CO2,y	0.936716634
Ton HFO -> CO2	3.10937
Ton HFO -> TJ	0.04019
Ton LPG -> CO2	2.98305
Ton Diesel -> CO2	3.18487

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 was explained thoroughly in the PDD, these are the parameters to be monitored, stored and used for the purpose of calculating the emission reductions generated by the project. The method of obtaining each parameter and the QA procedures aimed at insuring data integrity are discussed in the PDD.
The DOE at the time of validation will be presented with internal work processes specifying in detail the actions and procedures that are employed in regards to:

1) Maintenance and operation of the monitoring equipment – The plant has strict work procedures regarding the maintenance, operation and calibration of its monitoring and measurement equipment. These procedures were modified to include specific instructions and work orders for the equipment related with the CDM project. The responsibility for following these work processes is in the hands of the electricity and electronics department manager and in the managerial responsibility of the plants head energy engineer and CDM project manager.

2) Work safety procedures – The plant follows very strict safety procedures to account for the wellbeing of its employees. A set of new safety standards where introduced to accommodate the introduction of NG to the plant and thorough training sessions were held, evidence to which will be presented to the DOE at Validation.

3) Data gathering, storing and analyzing techniques – A unique process was written and will be implemented upon the project's implementation regarding the acquiring, storing, analyzing and insuring of data integrity for the data parameters related with the CDM project activity. This process will be carried out by the energy engineer appointed to be CDM project manager.

4) Troubleshooting procedures – The paper mills' staff is equipped to handle problems that might occur in the operation of the mills energy producing equipment as well as the monitoring equipment. The technical skill of the staff will be observed by the DOE.

5) Training procedures – The paper mills have a system of training and qualifications for its technical staff which will be presented to the DOE at Validation. Additional rigorous training sessions where held before the fuel switch to qualify the plant's employees to operate the new natural gas energy system.

Measurement Procedure – Natural Gas Purchase Agreement

INTRODUCTION

This specification covers the measurement of gas by turbine meters and multi-path ultrasonic flow meters as related to the installation, operation and calibration practices for determining volume.
More detailed information regarding these issues is given in document EEN-ESP-SPC-031 "Specification Turbine Meter Runs" and EEN-ESP-SPC-035 "Specification Ultrasonic Gas Meter Run".

This specification does not cover the equipment used in the determination of pressures, temperatures, densities and other variables that must be known for the accurate determination of measured gas quantities. These items are covered by following documents:

- EEN-ESJ-SPC-008 "Functional Specification for Gas Analysis System"
- EEN-ESJ-SPC-015 "Functional Specification for Volume Corrector"
- EEN-ESJ-SPC-001 "Functional Specification for Field Instruments" and
- EEN-ESP-RQU-001 "General Design Criteria"

APPLICABLE CODES AND STANDARDS

The following standards and publications form an integral part of this specification:

- AGA report no. 7 Measurement of Gas by Turbine Meters
- AGA report no. 8 Compressibility Factor of Natural Gas and Related Hydrocarbon Gases
- AGA report no. 9 Measurement of Gas by Multi-path Ultrasonic Meters
- ANSI B16.5 Pipe Line Flanges and Flanged Fittings;
- API Chapter 21.1 MPMS Flow Measurement Using Electronic Metering Systems
- EN 50014 Electrical apparatus for potential explosive atmosphere;
- EN 50020 Electrical apparatus for potentially explosive atmosphere "intrinsically safe";
- ISO 5208 Industrial Valves / Pressure Testing of Valves
- ISO 9951 Measurement of gas flow conduits-Turbine meters *)
- DIN EN 12261 Gas Meters – Turbine gas Meters *)
- OIML R32 Rotary Piston Gas Meters and Turbine Gas Meters*)
- OIML R6 General Provisions for Gas Volume Meters *)
- [DVGW G685]

[* Upon availability of specific standards for Ultrasonic Turbine Meters these guidelines shall be used analogously]

PRINCIPLES OF MEASUREMENT

Depending on the gas flow rate the fiscal metering shall be divided into three basic measuring principles:

