CLEAN DEVELOPMENT MECHANISM

PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

CONTENTS

Annexes

SECTION A. General description of project activity

A.1 Title of the project activity:

Project Title: *Soma - Polat Wind Farm Project, Turkey*

Document version: 3.2

Date: 22.10.2010

A.2. Description of the project activity:

The *Soma - Polat Wind Farm Project, Turkey*, hereafter referred to as the Project, involves a grid-connected onshore wind farm project in Manisa and Balıkesir Provinces, consisting of 119 wind turbines with a total installed power generation capacity of 140.1 MW. The Project is being implemented by Soma Enerji Elektrik Üretim A.Ş. owned by Polat Enerji. The Project aims to generate electricity from wind energy and feed it to the national electricity grid.

The project foresees to install 89 units of Enercon E-44 and 30 units of Enercon E-70 wind turbines with 900 kW and 2000 kW installed capacity each, respectively, and to feed this electricity to the national grid via a transmission line of 17 km at the Soma-B thermal plant transformer. The project area is distributed over two provinces (Manisa and Balıkesir province) encompassing three districts (Soma, Kırkağaç and Savaştepe districts) and nine villages (Kayrakaltı, Sultaniye, Bozarmut, Hamidiye, Tuzladağı, Tekeliışıklar, Kozluören / Bademli / Hıdırbalı, Yazören).

According to the technical feasibility study, the Project is estimated to generate a net electricity amount of 467,364 MWh per year, resulting in annual emission reductions of 296,667 metric tonnes CO_2 and a total reduction of 1,897,692 tCO_2 over the 7-year crediting period. The site preparation for the first wind turbines (including the construction of roads, transmission line, etc.) is started in October 2008 and generation has started in September 2009. It will reach full capacity in 2010.

The Project will reduce greenhouse gas emissions by displacing electricity from grid connected fossil fuel fired power plants, thereby contributing to climate change mitigation along with other environmental benefits. Given an expected operational life of 30 years, the Project Activity will continue to reduce emissions further after the end of the crediting period as well.

The Project currently has a license, which has been granted for 49 years on 04.04.2007 by EMRA.

Contribution to sustainable development:

The project significantly contributes to regional sustainable development in following ways:

- Reduction of:
    - electricity imports of Turkey,

- dependency on fossil fuels and associated risks due to price variations;

- Diversification and assurance of energy supply;
- Reduction of greenhouse gas emissions and air pollutants (e.g. particulates, sulphur dioxide, nitrogen oxides etc.) in Turkey by displacing electricity from fossil fuel based power plants;
- Creation of jobs in Turkey and in the region during construction and operation phases;
- Support to local economy by procuring available services (like subcontractors) and equipment (like cables, masts and transformer for the transmission line, turbine blades, general construction material, etc.) locally;
- Support to technology and know how transfer and development of the renewable energy sector in Turkey.

ADDITIONAL REQUIREMENTS FOR THE GOLD STANDARD:
Sustainable Development Screen:
The project shows mainly positive scores according to the Gold Standard sustainability screen. Eight neutral and no negative scores have been found. The total score of the Gold Standard sustainable development screen amounts to +4. For details please refer to the Annex 7.

A.3. Project participants:

Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Turkey (host)	Soma Enerji Elektrik Üretim A.Ş. (private entity)	No
Turkey (host)	Mavi Consultants – Sustainability Management Ltd. (private entity)	No

Soma Enerji Elektrik Üretim A.Ş. (private entity), the project operating company owned by Polat Enerji, shall be defined as the project participant representing both project owners. Contact details are given in Annex 1. Mavi Consultants act as carbon consultants for this project.

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

A.4.1.1. Host Party(ies):

Turkey

ADDITIONAL REQUIREMENTS FOR THE GOLD STANDARD:
Host Country Eligibility Check:
Turkey has ratified the Kyoto Protocol but does not have any emission reduction obligations and is eligible as a host country for Gold Standard VER projects.
The host country has been involved in the stakeholder consultation process. Please see Annex 7 for more details.

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

Manisa and Balıkesir Provinces

A.4.1.3. City/Town/Community etc:

Soma District: Kayrakaltı, Sultaniye, Bozarmut, Hamidiye, Tuzladağı, Tekeliışıklar, Kozluören villages
Kırkağaç District: Bademli village
Savaştepe District: Hıdırbalı, Yazören villages

A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page):

The Project location has a distance of 6-7,5 km to Savastepe, 13 km to Soma, 33 km to Balikesir and 93 km to Manisa.

The geographical location of the Project covers a wide area between 39^{o} 14’ N, 27^{o} 55’ E and 39^{o} 23’ N, 27^{o} 43’ E approximately. Please note that micrositing planning is not finalized and the turbine locations mentioned in the PDD are preliminary. Details about the geographical position of the Project Activity can be found in Annex 6.

Figure 1. Project Location

A.4.2. Category(ies) of project activity:

As per UNFCCC definition of sectoral scopes for CDM projects, the Project Activity is included in the Sectoral Scope 1, category "Energy Industries - Renewable Sources".

ADDITIONAL REQUIREMENTS FOR THE GOLD STANDARD:
Project activities eligible under the Gold Standard
The project activity falls under category "A.1. Renewable Energy (Electricity/Heat)", as specified in Appendix A of the Gold Standard VER Manual for Project Developers and is therefore eligible under the Gold Standard.

A.4.3. Technology to be employed by the project activity:

The Project Activity involves the generation of renewable energy from wind. It thereby displaces grid electricity that is partly generated from fossil fuel fired power plants. The wind-driven blades are connected to an electricity generator, which produces electrical energy and supplies it to the grid without storage.

Enercon, a German turbine manufacturer, has been selected as technology provider due to the quality of its products in terms of high reliability, grid friendliness, low maintenance requirements and low noise levels. The turbines will be delivered from Germany to the project site. Blades and masts will be produced in Turkey.

The Project includes gearless, variable speed, variable pitch control Enercon E44 wind turbines with an output of 900 kW and 44 m rotor diameter and Enercon E70 turbines with 2000 kW. The project activity is expected to supply 467,364 MWh of net electricity per year to the national grid via a 380 kV HV transmission line of 17 km at the Soma-B thermal plant transformer.

When the wind speed is low, the wind farm will draw some electricity from the grid, which has to be produced partly by fossil fuel fired power plants. Although power augmentation during such wind fluctuations may be necessary, these amounts are negligible and are already accounted for by considering only the net electricity generation of the Project.

ADDITIONAL REQUIREMENTS FOR THE GOLD STANDARD:

Gold Standard projects must result in technology transfer and/or knowledge innovation. Please refer to Annex 7 for Gold Standard information.

A.4.4 Estimated amount of emission reductions over the chosen crediting period:

The Project is estimated to export a net electricity amount of 467,364 MWh per year to the electricity grid, which will result in 296,667 tCO_2 of emission reductions annually. The total emission reduction over the 7-year crediting period is 1,897,692tCO_2, dispersed over years 2009-2017.

Table 1. Emission reductions of the project activity over the crediting period

Year	Annual estimation of emission reduction [tCO_2]
2009	19,614
2010	117,691
2011	296,667
2012	296,667
2013	296,667
2014	296,667
2015	296,667
2016	296,667
2017	277,053
Total emission reductions [tCO_2]	**1,897,692 tCO_2 over 7 years**
Annual average of estimated reductions over the crediting period [tCO_2]	**271,099**

The amount of VERs actually generated by the project will vary depending on the metered power supply of the project. The project is designed and planned according to 21 years crediting period. After the first crediting period of 7 years, project participants are planning to extend it 2 times more by undergoing the validation process again.

A.4.5. Public funding of the project activity:

There is no public funding and no Official Development Assistance (ODA) funding to be used for the project activity.

ADDITIONAL REQUIREMENTS FOR THE GOLD STANDARD:
ODA Additionality Screen:

Please refer to Annex 7 for Gold Standard information.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity:

The latest version of the approved CDM large-scale methodology ACM0002, Version 07 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (dated 14 December 2007) is applied for calculation of emission reductions. The ACM0002 methodology is hereafter referred to as the "baseline methodology".

For baseline emission calculations, ACM0002, Version 07 refers to the "Tool to calculate the emission factor for an electricity system", Version 01.

For additionality assessment, the "Tool for the demonstration and assessment of additionality", Version 05 is used, which is hereafter referred to as the "additionality tool".

All calculations in this section are performed in a conservative manner in order to avoid overestimation of generated emission reductions. The applied data is based on official, publicly available data.

B.2 Justification of the choice of the methodology and why it is applicable to the project activity:

The ACM0002 baseline methodology has been chosen because of the following reasons:

- The project activity consists of the installation of wind turbines, which will export electricity to the national grid system;
- The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available;
- The Project supplies electricity to the national grid and thereby displaces electricity from fossil fuel based power plants connected to the grid.

B.3. Description of the sources and gases included in the project boundary

The greenhouse gases and emission sources included in or excluded from the Project boundary are:

Table 2. Emission sources included or excluded from the Project boundary.

Source		Gas	Included?	Justification / Explanation
Baseline	CO_2 emissions that are displaced due to the Project Activity from electricity generation in fossil fuel fired power plants connected to	CO_2	Yes	Main emission source. The dominant emissions from power plants are in the form of CO_2, therefore CO_2 emissions from fossil fuel fired power plants connected to the grid will be accounted for in baseline calculations.

	national grid	CH_4	No	Minor emission sources. This is conservative.
		N_2O	No	
Project Activity	Emissions as a result of Project Activity	CO_2	No	Minor emission source. As suggested by the baseline methodology, project emissions (PE_y) are assumed to be 0 and will not be considered.
		CH_4	No	
		N_2O	No	

B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

The project activity consists of the installation of a new grid-connected renewable power plant. The respective baseline scenario would be the generation of grid-connected power, which would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

The project activity is a green field investment, which does not modify or retrofit any existing electricity generation facility. The emission factors are calculated with the recent data available at the date of PDD compilation. The additionality methodology consists of the following steps;

- Identification of alternatives to the project activity;
- Investment analysis to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible;
- Barriers analysis; and
- Common practice analysis.

STEP 1. Identification of alternatives to the project activity consistent with current laws and regulations

This step involves the definition of realistic and credible alternatives to the project activity that can be part of the baseline scenario.

Sub-step 1a. Define alternatives to the project activity:

The Project involves the generation of electricity and sales of VER credits. It will help Turkey to stimulate and commercialise the use of grid connected renewable energy technologies and markets. The two alternatives identified to the project activity are;

Alternative A. The proposed project activity will be undertaken without the generation and sale of VER credits.

- The revenues derived from the sale of voluntary emission reductions have been included in the financial feasibility analysis and preliminary negotiations with the bank, and the investment decision relies upon carbon trading. Since the project is not feasible for project participants without the sales of VER credits due to its low IRR, the Project will not be realized and this alternative cannot be considered as the baseline scenario. These statements will be further elaborated within the framework of a barrier analysis in Section B.5.

Alternative B. Continuation of the current situation: The project activity is not realized and investors do not take any actions.

- In this alternative, the same amount of electricity to be produced by the project activity will be generated by other power plants connected to grid, where the energy mix is dominated by fossil fuel fired power plants.

No realistic and credible alternative scenarios to the proposed project activity can be identified that deliver electricity with comparable quality, properties and application areas. Thus, no other alternatives other than both above mentioned alternatives have been considered as potential baseline scenarios.

Outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity.

Alternative B is identified as the baseline scenario, since Alternative A is not applicable, which will be further elaborated in Section B.5. According to the baseline scenario, the electricity delivered to grid will continue to be fed by a power plant portfolio, which is highly fossil fuel dependent and CO_2 intensive (see figures below).

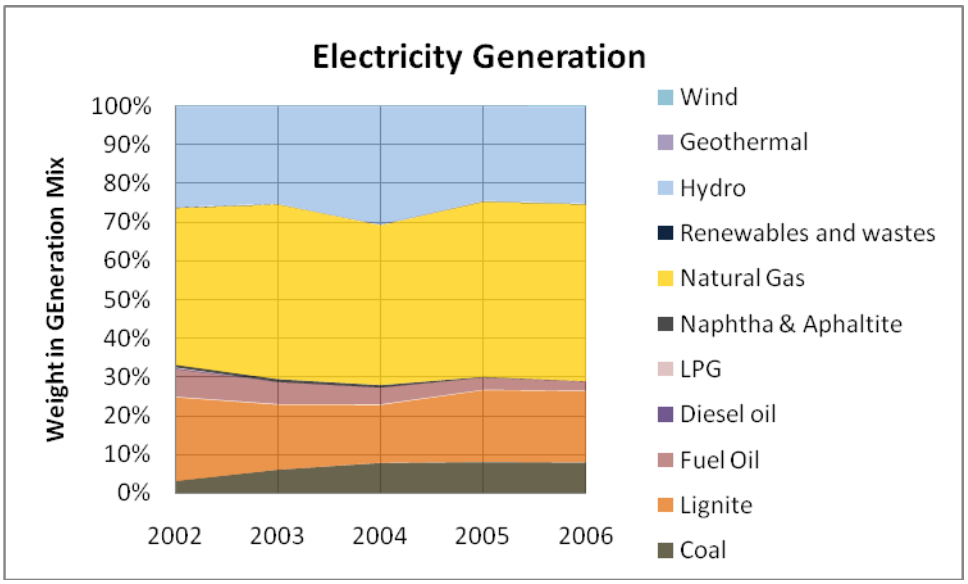

Figure 2. Electricity generation mix in Turkey[1]

[1] Based on TEİAŞ data, http://www.teias.gov.tr/istatistik2005/39.xls, http://www.teias.gov.tr/ist2006/36(06).xls .

Figure 2 shows the current practice of electricity generation in Turkey; the weight of fossil fuels in electricity generation has been around 70-75% for the last five years and is not expected to change much in the future as highlighted in Figure 2.

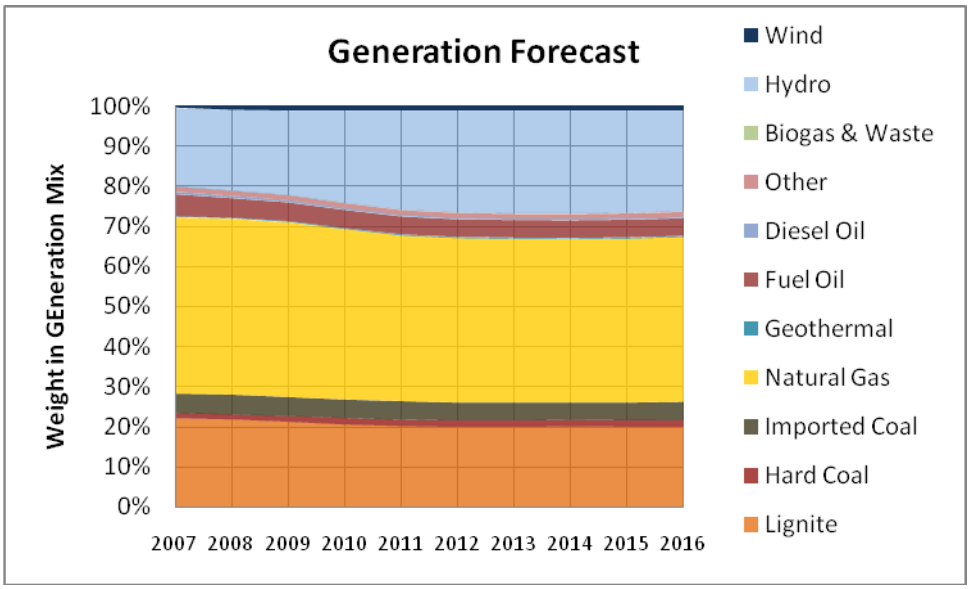

Figure 3. Electricity Generation Forecasts[2]

The official forecasts as displayed in Figure 3 suggest that in the future power generation in Turkey will be dominated by fossil fuel sources covering more than 70% of the overall electricity supply. In this framework, the continuation of the current situation (Alternative B) would mean carrying on this fossil fuel dominated trend.

The same forecasts show that wind energy is expected to cover around 1% of Turkey's electricity demand during 2007-2016. Thus, wind farm projects most likely will not become business as usual in the near future.

Sub-step 1b. Consistency with mandatory laws and regulations

Both alternatives as well as the project activity are subject to the following laws;

Relevant Laws	**Number / Enactment Date**
Electricity Market Law	Nr. 4628 / 03.03.2001
Energy Efficiency Law	Nr. 5627 / 02.05.2007
Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy	Nr. 5346 / 18.05.2005
Environmental Law	Nr. 2827 / 11.08.1983

[2] TEİAŞ capacity projection 2007-2016, p.30, (http://www.teias.gov.tr/projeksiyon/projeksiyon%20Temmuz2007.pdf)

There are various regulations in connection with these laws as well. The mandatory preliminary permits will be obtained by the Project during the GS VER validation process, showing that it is in compliance with the current laws and regulations. Turkey did ratify the Kyoto Protocol but has no national legal binding emission reduction goals for power plants. Hence, both alternatives, A and B, are consistent with the applicable legislation.

Outcome of Step 1b: As mentioned above, if the project activity is not feasible and will not be realized, project participants do not have an alternative investment plan that would generate electricity with a comparable quality and similar amount. Alternative A cannot be considered as a plausible scenario because of financial, investment, technological and prevailing practice barriers that would prevent the project activity from being implemented, which will be further elaborated under Section B.5. Therefore, the only plausible baseline scenario to the Project is Alternative B: the continuation of the current situation without realization of the proposed Project Activity.

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 CDM project activity (assessment and demonstration of additionality):

For the demonstration of additionality, a barrier analysis or an investment analysis, or both can be conducted. Barrier analysis is applied.

STEP 2. Investment Analysis

The Investment Analysis is not applied.

STEP 3. Barrier Analysis

This analysis determines whether the proposed project activity faces barriers that:

- Prevent the implementation of this type of proposed project activity; and
- Do not prevent the implementation of at least one of the alternatives.