Single line meter run with check device using turbine meters	-	For gas flow rates up to 15,000 Sm^3/h
Single line meter run using ultrasonic meter and turbine meter in series	-	For gas flow rates over 20,000 Sm^3/h
Either of above principles, as agreed by the Parties	-	For gas flow rates from 15,000 Sm^3/h to 20.000 Sm^3/h

Every meter run consists of the following components, depending on measuring principle:

- Measuring device for definition of flow rate (gas meter like turbine meter, ultrasonic meter)
- [Measuring device for definition of gas quality (Gas Chromatograph)]
- Switch device between working and reserve line
- Shut-off devices upstream and downstream (Ball valves)
- Check device for gas meter
- Control device
- Communication device
- Applicable number of metering runs
- Pulsation / Vibration absorber (flow straightening vanes)
- Electro technical devices
- Additional equipment

SINGLE LINE METER RUN WITH CHECK DEVICE
This measuring principle is applicable for gas flow rates up to 15.000 Sm^3/h.

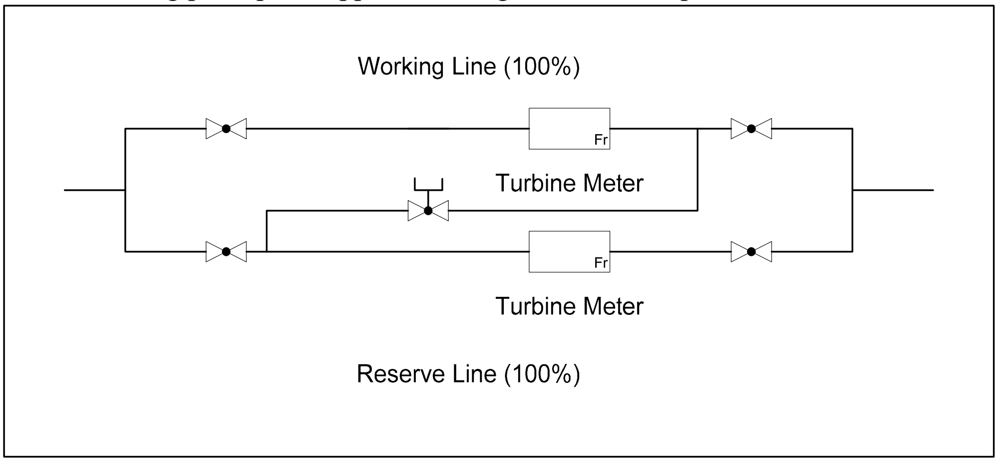


Figure 1: Single Line Meter Run with Check Device

SINGLE LINE METER RUN USING ULTRASONIC METER AND TURBINE METER IN SERIES
This measuring principle is applicable for gas flow rates over 20.000 Sm^3/h.

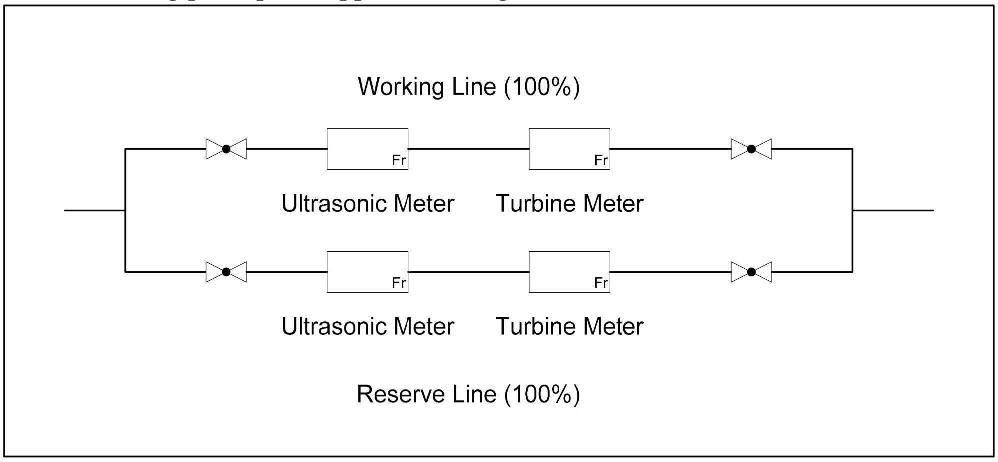


Figure 2: Single line meter run using ultrasonic meter and turbine meter in series

GENERAL REQUIREMENTS
The meters should be operated within the specific flow range and operating conditions to achieve the desired accuracy and normal life time.