Sub-step 3a. Identify barriers that would prevent the implementation of the proposed project activity:

Investment -, technical -, prevailing practice - and other barriers are explained below for the scenario identified as Alternative A, which assumes that the project activity being implemented without consideration of revenues from VER credits;

(a) Investment barriers

- As of PDD development date, no similar wind energy project has been taken into operation without VER credits in Turkey.
- Access to finance: Although being one of the leading and reputable renewable energy companies in Turkey, the project participants have experienced some difficulties in securing the finance for the Project because of the following reasons;

- Country Risk: Turkey faces a relatively high volatility of its economy[3]. The associated country credit ratings of Turkey lead to higher interest rates for debt financing, since commercial risks affect expected returns. This perception results in elevated financing costs for wind projects and a more selective approach by banks for their financing decision. As of March 2010, the Project Owner has not found a loan covering the whole Project, although the construction has begun. However, carbon development services for the Project activity date back to 2007. A commercial loan agreement has been signed for one of the Project phases, which is being used partially. The Project Owner still continues discussions for the loan regarding the other Project phases. This clearly suggests that the Project faces difficulty in finding finance for the Project.
- Long Payback Period: As a result of higher debt interest rates and initial investment requirements, inter alia, wind farm investments in general have long payback periods, low IRR[4] and ADSCR[5]. This creates difficulties in accessing finance for wind projects where their insufficient financial performance can be associated with low electricity prices, inter alia due to political reasons, competition with fully-depreciated old public power plants which do not reflect the real cost of electricity generation onto prices, etc. These difficulties have also been described by the financing bank with a letter, which has been submitted to the DOE. This bank letter suggests that carbon revenues are included in the evaluations and that the ADSCR is only sustainable with VER revenues. The letter further states that the bank has considered carbon revenues for the credit evaluation and that it supports the use of carbon credits to achieve the necessary creditworthiness of the project. This letter proves sufficiently that the Project needs carbon revenues to be realized and that the bank considers these revenues in its own evaluations.
- Lack of Project Finance: Securing project financing -which is a common tool for financing wind farms- for a wind farm project in Turkey poses significant challenges and difficulties, which is related to poor financial parameters of wind energy projects (without the income from sales of VER credits) and lack of experience of local banks with project financing. Considering the commercial loan, the annual debt service cover ratio (ADSCR) was the main concern of the bank, as also confirmed by the bank letter, as referred above.

(b) Technological barriers

- Technology Transfer: Turkey is a developing country and technology / know how transfers are significant factors for a sustainable development. Successful wind farm implementations in Turkey will enable a faster expansion of the local renewable energy market. However, since the wind energy market is underdeveloped in Turkey, the procurement of specific services and equipments in Turkey is difficult, at least at a desired level of quality. A significant portion of the required technology must therefore be imported.

[3] As a result of relatively high foreign trade and current account deficits and high public debt to GDP ratio, inter alia.
[4] Internal Rate of Return.
[5] Annual Debt Service Cover Ratio.

- Transmission System: Electricity generation from wind is by its nature more variable depending on the wind speed, which creates supply fluctuations as opposed to conventional power plants, which have a more predictable and controllable generation pattern. The transmission system has to offset oversupply or shortage by wind farms and balance the electricity fed to the national grid regulating other power plants. Although the Renewable Energy Law Nr. 5346 privileges and prioritizes renewable energy projects for transmission line connection, the actual practice is different. TEİAŞ allocates low capacities for wind farms at transformer stations, which poses a significant barrier to wind projects.
- Lack of Skilled Labour: Skilled and properly trained technical staff in the construction and operation of wind farms is unavailable in Turkey, which causes difficult maintenance and operation conditions and a considerable risk of underperformance. Experienced staff is crucial for wind farms, as any malfunctioning, disrepair or poor maintenance of wind turbines may result in long and costly interruptions in electricity generation.

(c) Other Barriers

- Legal and bureaucratic difficulties: The first licensing application for the Project has been submitted on 03.09.2002 to EMRA. Following the first application, all documents additionally requested by EMRA have been submitted on 26.11.2002. Following an inspection and examination period for more than 3 years, an information and permit update has been requested by EMRA on 31.05.2006. The license has been obtained on April 4th, 2007. Apart from this aspect, a recent stay of execution judgement regarding a law concerning forestry areas resulted in an abrupt halt of some energy projects in Turkey, which shows the unforeseeable nature of legal, political and bureaucratic risks investors are faced with. However, this stay of execution judgement has been lifted later on, thus legally the project is compliance with regulations.
- Governmental Policies: Considering the foreseen electricity supply shortage[2], the Turkish Government has set out some incentives for the promotion of power generation. Some of these incentives are particularly in favour of nuclear and fossil fuel-fired power plant investments, which constitute investment barriers for the Project as explained in Table 3 below;

Table 3. Some of new support mechanisms in favour of conventional energy sources

Applicability / Legal Reference	**Law Clause Description**	**Explanation**
Nuclear power plants (Law on Establishment and Operation of Nuclear Power Plants and Sales of Energy, Enactment date 20.11.2007)	Public-Private Partnership model	This clause enables private nuclear power plant investors to form PPP's and thus minimize their associated political and financial risks. This is not the case for renewable energy projects.
	Electricity purchase guarantee up to 15	This period is longer than the purchase guarantee period given to electricity generated by renewable resources,

	years	making nuclear energy investments more attractive.
	No sales price cap for the generated electricity	There is *no* upper price cap for nuclear energy (contrary to renewable energy), making nuclear power plant investments more attractive.
	Various other supports	Nuclear power plants are supported in terms of free land allocation, incentives for staff training and know how transfer etc., which are not available for renewable energy projects.
Coal fired power plants (Law on Establishment and Operation of Nuclear Power Plants and Sales of Energy, Enactment date 20.11.2007)	Electricity purchase guarantee up to 15 years	This period is longer than the guarantee given to renewable resources and makes the financing of high-capacity coal fired power plants more attractive.
Liquid fuel fired power plants (planned - amendment draft for the Electricity Market Law Nr. 4628)	ÖTV[6]-exemption of liquid fuels used in power plants	If this amendment draft is accepted, it will lower the operational costs of liquid fuel fired power plants, making these investments more attractive.

These laws suggest that the government does not prioritize electricity generation from renewable resources over others. There exist no official medium- or long-term strategies or any agenda for the development or support of renewable energies in Turkey, except the renewable energy law of 2005, which is negligible in terms of investment incentives in comparison to the laws described in Table 3. This uncertainty about future renewable energy policies creates significant risks and obstacles for potential investors.

- Project-specific licensing barriers: The generation license sets out that the Project Activity starts operation in 40 months, the first 16 months of this period being allowed for preparations. The Project Activity has to start until 04.12.2011, and if this schedule cannot be met, the license may be cancelled by EMRA. This schedule puts a time pressure and certain risks.
- Logistic Barriers: Transportation of wind turbines and construction of wind farms require special machinery and equipment to be brought to the Project site, which is inaccessible under normal conditions by vehicle. The local infrastructure poses some challenges such as insufficient roads and difficult terrain for equipment transportation and construction, therefore new roads capable of carrying heavy trucks will be built. This may add up certain delays and associated costs. Construction of roads is planned in order to be able to carry the wind turbines.

[6] Excise tax.

Table 4. Timeline of the Project

Date	Action
1995-1996	Wind measurement in the Project area is initiated by Demirer Enerji and project development is continued afterwards
03.03.2001	Liberalization of the electricity market
18.05.2005	Renewable Energy Law is passed
04.04.2007	Electricity generation license is obtained
28.08.2007	Board decides the use of carbon revenues
11.09.2007	The Ministry of Environment grants the Project exemption from EIA
March 2008	First draft PDD for the Project is prepared
06.05.2008	The Project is validated
01.06.2008	Carbon development agreement is signed with carbon consultants[7]
10.10.2008	Mobilisation for road construction is initiated (Starting date of the Project)
02.12.2008	Turbine order for 88 turbines is signed
04.12.2008	Partial loan agreement is signed
April 2009	Turbine installation has started
08.05.2009	Turbine order for 88 turbines is revised (regarding tower type and height)
05.09.2009	18 MW of the Project becomes operational
10.03.2010	Total installed capacity reaches 49.5 MW.
12.04.2010	Turbine order for the remaining 31 turbines is signed.

Outcome of Step 3a: The identified barriers are sufficient grounds for demonstration of additionality since they prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a VER project activity. The barriers mentioned above prevent the realization of Alternative A (the proposed Project Activity undertaken without VER credits).

Sub-step 3b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)

Identified barriers explained in Sub-step 3a would not prevent the implementation of the Alternative B, which is mainly the continuation of fossil fuel and hydro power plant construction because of the following reasons:

[7] Carbon consultants have begun working on the Project before a formal agreement was signed

- Investment Barriers: Investment barriers partly affect ongoing power plant investments; however as the current practice of financial institutions also shows, fossil fuel powered power plant investments often face considerably lower investment barriers as a result of:
    - Smaller initial investment volumes compared to similar-capacity renewable energy projects
    - Familiarity of financiers, investors and authorities
    - Support mechanisms (e.g. given in Table 3) specifically in favour of conventional power plants
- Technological Barriers: Large hydro - and fossil fuel fired thermal power plants, which constitute a big portion in the installed capacity forecasts, utilize conventional technologies, which are well known and mature. In Turkey there are technically competent equipment suppliers, technical planners, contractors, maintenance staff etc. regarding such investments. Therefore the continuation of the current situation does not involve any identifiable technological barriers.
- Prevailing Practice: This alternative already involves the current practice and is therefore not applicable.
- Other Barriers: In general, there is an oversupply of imported natural gas in Turkey because of Turkey's international take-or-pay purchase contracts. Therefore, the national energy policy supports the expansion of natural gas networks stimulating the demand. Furthermore, the Turkish energy policy is based on a strategy acting as an energy bridge between the Eastern and the Western oil and gas markets, thereby securing its own fossil fuel supply and gaining strategic position in the global energy market. This strategy prioritizes fossil fuels at political levels, whereby renewable resources and their strategic importance are seen as secondary.

These reasons stated above prevent Alternative B being affected by the barriers, whereas these barriers seriously affect the Alternative A.

STEP 3. Common Practice Analysis

Common Practice Analysis checks whether the proposed project type has already diffused in the relevant sector and region.

Sub-step 4a. Analyze other activities similar to the proposed project activity

As far as similar activities to the Project are concerned, wind power plants under IPP[8] model with comparable installed capacities can be identified.