The requirements of accuracy, safety, economy, efficiency, traceability and reliability shall be considered while designing the measurement system.
The metering runs shall be designed such that a single failure does not shut down the whole measurement.

ENGINEERING UNITS

Parameter	Units
density	kg / m^3
energy	MMBTU
mass	kg
pipe diameter	mm
pressure	bar or Pa
temperature	°C
velocity	m/s
viscosity, absolute dynamic	cP or Pa ·s
volume	Sm^3
volume flow rate	Sm^3 / h

Table 2: Engineering Units

CALIBRATION
An individual calibration of each meter shall be made prior to operation. The results of this calibration shall be available on request, together with a statement of conditions under which the calibration took place.

Meter Proving On Site
In the case of a single line meter run with check device, the meters shall be proven by serial operation at least annually. In case of a single line meter run using ultrasonic meter and turbine meter in series, the differential between the two meters shall be monitored continuously.

Calibration Intervals
The calibration intervals shall be as follows:

Component	Interval in years
Turbine Meter [G 4000 and G 6000] with oil pump	16
Turbine Meter for custody transfer with 1. $Q_{max} \geq 3000\ Sm^3/h$ 2. with installation of a reference meter 3. possibility to connect both meters in series 4. reference measurement during start-up and annual repetition of reference measurement	Unlimited (Note: all four conditions have to be fulfilled)
Calorific value measuring device	1
Flow computer	5
Additional devices except indicators and switch devices	5
Additional switch devices and switch over devices	unlimited

Table 3: Calibration Intervals

As far as the calibration approval defines a shorter period for calibration than given in Table 3: Calibration Intervals then the shorter interval has to be considered.

Maximum Permissible Error
The limit of maximum permissible error has to be defined as well for the single gas meter as for the complete measuring device.

Within the measuring device the systematic error of one gas meter should not be compensated by the contrarily systematic error of another gas meter.

Regarding measurement uncertainty analysis Technical Report ISO/TR 5168 has to be taken into consideration.

Especially the INGL-requirements listed below have to be followed:

Flow rate [m^3/h]	Maximum permission errors on initial verification	in service
$Q \leq 0.2 \times Q_{max}$	± 1%	± 2%
$Q > 0.2 \times Q_{max}$	± 0.5%	± 1%

Gas Quality Measurement – Natural Gas Purchase Agreement

1. GENERAL

INGL is operating the Transmission System in order to transport gas for the Shipper and Other Shippers from the Delivery Points to the Redelivery Points, without being the owner of the gas transported. In order to protect the Transmission System, the Shipper, and Other Shippers, INGL has established a gas quality specification, which is set out as Appendix 2 of this Agreement. This specification determines the maximum and minimum values of certain components and parameters of the gas. In order to maintain this quality, INGL shall carrying out quality measurements at certain points of the network

- At the Delivery Points (which may be carried out by the Upstream Operator on INGL's behalf)
- At the Redelivery Points

2. QUALITY MEASUREMENT AT THE DELIVERY POINTS

At the Delivery Points, two principle types of measurement will be carried out:

- Online measurement
- Offline measurement

o ***Online Measurement***

The Following properties will be measured online:

- Gas Composition (Calorific value) - measured with a Gas Chromatograph.
- Water Dew Point - measured by a moisture analyser
- Hydrocarbon Dewpoint - measured by a Hydrocarbon dewpoint analyser
- Hydrogen Sulphide - measured by a Sulphur analyser

o ***Offline Measurement***

The above online measurements shall be checked and verified by analytic investigation of the gas in a laboratory, initially at monthly intervals. The gas shall be taken by probes from dedicated points at each Delivery Points. Further, this quality measurement procedure will also be used to determine other components mentioned in Appendix 2, such as sulphur and sulphur compounds.

Upon conclusion by INGL, acting as a Reasonable and Prudent Operator, that the gas quality is stable, the interval may be extended to maximum one year.