As of May 30th, 2008, 2008, EMRA has issued 79[9] wind farm projects a generation license (total capacity 2.919,4 MW). 13 of them are in operation (total capacity 249,35 MW) and 4 of them are under construction (total capacity 226,8 MW). The progress of the remaining wind farm projects is unknown, and several licenses and license applications have been cancelled due to various reasons in the past by

[8] Independent Power Producer

[9] EMRA Website, http://www.epdk.gov.tr/lisans/elektrik/yek/yeklisansgeneltablo.xls

EMRA. This illustrates that there is a low correlation between wind power project license ownership and project implementation and that implementation of wind power projects in Turkey is rather difficult.

EMRA has prohibited wind power license applications for an unknown period of time for an unknown reason. On November 1, 2007, the prohibition on wind farm license applications has been lifted by EMRA only for one day, and a big volume in applications has been observed. However, there have been several multiple overlapping applications for the same locations. As fees and technical requirements for the license applications are minimal, this intensive interest of applicants can be associated with:

- Obtaining licenses by companies aiming to sell their license to third parties
- Creation of a project portfolio for a potential future use
- Precaution against future uncertainty by applying for non- or semi-developed projects
- Prevention of competitors reserving attractive wind farm locations

In the past, a significant percentage of applications and granted licenses have either been rejected or cancelled later, therefore the available licenses have a low realization implication. Based on these arguments and recent experience, these recent license applications have not been considered to be significant.

Sub-step 4b. Discuss any similar options that are occurring

As discussed above, wind farms are not common practice in Turkey, as their share in overall electricity generation is and will be under 1% according to official projections. Although wind farm projects in Turkey face various barriers besides economic ones, their realization chance can be improved by the sales of VERs, which would offset some of their difficulties by means of better feasibility figures.

As of May 30th, 2008, the list of wind parks in operation and under construction is given below;

Table 5. Wind farms in operation[10]

Location	Company	Operational Start	Installed Capacity [MW]	Business Model
İzmir-Çeşme	Alize A.Ş.	1998	1,5	IPP*
İzmir-Çeşme	Güçbirliği A.Ş.	1998	7,2	BOT
Çanakkale-Bozcaada	Bores A.Ş.	2000	10,2	BOT
İstanbul-Hadımköy	Sunjüt A.Ş.	2003	1,2	Autoproducer
Balıkesir-Bandırma	Bares A.Ş.	I/2006	30	IPP-VER
İstanbul-Silivri	Ertürk A.Ş.	II/2006	0,85	IPP
İzmir-Çeşme	Mare A.Ş.	I/2007	39,2	IPP[11]-VER
Manisa-Akhisar	Deniz A.Ş.	I/2007	10,8	IPP-VER
Çanakkale-İntepe	Anemon A.Ş.	I/2007	30,4	IPP-VER
Çanakkale-Gelibolu	Doğal A.Ş.	II/2007	14,9	IPP-VER
Hatay- Samandag	Deniz A.Ş.	I/2008	30	IPP-VER

[10] Source: EMRA Website, http://www.emra.gov.tr/lisans/elektrik/yek/ruzgarprojeleriningelisimi.xls.
[11] Independent Power Producer.

Manisa- Sayalar	Dogal A.Ş.	I/2008	30,6	IPP-VER
İzmir- Aliaga	Innores A.Ş.	I/2008	42,5	IPP-VER
Total			**249,35**	

*former autoproducer

Table 6. Wind farms under construction

Location	Company	Operational Start	Installed Capacity [MW]	Business Model
İstanbul-Gaziosmanpaşa	Lodos A.Ş.	I/2008	24	IPP-VER
İstanbul-Çatalca	Ertürk A.Ş.	I/2008	60	IPP-VER
Balıkesir-Şamlı	Baki A.Ş.	I/2008	90	IPP-VER
Muğla-Datça	Dares A.Ş.	II/2008	28,8	IPP-VER
Total			**226,80**	

The first wind farms in operation have been realized under "BOT[12]" or "autoproducer" models. Autoproducers generate electricity primarily for their own electricity consumption, and they are allowed to feed a limited portion of their generation to the grid. The BOT model is not applicable in Turkey anymore, as the existent BOT projects have special contracts with the government and will be handed over to the government after a certain period of time. Since BOT projects are realized based upon governmental purchase guarantee containing project-specific conditions, they are not comparable to IPP projects, where liberal market conditions apply.

As BOT and autoproducer wind farms are not completely liberal electricity market players and are limited in terms of number and installed capacity, they are not considered as common practice nor similar projects.

After the "liberalization" of the electricity market, which is still in a transformation period, investors have been allowed to build and operate their own power plants for electricity production and sales to the national grid as IPPs. As of now, two wind farms (1,5 MW İzmir Çeşme and 0,85 MW İstanbul Silivri) are either operated or under construction without the sales of VERs, which can be considered as outliers in terms of number, business model (BOT) and scale. All the other wind farms in operation have undergone a VER procedure for facilitating additional revenues enabling the realization of projects.

Since wind energy constitutes a very limited portion of the Turkish electricity market, the Project Activity goes beyond of "business as usual" scenario and cannot be considered as a common practice. As a result, the Project is considered to be additional.

ADDITIONAL REQUIREMENTS FOR THE GOLD STANDARD:
Gold Standard Additionality Screen

In addition to the UNFCCC Additionality Tool, the Gold Standard Additionality Screen includes a Previous Announcement Check and ODA Additionality.

[12] Build-Operate-Transfer

Please refer to Annex 7 for Gold Standard information.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

The Project mainly involves electricity capacity addition, which reduces CO_2 through the substitution of grid electricity generation with fossil fuel fired power plants by renewable electricity. According to the baseline methodology, the emission reduction ER_y by the project activity during a given year y is found as;

$$ER_y = BE_y - PE_y - LE_y \quad (1)$$

where BE_y is calculated as;

$$BE_y = (EG_y - EG_{baseline}) * EF_{grid,CM,y} \quad (2)$$

The operation margin refers to a cohort of power plants that reflect the existing power plants whose *electricity generation* would be affected by the proposed project activity. The build margin refers to a cohort of power plants that reflect the type of power units whose *construction* would be affected by the proposed project activity.

The combined emission factor $EF_{grid,CM,y}$ for the project activity is calculated as a weighted average of Operating Margin emission factor and Build Margin emission factor as described in the baseline methodology;

$$EF_{grid,CM,y} = w_{OM} * EF_{grid,OM,y} + w_{BM} * EF_{grid,BM,y} \quad (3)$$

Definitions and explanations regarding the equations (1), (2) and (3) are given in Table 11.

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

Data / Parameter:	**$GEN_{i,y}$**
Data unit:	GWh
Description:	The gross electricity generation by fuel type i in year y (2002-2006)
Source of data used:	Turkish Electricity Transmission Company (TEİAŞ) website http://www.teias.gov.tr/istatistik2005/39.xls (2002-2005)

	http://www.teias.gov.tr/ist2006/36(06).xls (2006)
Value applied:	Table 7. Gross and Net Electricity Generation [GWh] in Turkey
Justification of the choice of data or description of measurement methods and procedures actually applied :	TEİAŞ annually publishes official data regarding electricity generation. Average share of each source in the overall generation has been calculated.
Any comment:	

Data / Parameter:	**Net Electricity Generation$_y$**
Data unit:	GWh
Description:	The difference between the total quantity of electricity generated by power plants/units and the auxiliary electricity consumption of power plants/units.
Source of data used:	Turkish Electricity Transmission Company (TEİAŞ) website http://www.teias.gov.tr/ist2006/30(84-06).xls (2002-2006)
Value applied:	See Table 7. Gross and Net Electricity Generation [GWh] in Turkey
Justification of the choice of data or description of measurement methods and procedures actually applied :	TEİAŞ annually publishes official data regarding *total* net electricity generation, but its *breakdown* by fuel type is unavailable.
Any comment:	

Data / Parameter:	**Net Delivery Ratio$_y$**
Data unit:	-
Description:	The ratio of the total Net Electricity Generation to the total Gross Electricity Generation in year y.
Source of data used:	Net Electricity Generation and Gross Electricity Generation data from http://www.teias.gov.tr/ist2006/30(84-06).xls http://www.teias.gov.tr/istatistik2005/39.xls (2002-2005)

	http://www.teias.gov.tr/ist2006/36(06).xls (2006)
Value applied:	See Table 7. Gross and Net Electricity Generation [GWh] in Turkey
Justification of the choice of data or description of measurement methods and procedures actually applied :	Electricity delivered to the grid by power plant/unit or by fuel source is unavailable. The Net Delivery Ratio$_y$ is used for approximating the net electricity amount delivered to the grid by power plants/units except lc-mr sources (GEN$_y$)
Any comment:	This is a conservative assumption, since in general thermal power plants consume more energy for auxilaries than e.g. hydro plants. It leads to higher net electricity amounts and lower emission reductions consequently.

Data / Parameter:	**GEN$_y$**
Data unit:	GWh
Description:	The net electricity delivered to the grid in year y
Source of data used:	Calculation (for each year y): 1. Gross electricity generation excluding lc-mr sources = Total gross electricity generation from all sources - total gross electricity generation from lc-mr sources 2. Net electricity generation excluding lc-mr sources = Gross electricity generation except lc-mr sources * Net Delivery Ratio 3. Net electricity delivered to the grid except lc-mr sources = Net electricity generation except lc-mr sources + Imports
Value applied:	Table 14. Electricity Supply to Grid Equation (4)
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	**FC$_{i,y}$**
Data unit:	ton or 1000 m^3

Description:	Total amount of fossil fuel type i consumed by power plants/units in year y
Source of data used:	Turkish Electricity Transmission Company (TEİAŞ) website http://www.teias.gov.tr/istatistik2005/46.xls (2002-2005) http://www.teias.gov.tr/ist2006/43.xls (2006)
Value applied:	Table 15. NCVs and Emission Factors of Fuels
Justification of the choice of data or description of measurement methods and procedures actually applied :	Fuel consumption breakdown by power plant/unit is unavailable, total consumption amounts are published annually by TEİAŞ. These data are used together with $HV_{i,y}$ for calculating the NCV of each fuel type i.
Any comment:	The total amount of fossil fuels consumed by power plants/units also includes supplementary firing in cogeneration plants for seasonal heat generation. Since detailed information is unavailable, it could not have been filtered out. However, most power plants do not utilize excess heat and this effect can be neglected. Wood waste, liquid sulphur, black liquor, bitumen pyrite, sulphur cake, coke gas, coke oven gas, black furnace gas and refinery gas amounts are not included in the official data, which is a conservative approach as well.

Data / Parameter:	**$HV_{i,y}$**
Data unit:	Tcal
Description:	Heating values of fuels consumed in thermal power plants in Turkey by the electric utilities
Source of data used:	http://www.teias.gov.tr/istatistik2005/47.xls http://www.teias.gov.tr/ist2006/45.xls
Value applied:	Table 15. NCVs and Emission Factors of Fuels
Justification of the choice of data or description of measurement methods and procedures actually applied :	These data are used together with $FC_{i,y}$ for calculating the $NCV_{i,y}$.
Any comment:	The publicly available data do not sub-categorize the coal amount by type for 2006. For harmonization with guideline reference figures, "hard coal" is assumed as *sub-bituminous coal* and "imported coal" is assumed as *other-bituminous coal*, which have similar corresponding NCVs.

Data / Parameter:	$NCV_{i,y}$
Data unit:	TJ/kt or TJ/milion m^3
Description:	Net calorific value of fossil fuel type i in year y
Source of data used:	Net calorific values of fuels used for power generation are not provided directly, but they are calculated by dividing $HV_{i,y}$ by $FC_{i,y}$, both of which are officially published.
Value applied:	Table 15. NCVs and Emission Factors of Fuels
Justification of the choice of data or description of measurement methods and procedures actually applied :	Since NCVs can be calculated, IPCC guideline figures are not used.
Any comment:	2006 breakdown of fuel consumption data do not differentiate between coal types. 2006 hard coal consumption of IPPs and autoproducers are regarded as other-bituminous coal, which do not distort the NCV figures.

Data / Parameter:	$EF_{CO2,i,y}$
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor of fossil fuel type i in year y
Source of data used:	The lower limits of the 95% confidence interval stated in the "2006 IPCC Guidelines for National Greenhouse Gas Inventories", Volume 2, Chapter 1 (energy) Table 1.4.
Value applied:	Table 15. NCVs and Emission Factors of Fuels Table 9. CO2 Emissions of Recent Capacity Additions by Fuel Type
Justification of the choice of data or description of measurement methods and procedures actually applied :	Emission factors are locally not available for Turkey, and there exist no national or regional average default figures, therefore industry guidelines are used instead.
Any comment:	

Data / Parameter:	EI_y
Data unit:	GWh
Description:	Net electricity imports delivered to the grid in year y
Source of data used:	Turkish Electricity Transmission Company (TEİAŞ) website

	http://www.teias.gov.tr/ist2006/23.xls
Value applied:	Table 14. Electricity Supply to Grid
Justification of the choice of data or description of measurement methods and procedures actually applied :	This is the total electricity imported and delivered to the national grid from connected electricity systems (neighbour countries).
Any comment:	

Data / Parameter:	**Electricity Capacity Additions**
Data unit:	-
Description:	Power plants which are most recently taken into operation
Source of data used:	Turkish Electricity Transmission Company (TEİAŞ) TEİAŞ Capacity Projection 2007-2016 Study http://www.teias.gov.tr/istatistik2005/7.xls http://www.teias.gov.tr/istat2004/7.xls http://www.teias.gov.tr/istatistik/7.xls
Value applied:	Table 18. Recent Capacity Additions 2003-2006
Justification of the choice of data or description of measurement methods and procedures actually applied :	Average generation values are used for hydro power plants. Since capacity additions between 2004-2006 are not sufficiently large, a natural gas / naphtha power plant has been included as well, which was taken into operation in year 2003.
Any comment:	As the methodology suggests, isolated and retrofitted power plants/units as well as performance revisions are not regarded.

Data / Parameter:	$\eta_{m,y}$
Data unit:	%
Description:	Average net energy conversion efficiency of power unit m in year y
Source of data used:	UNFCCC methodological tool “Tool to calculate the emission factor for an electricity system” Annex I
Value applied:	Table 9. CO2 Emissions of Recent Capacity Additions by Fuel Type
Justification of the choice of data or	The tool defines the source data as follows: • Documented manufacturer’s specifications (if the efficiency of the plant is not

description of measurement methods and procedures actually applied :	significantly increased through retrofits or rehabilitations); or • Data from the utility, the dispatch center or official records if it can be deemed reliable; or • The default values provided in Annex 1 (of the tool). There is no official efficiency values available based on each power plant or each fuel type in Turkey. Most natural gas power plants in Turkey are combined cycle, most coal power plants operate sub-critical and most liquid fuel power plants adopt an open cycle technology.
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

STEP 1. Identify the relevant electric power system

A *project electricity system* is defined by the *spatial extent* of the power plants that are physically connected through transmission and distribution lines to the project activity and that can be dispatched without significant transmission constraints.

There is no officially available and published delineation of the project electricity system and connected electricity systems for Turkey. In the Turkish electricity system, power plants can be dispatched without significant transmission losses. In this respect, the spatial extent of the Project Boundary is defined as the *national electricity grid* of Turkey.

Some power plants, which are not connected to the national grid and are operated stand-alone, are included in the project boundary, since no detailed data are available to filter them out. However the share of these stand-alone power plants in overall gross generation is negligibly small[13]. These are some of the so-called *autoproducers*, who mostly cover their own seasonal energy demand peaks with their own stand-alone thermal power plants.

[13] Around 0,2% for recent years (http://www.teias.gov.tr/istat2004/44.xls, http://www.teias.gov.tr/istatistik2005/45.xls, http://www.teias.gov.tr/ist2006/41.xls)

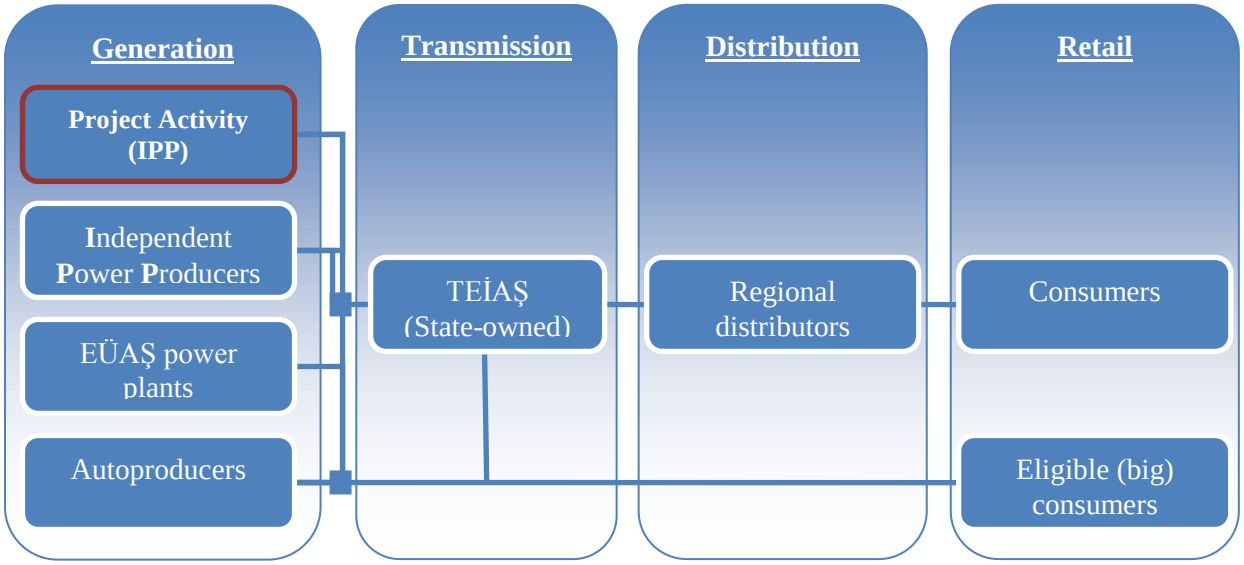

Figure 4. Overview of the Turkish electricity system

construction is not considered in BM emission factor calculations.

Turkey imports electrical power from and exports to neighbour countries[14], which are defined as *connected electricity systems* for the Project. According to the baseline methodology, imports are regarded as a power source delivering electricity to the grid with an OM emission factor of 0 tCO_2, since electricity being imported is purchased from connected electricity systems located in other countries.