3. QUALITY GAS MEASUREMENT AT THE REDELIVERY POINTS

Since the Natural Gas transported in the Transmission System may be from several sources, the gas composition (Calorific value) shall be measured at each Redelivery Point (unless agreed otherwise by the Parties). This measurement will be carried out by a gas chromatograph.

4. CALIBRATION AND VERIFICATION

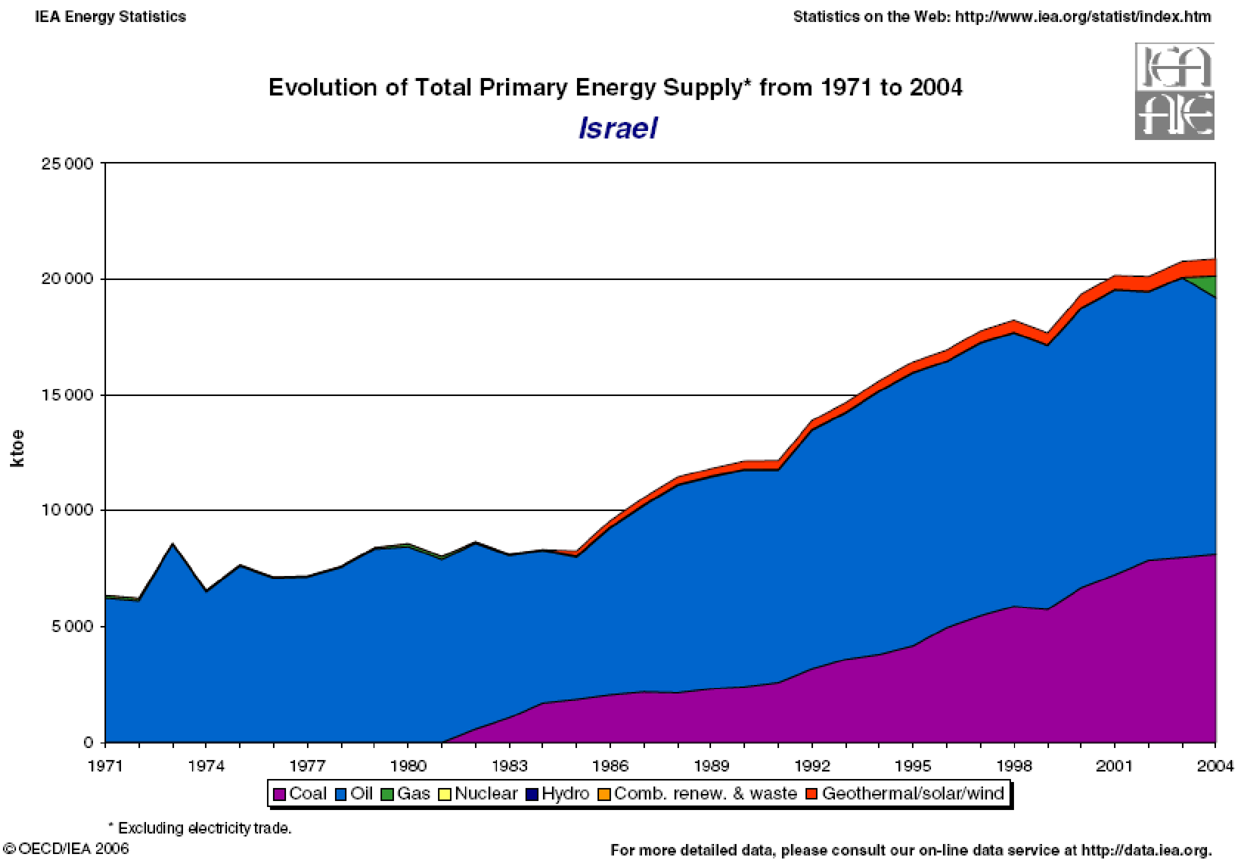
Verification of the accuracy the above online measurement facilities will carried out by means of laboratory analysis of probes at annual intevals (or more frequently, as determined by INGL, acting as a Reasonable and Prudent Operator). In the event of discrepency between the online facilities and the laboratory analysis, the measurement equipment shall be recalibrated. The maximum interval between calibrations shall be determined in accordance with Statutory Requirements, or, if not applicable, in accordance with the recommendation of the manufacturer of the equipment.