STEP 2. Select an operating margin (OM) method

There exists no nuclear power plant in Turkey, and there is no indication that coal or lignite are obviously used as must-run. Hydro, geothermal, wind power plants and other renewables are included as low-cost/must-run resources, hereafter referred as lc-mr, which turns out to be 26,5% of the total electricity generation on average between years 2002 and 2006:

Table 7. Gross and Net Electricity Generation [GWh] in Turkey

	2002	2003	2004	2005	2006	Avg. Share
Coal	4,093	8,663	11,998	13,246	14,217	6.7%
Lignite	28,056	23,590	22,450	29,946	32,433	18.0%
Fuel Oil	9,505	8,153	6,690	5,121	4,232	4.6%
Diesel oil	271	4	7	3	58	0.1%
LPG	35	3	33	34	0	0.0%

[14] Since 2001: Exports to Georgia, Azerbaijan, Iraq, Syria. Imports from Bulgaria, Iran, Turkmenistan, Georgia. Sources: http://www.teias.gov.tr/ist2006/49.xls, http://www.teias.gov.tr/ist2006/47.xls

Naphtha & Asphaltite		933	1,036	940	326	50	0.5%
Natural Gas		52,497	63,536	62,242	73,445	80,691	43.6%
low cost-must run	**Renew, & Wastes**	174	116	104	122	154	0,1%
	Hydro	33,684	35,330	46,084	39,561	44.244	26,3%
	Geothermal	105	89	93	94	94	0,1%
	Wind	48	61	58	59	127	0,0%
Gross Total		129,400	140,581	150,698	161,956	176,300	**100%**
Gross Total, excluding lc-mr resources		95,389	104,985	104,360	122,120	131,681	**73.5%**
Net generation		123,727	135,248	145,066	155,469	169,543	
Net Delivery Ratio [%]		95.6%	96.2%	96.3%	96.0%	96.2%	

The baseline methodology allows a choice among four methods for the calculation of OM emission factor;

(a) Simple OM, or

(b) Simple adjusted OM, or

(c) Dispatch Data Analysis OM, or

(d) Average OM

There exist no publicly available data for the dispatch data analysis (c) or for the simple adjusted OM (b). Since the average share of electricity generation by lc-mr plants for five most recent years is found to be less than 50%, option (a) is chosen. The simple OM emission factor can be calculated using either of the two data vintages:

- *Ex-ante option*, where a 3-year generation-weighted average based on the most recent data is used. Monitoring and recalculation of the emission factor is not required, or
- *Ex-post option*, where the data of the year is used, in which the project activity displaces grid electricity. Yearly update of the emission factor is required.

The *ex-ante option* is selected to carry out the baseline methodology for the Project.

Official emission figures of Turkey submitted to UNFCCC are available for the time period 2002-2004[15]. No newer official emission figures have been published. Identification of the OM emission figures for a more recent time range requires calculations. Therefore, official 2004 CO_2 emissions data stemming from electricity generation are used directly, whereas 2005 - 2006 emissions are calculated.

STEP 3. Calculate the operating margin emission factor according to the selected method

[15] UNFCCC 2006 National GHG Emission Inventory. http://unfccc.int/resource/docs/natc/turnc1.pdf, p.244

The Simple OM emission factor is calculated as the generation weighted average CO_2 emissions per unit net electricity generation of all generating power plants serving the system, excluding lc-mr sources using one of the following approaches;

- Option A: Based on data on fuel consumption and net electricity generation of each power plant/unit, or
- Option B: Based on data on net electricity generation and the average efficiency of each power unit and the fuel types used in each power unit, or
- Option C: Based on data on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

Since power plant-specific data required by Options A and B are unavailable, Option C is selected. Option C can be used, as only renewable sources are considered as lc-mr power sources and the quantity of electricity supplied to the grid by these sources is known. According to the "Tool to calculate the emission factor for an electricity system";

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} * NCV_{i,y} * EF_{CO2,i,y}}{GEN_y} \qquad (4)$$

Definitions and details to the parameters in Equation (4) are given in Table 12. As a result, the Simple OM emission factor is found as below;

Table 8. Calculation of the OM emission factor

Parameter	2004	2005	2006
CO_2 Emissions [$ktCO_2$]	76,185[16]	74,426	82,787
GEN_y [GWh]	100,923	117,864	127,208
$EF_{grid,OMsimple,y}$ [tCO_2/MWh]	0.755	0.631	0.651
OM emission factor [tCO_2/MWh]	**0.679**		

STEP4. Identify the cohort of power units to be included in the build margin

In this step, a generation-weighted average emission factor is calculated based on a sample of power plants, which have been taken into operation recently. The sample group of power plants/units *m* used to calculate the build margin consists of either:

(a) The set of five power units that have been built most recently

(b) The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

[16] Official 2004 emission figure stemming from electricity generation activities (Source: Statistical Year Book 2006, page 20). Used directly since the identified lc-mr sources (mostly hydro) do not generate CO_2 emissions.

For conducting the calculations, option (b) is selected, because this option results in a larger electricity generation. In terms of vintage data, there are two options available:

Option 1: *"For the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period."*

Option 2: *"For the first crediting period, the build margin emission factor shall be updated annually, ex-post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex-ante, as described in option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used."*

Option 1 is selected.

The data of the most recent commissioned power plants are being published by the Turkish Electricity Transmission Company (TEİAŞ) on an annual basis. For build margin calculations, the power plants/units taken into operation between 2003 and 2006 are included in the cohort of power units. Performance revisions as well as power plants, which have been modified, retrofitted, dismantled or are stand-alone have been excluded from the samples list for the build margin calculations.

Total capacity additions between the years 2004 -2006 are not sufficiently large to constitute 20% of the system generation; therefore for the sake of conservative approach a natural gas fired power plant from 2003 capacity additions is included as well. The final sample group represents a total generation capacity addition of 35,329 GWh and exceeds 20% of the 2006 gross electricity generation, which is 176,300 GWh. Please see Annex 3 Table 18 for details.

STEP 5. Calculate the build margin emission factor

The build margin emission factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows;

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} * EF_{EL,m,y}}{\sum_m EG_{m,y}} \qquad (5)$$

The $EF_{EL,m,y}$ is found as;

$$EF_{EL,m,y} = \frac{EF_{CO2,m,i,y} * 3{,}6}{\eta_{m,y}} \qquad (6)$$

Definitions and explanations regarding Equations (5) and (6) are given in Table 13.

Table 9. CO_2 Emissions of Recent Capacity Additions by Fuel Type

Fuel Type	Generation of New Capacity Additions, GWh	Average Efficiency, η[17]	Emission Factor, tCO_2/TJ	CO_2 Emissions, $ktCO_2$
Coal	1,462.5	39.0%	89.5	1,208
Lignite	11,440.0	39.0%	90.9	9,599
Fuel Oil	565.3	39.5%	75.5	389
Diesel oil	4.1	39.5%	72.6	3
LPG	0.0	60.0%	61.6	0
Naphtha & Aphaltite	322.9	39.5%	69.3	204
Natural Gas	19,592.0	60%	54.3	6,383
Renewables and wastes	127.0	0%	0	0
Hydro	1,754.9	0%	0	0
Geothermal & Wind	60.4	0%	0	0
Total	**35,436**			**17,786**
Build Margin EF	**0.502**			

Power plant-specific data are unavailable in Turkey; therefore CO_2 emissions are calculated based on fuel type consumed in sample power plants/units. As data regarding electricity generation efficiency rates in Turkey are not available either, industry guidelines are used[18] in a conservative approach. When selecting the power plants, revisions and dismantled plants have been discarded, as the methodology suggests.

Using the Equation (5), the total CO_2 emissions (17,786 $ktCO_2$) of the sample power plants are divided by the total electricity generated (35,329 GWh), and the build margin emission factor $EF_{grid,BM,y}$ is found to be **0.502** tCO_2/MWh. Further information is available in Table 19.

STEP 6. Calculate the combined margin emissions factor

The combined margin emissions factor is calculated by using Equation (3);
$EF_{grid,CM,y}$ = 0.679 tCO_2/MWh * 0.75 + 0.502 tCO_2/MWh * 0.25 = **0.635 tCO_2/MWh**

Emission Reduction

The emission reduction is thus found by using Equations (1) and (2);

$ER_y = EG_y * EF_{grid,CM,y}$ = 467,364 MWh * 0.635 tCO_2/MWh = **296,667 tCO_2.**

[17] Source: Annex 1 of the "tool to calculate the emission factor for an electricity system"

18 This is a conservative approach, as "Best Available Techniques" may not always apply to recently built power plants. Furthermore, for power plants fuelled by multiple fuel types, the fuel type with lower emission factor has conservatively been assumed.

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

The outcomes of baseline calculations are summarized below;

Parameter	Definition	Value
$EF_{grid,OM,y}$	Operating Margin Emission Factor in year y	0.679 tCO_2/MWh
$EF_{grid,BM,y}$	Build Margin Emission Factor in year y	0.502 tCO_2/MWh
$EF_{grid,CM,y}$	Combined Margin Emission Factor in year y	0.635 tCO_2/MWh
EG_y	Net electricity delivered to grid by the Project	467,364 MWh/a
ER_y	Emission reduction in year y	296,667 tCO_2/a

The project has approximately generated 30,900 MWh electricity in 2009 and is expected to generate 185,409 MWh in 2010. Beginning with 2010, the project is expected to operate with full capacity. The emission reductions are therefore foreseen as below;

Table 10. Emission reductions of the project activity over the crediting period

Year	Annual estimation of emission reduction [tCO_2]
2009	19,614
2010	117,691
2011	296,667
2012	296,667
2013	296,667
2014	296,667
2015	296,667
2016	296,667
2017	277,053
Total emission reductions [tCO_2]	**1,897,692 tCO_2**
Total length of crediting period	**7 years**
Annual average of estimated reductions over the crediting period [tCO_2]	**271,099**

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

B.7.1 Data and parameters monitored:

Data / Parameter:	EG_y
Data unit:	MWh

Description:	Annual net electricity amount fed to the grid by the project activity
Source of data to be used:	Measured
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Estimated amount of annual electricity generation supplied to the grid is 467,364 MWh
Description of measurement methods and procedures to be applied:	There are two metering instruments (a primary and a backup) at the main switchgear station. These devices measure the net electricity supply to the national grid by the project activity, all losses before this point are on account of the project participant. Both metering instruments, which continuously monitor and measure the net electricity delivered by the project activity, are sealed and only accessible by TEİAŞ personnel.
QA/QC procedures to be applied:	Please see B.7.2
Any comment:	The annual emissions reductions will be updated by multiplying the ex-ante calculated baseline emission factor by the metering instrument readings.

ADDITIONAL REQUIREMENTS FOR THE GOLD STANDARD:
Data to be collected in order to monitor the project's performance on the sustainable development indicators:
The actual project performance must be assessed against the projected outcomes of the sustainable development assessment as defined in Section 3.4 of the Gold Standard Project Developer's Manual. Please refer to Annex 7 for Gold Standard information.

B.7.2 Description of the monitoring plan:

The monitoring plan involves the determination of the baseline emissions occurring within the project boundary during the crediting period. As the project boundary is defined as the national grid of Turkey, the baseline emissions from electricity generation activities in Turkey are calculated and monitored based on national official data.

The leakage during crediting period will be negligibly small and will not be monitored, as fossil fuel consumption during construction and operation of the project activity is minimal. As no significant change in sustainable development indicators is expected or foreseen, they will not be monitored.

Hence, the monitoring plan only involves the net electricity generation by the project activity;

- The two measurement instruments, which are located at the high voltage side of the main switchgear station (380 kV), are not accessible by the project participant or any other party except TEİAŞ. This prevents any intervention and assures the accuracy and quality of the measurements.
- The measurement instruments give two types of data; the total gross electricity generated and the total electricity consumed by the wind farm. The difference of these two data is the net electricity generated. Furthermore, TEİAŞ cuts a certain percentage of the generation to account for transmission losses. The net electricity generation, which is to be monitored and to be used for baseline emissions, is the net electricity generation, which is read by TEİAŞ for invoicing.
- At the end of each monitoring period, the data from the monthly meter readings will be added up to obtain the total monitoring period net electricity generation. This figure will be multiplied with the combined margin, which has been calculated ex-ante.

Annex 4 provides further information for monitoring.

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

This monitoring methodology and baseline study application was completed on 03.07.2008. Mavi Consultants is the carbon consultant for the project activity.

Contact Information of the project participants is given in Annex 1.

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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:

According to UNFCCC rules, the starting date should be chosen as the signature date of the loan agreement, or the equipment order, or the construction start, whichever is earlier. Timeline of the Project is as the following;

Date	Activity
10.10.2008	Mobilisation for road construction
02.12.2008	Turbine order date
04.12.2008	Signature date of loan agreement

The earliest of these activities is the construction start date. Therefore, the starting of the Project activity is 10.10.2008.

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

The project is expected to run for 30 years.

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

C.2.1. Renewable crediting period

The project will use a crediting period of 3 x 7 years.

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

The first crediting period starts on 05/09/2009.

C.2.1.2. Length of the first crediting period:

7 years.

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

N/A

C.2.2.2. Length:

N/A

SECTION D. Environmental impacts

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

For wind energy projects, generally no significant environmental impacts are foreseen. No Environmental Impact Assessment (EIA) has been performed for the following reasons:

- For wind farms in Turkey, an Environmental Impact Assessment report is officially not required. The copy of the document showing that EIA is legally not needed for the Project Activity is given in Annex 5.
- Environmental impacts of the project activity are not considered to be significant by the project participant, local stakeholders or the host country. No relevant comment suggesting potential negative environmental or social impacts has been expressed in the initial stakeholder consultation either. Please see Annex 8 for further details on the stakeholder consultation.

Therefore, no EIA is necessary and no relevant negative environmental or social impact is considered. For further details, please refer to the Gold Standard documentation in Annex 7.

ADDITIONAL REQUIREMENTS FOR THE GOLD STANDARD:
EIA Requirements
The Gold Standard prescribes an elaborate process in order to determine whether an Environmental Impact Assessment (EIA) needs to be undertaken.
Please refer to Annex 7 for Gold Standard information.

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:

N/A

SECTION E. Stakeholders' comments

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

ADDITIONAL REQUIREMENTS FOR THE GOLD STANDARD:
Public Consultation Process
The Gold Standard Public Consultation Process requires at least two public consultations and provides guidance on the content and procedures for the consultation process.
Please refer to Annex 8 for information on the public consultation process.

E.2. Summary of the comments received:

Please refer to Annex 8 for information on the Gold Standard public consultation process.

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

Please refer to Annex 8 for information on the Gold Standard public consultation process.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Soma Enerji Elektrik Üretim A.Ş.
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Represented by:	Ms. Lale Çapalov
Title:	Managing Partner
Salutation:	
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Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

There is no public funding in the project.

BİRİKİM
YEMİNLİ MALİ MÜŞAVİRLİK

Sayı: YMM 1285-08.09 **İstanbul,** 03.06.2008

To Whom It May Concern,

Soma Enerji Elektrik Uretim A.S. has received a license for 140.8 MW for Soma wind farm project from Energy Market Regulation Authority. This project is situated in Manisa Province, Soma District and Balıkesir province, Savaştepe District.

We would like to inform you that the Soma project did not receive any official development assistance support such as government donors, public funds or concessional loans.

The Soma Enerji Company is to implement the project under current market conditions with project financing to be received from private banks.

This letter is for your kind information

Yours sincerely,

Mr. Mustafa Metin KÖKAVCI

Sworn Financial Consultant

BİRİKİM Yeminli Mali Müşavirlik
Mustafa Metin KÖKAVCI-Yeminli Mali Müşavir.
Ayazağa Oyak Sitesi 22. Blok Daire:29 Şişli- İstanbul
Tel: (0212) 332 02 82 E-mail:mkokavci@mynet.com

Figure 5. Sworn Financial Consultant statement about ODA

Annex 3

BASELINE INFORMATION

Table 11. Definitions and Explanations regarding Equations (1), (2), (3)

Parameter	Definition	Explanation
ER_y	Emission reductions in year y (tCO_2/yr)	Calculated using Equation (1)
BE_y	Baseline emissions in year y (tCO_2/yr)	Calculated using Equation (2)
PE_y	Project emissions in year y (tCO_2/yr) Project emissions involve direct emissions (such as fossil fuel consumption of construction equipment or vehicles for on-going operations and maintenance).	0 tCO_2/yr This is suggested by the baseline methodology, and the quantity of fossil fuels used for the Project Activity is negligibly small.
LE_y	Leakage emissions in year y (tCO_2/yr) Leakage is emissions arising due to activities such as power plant construction, fuel handling and land inundation.	0 tCO_2/yr The baseline methodology suggests not considering these emission sources as leakage.
EG_y	Electricity supplied by the project activity to the grid (MWh)	Net electricity generation estimation of Project developer is 467,364 MWh. The monitoring methodology involves actualization of this figure annually.
$EG_{baseline}$	Baseline electricity supplied to the grid in the case of modified or retrofit facilities (MWh)	0 MWh No modification or retrofitting.
$EF_{grid,CM,y}$	Combined Margin CO_2 emission factor (tCO_2/MWh) for grid connected power generation in year y	Calculated using Equation (3)
$EF_{grid,OM,y}$	Operation Margin CO_2 emission factor (tCO_2/MWh) for grid connected power generation in year y	Calculated based on the "Tool to calculate the emission factor for an electricity system" (EB 35)
$EF_{grid,BM,y}$	Build Margin CO_2 emission factor (tCO_2/MWh) for grid connected power generation in year y	Calculated based on the "Tool to calculate the emission factor for an electricity system" (EB 35)
w_{OM}	Weighting of operation margin emissions factor (%)	75% (default value), as "Tool to calculate the emission factor for an electricity system" suggests
w_{BM}	Weighting of build margin emissions factor (%)	25% (default value), as "Tool to calculate the emission factor for an electricity system" suggests

Table 12. Definitions and Explanations regarding Equation (4)

Parameter	Definition	Explanation
$EF_{grid,OMsimple,y}$	Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)	Calculated using Equation (4) Data in Table 17
$FC_{i,y}$	Amount of fossil fuel type *i* consumed in the project electricity system in year y (ton or $000m^3$)	
$NCV_{i,y}$	Net calorific value (energy content) of fossil fuel type *i* in year y (TJ/kt or TJ/mil m3)	Data in Table 15
$EF_{CO2,i,y}$	CO_2 emission factor of fossil fuel type *i* in year y (tCO_2/TJ]	Data in Table 15
GEN_y	Net electricity generated and delivered to the grid by all power sources serving the system, not including lc-mr power plants/units, in year y (GWh)	Data in Table 14
i	All fossil fuel types combusted in power sources in the project electricity system in year y	

Table 13. Definitions and Explanations regarding Equations (5) and (6)

Parameter	Definition	Explanation
$EF_{grid,BM,y}$	Build margin CO_2 emission factor in year y [tCO_2/MWh]	Calculated using Equation (5) Data in Table 9
$EG_{m,y}$	Net quantity of electricity generated and delivered to the grid by power unit m in year y [MWh]	Data in Table 18
$EF_{EL,m,y}$	CO_2 emission factor of power unit m in year y [tCO_2/MWh]	
$EF_{CO2,m,i,y}$	CO_2 emission factor of fuel type i used in power unit m in year y (tCO_2/TJ)	Data in Table 15
$\eta_{m,y}$	Average net energy conversion efficiency of power unit m in year y (%)	Data in Table 9
m	Power units included in the build margin	
y	Most recent historical year for which power generation data is available	