ANNEX 5

Fuels Used for Total Primary Energy Supply (TPES) in Israel

Diagram taken from the International Energy Agency (IEA), http://www.iea.org/Textbase/stats/pdf_graphs/ILTPES.pdf/ According to the International Energy Agency TPEC is calculated as indigenous energy products plus imports, less energy exports.

The following diagrams illustrate that the majority of energy in Israel is generated from coal and oil products.

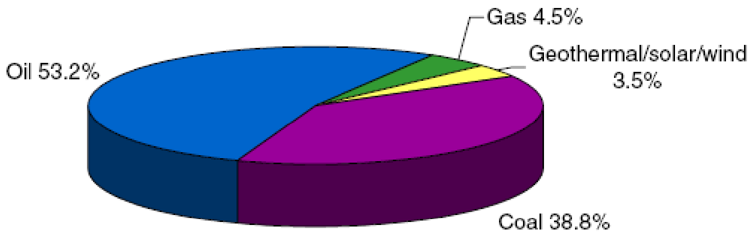


IEA Energy Statistics

Statistics on the Web: http://www.iea.org/statist/index.htm

Share of Total Primary Energy Supply* in 2004

Israel



20 743 ktoe

* Share of TPES excludes electricity trade.

Note: For presentational purposes, shares of under 0.1% are not included and consequently the total may not add up to 100%.

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For more detailed data, please consult our on-line data service at http://data.iea.org.

The following letter from the Israel Natural Gas Lines Ltd. clearly indicates that natural gas is not commonly used in Israel and, furthermore, corroborates the lengths to which the AIPM went to develop natural gas as a new fuel source.

ISRAEL NATURAL GAS LINES LTD (INGL)

Mr. Aaron Grabli
Energy Manager
America-Israel Paper Mills
Hadera

Engel Bld., 3rd Floor,
2A Kremenitski St.,
Tel Aviv 67899 / Israel

Jay Epstein
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F 03-5611320
epstein@ingl.co.il

Our reference
COM-X01-LET 0012

May 8, 2007

Re: America-Israel Paper Mills

Dear Mr. Grabli:

I am responding to your request for a brief description of the natural gas sector in Israel as relates to your company, AIPM.

The first natural gas found in Israel was the Mari B field, located offshore of Ashkelon, which was discovered by a group of American and Israeli companies toward the end of 1999. Natural gas was first consumed in Israel in Feburary 2004, flowing construction of a production platform and a subsea pipeline to the Eshcol power station in Ashdod, which is owned by the national electricity company (IEC). At that time, INGL commenced operation as the national gas transmission company.

The Ashdod Refineries, a former government company which was recently privatized and acquired by the Paz Group, began consuming natural gas in November 2005. In June 2006 INGL commissioned a 30'', 40 km subsea pipeline from Ashdod to Tel Aviv and began supplying gas to IEC's Reading power station.

A further 60 km of subsea pipeline, with a lateral connection to Hadera is soon to be commissioned and will supply natural gas to AIPM. Similarly, the 92 km, 24" onshore pipeline from Ashdod to Ashkelon will supply natural gas to the desalination plant in Ashkelon and IEC's power stations Gezer and Tsafit.

Imports of gas from Egypt to Ashkelon are expected to commence early in 2008.

AIPM was one of the first industrial companies in Israel recognize the potential benefits of natural gas and act to overcome the many obstacles inherent

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ISRAEL **NATURAL GAS** LINES LTD (INGL)

in pioneering a new energy infrastructure. In particular, AIPM was instrumental in convincing the government to include a connection to the Hadera industrial zone in the planned natural gas transmission system, which was included at AIPM's request. Delivery of natural gas to AIPM is expected to commence during the next few months, at which time AIPM will be the second or third industrial user of natural gas in Israel – which will no doubt bring tremendous benefits (environmental, regional development etc.) to AIPM and the surrounding region.

Yours sincerely,

Jay Epstein
Commercial Director