Table 14. Electricity Supply to Grid

	2002	2003	2004	2005	2006
Net Generation, GWh	123,727	135,248	145,066	155,469	169,543
Net Delivery Ratio	95.6%	96.2%	96.3%	96.0%	96.2%
Imports, GWh	3,588	1158.0	463.5	635.9	573.2
Net Delivered to Grid, exc. lc-mr	*94,796*	*102,161*	*100,923*	*117,864*	*127,208*

Table 15. NCVs and Emission Factors of Fuels

NCV [TJ/kt or TJ/mil m^3]	**2002**	**2003**	**2004**	**2005**	**2006**	**Emission Factors [tCO_2/TJ]**
Hard Coal	15.1	14.4	15.1	13.6	14.9	92.8
Imported Coal	25.1	25.7	25.5	24.7	24.7	89.5
Lignite	7.5	7.5	7.6	5.9	6.9	90.9
Fuel Oil	40.1	40.1	39.9	40.2	40.2	75.5
Diesel Oil	42.8	43.3	42.4	42.8	42.7	72.6
Lpg	46.1	44.1	45.9	46.0	0.0	61.6
Naphta	44.9	40.0	44.0	44.3	43.9	69.3
Natural Gas	36.5	37.2	36.9	37.3	37.0	54.3

Table 16. CO_2 Emissions Breakdown by Fuel Type

CO_2 Emissions, $ktCO_2$	**2002**	**2003**	**2004**	**2005**	**2006**
Hard Coal	2,161	2,057	1,860	2,155	2,162
Imported Coal	1,145	4,986	7,388	7,858	8,963
Lignite	28,875	24,191	23,207	26,057	31,921
Fuel Oil	9,635	8,669	7,242	6,085	5,297
Diesel Oil	306	44	90	88	190
Lpg	27	2	36	37	0
Naphta	682	733	637	260	41
Natural Gas	22,882	25,455	26,687	31,886	34,212
Total Calculated	65,713	66,138	67,145	**74,426**	**82,787**
UNFCCC Data	74,056	74,196	**76,185**		

Table 17. Operation Margin EF Calculations

Operating Margin EF	**2004**	**2005**	**2006**
CO_2 Emissions, $ktCO_2$	76,185	74,426	82,787
Net electricity supplied to grid, GWh	100,923	117,864	127,208
OM Emission Factor, [$ktCO_2$/GWh]	0.755	0.631	0.651
EF_{OM} average 2004-2006, $ktCO_2$/GWh	**0.679**		

Table 18. Recent Capacity Additions 2003-2006

Year	**Plant**	**Installed capacity (MW)**	**Average Generation (GWh)**	**Fuel Type**	**Commissionary date**
2003	ENERJİ-SA(Mersin) GR GT	41.65	312	N.GAS+NAPHTA	05/10/2003
2004	TÜPRAŞ BATMAN GR V	1.5	4.1	D.OIL	2003
2004	ECZACIBAŞI BAXTER HAS.ÜRÜN.	1.0	5.8	N.GAS	13/01/2001
2004	ÇIRAĞAN SARAYI İŞL.	1.4	11.0	N.GAS	01/11/2002
2004	ANKARA D.G.(BAYMİNA) GR-I-II-III	798.0	6500.0	N.GAS	08/01/2004
2004	ENTEK GR-IV	31.1	255.7	N.GAS+NAPHTA	12/02/2004
2004	ATATEKS 2 GM	5.6	45.0	N.GAS	20/02/2004
2004	TANRIVERDİ 4 GM	4.7	38.7	N.GAS	24/03/2004
~~2004~~	~~VAN SANT (Dismantled)~~	~~(26)~~	~~(195.0)~~	~~FUEL OIL~~	~~06/04/2004~~
2004	ÇOLAKOĞLU(KAPASİTE ARTIRIMI)	45	337.5	IMPORTED COAL	05/05/2004
2004	TEKBOY TEXTILE 1 GM	2.2	16.0	N.GAS	18/05/2004
2004	GÜL ENERJİ GR-II	12.5	96.5	FUEL-OIL	03/06/2004
2004	KOMBASSAN KAĞIT GIDA VE TEKS	5.5	38.1	N.GAS	09/06/2004
2004	AYEN OSTİM ENERJİ ÜRETİM	31.1	264.1	N.GAS	11/06/2004
2004	BİS ENERJİ 2 GT	73.0	602.7	N.GAS	16/06/2004
2004	ENERJİ-SA ADANA 1 BT	49.8	322.9	NAPHTA	23/06/2004
2004	ŞAHİNLER ENERJİ 1 GM	3.2	22.2	N.GAS	29/06/2004
2004	BESLER GR-2, BT (5,2+7,5)	12.7	97.7	N.GAS	07/07/2004
~~2004~~	~~KAREGE (Revision)~~	~~(7.7)~~	~~(57.9)~~	~~N.GAS~~	~~08/07/2004~~
2004	ÇELİK ENERJİ ÜR.ŞTİ. 2 GM	2.4	18.6	N.GAS	09/07/2004
~~2004~~	~~ÇİNKUR (Dismantled)~~	~~(30.0)~~	~~(150)~~	~~FUEL OIL~~	~~20/07/2004~~
~~2004~~	~~OTOPRODÜKTÖR (Revision)~~	~~6.4~~	~~43.2~~		~~20/07/2004~~
2004	KOMBASSAN KAĞ.	5.5	35.7	N.GAS	24/09/2004

	MATBAA GIDA				
2004	AYEN OSTİM ENERJİ ÜRETİM(BT)	9.9	84.0	N.GAS	01/10/2004
2004	HABAŞ ALİAĞA GRUP I-II	89.2	713.9	N.GAS	08/10/2004
2004	STANDART PROFİL 3 GM	6.7	49.2	N.GAS	22/10/2004
2004	KARKEY-II 3+3 DGM	54.3	369.7	FUEL-OIL	12/11/2004
~~2004~~	~~HAKKARİ 1~~	~~(15.3)~~	~~(114.8)~~	~~MOBILE~~	~~30/11/2004~~
~~2004~~	~~EÜAŞ Revision (ADALAR)~~	~~(8.2)~~	~~0~~	~~D.OIL~~	~~09/12/2004~~
2004	ALTINMARKA GIDA GR I-II-III	3.6	28.8	N.GAS	17/12/2004
2004	ERE(BİR KAPILI HES) GRUP-I	48.5	170.6	RUN OF RIVER	11/03/2004
2004	ELTA ELK(DODURGA) GR-I-II-III-IV	4.1	12.3	RUN OF RIVER	26/04/2004
2004	İSKUR TEKSTİL(SÜLEYMANLI) GR I-II	4.6	17.86	RUN OF RIVER	28/04/2004
2004	BEREKET EN.(Feslek Hes) Gr-1-2	9.5	41	RUN OF RIVER	05/08/2004
2005	ÇAN GR I	160.0	1,040.0	LIGNITE	15/02/2005
2005	ÇAN GR II	160.0	1,040.0	LIGNITE	15/03/2005
2005	ELBİSTAN-B GR I	360.0	2,340.0	LIGNITE	15/02/2005
~~2005~~	~~AKBAŞLAR GR II (Isolated)~~	~~8.8~~	~~73~~	~~N.GAS~~	~~24.06.2005~~
2005	AKÇA ENERJİ GR-III	8.7	65.4	N.GAS+NAPHTHA	14/12/2005
2005	AYKA TEKSTİL GR-I	5.5	40.0	N.GAS	24/09/2005
2005	BAYDEMİRLER GR IV-V-VI	6.2	51.4	N.GAS	04/02/2005
2005	BOSEN GR-III	50.0	350.0	N.GAS	30/12/2005
~~2005~~	~~BOSEN (Revision)~~	~~(6.5)~~	~~(45.5)~~	~~N.GAS~~	~~30/12/2005~~
2005	ÇUMRA ŞEKER	16.0	40.0	N.GAS+LIGNITE	01/01/2005
~~2005~~	~~ETİ MAD.(BAN.ASİT) Dismantled~~	~~(3.8)~~	~~(28.5)~~	~~RENEW.+WASTES~~	~~15/07/2005~~
2005	ETİ MAD.(BAN.ASİT)GR-I	11.5	85.0	RENEW.+WASTES	15/07/2005
2005	EVYAP GR I-II	5.1	30.0	N.GAS	27/08/2005
2005	GRANİSER GRANİT GR-I	5.5	42.0	N.GAS	14/11/2005
2005	HABAŞ ALİAĞA GR III	47.7	381.6	N.GAS	02/06/2005
2005	HABAŞ ALİAĞA GR IV	47.7	381.6	N.GAS	21/09/2005
2005	HABAŞ ALİAĞA GR-V	24.6	196.8	N.GAS	24/11/2005
~~2005~~	~~HABAŞ ALİAĞA (Revision)~~	~~6.2~~	~~49.3~~	~~N.GAS~~	~~24/11/2005~~
2005	HAYAT KAĞIT GR-I	7.5	56.0	N.GAS	27/05/2005
2005	İÇDAŞ ÇELİK GR-I	135.0	1,080.0	IMPORTED COAL	30/11/2005
2005	KAHRAMANMARAŞ KAĞIT GR-I	6.0	45.0	IMPORTED COAL	08/12/2005
2005	KORUMA KLOR GR I-II-III	9.6	77.0	N.GAS	03/12/2005
2005	KÜÇÜKÇALIK TEKSTİL GR I-II-III-IV	8.0	64.0	N.GAS	27/11/2005

2005	MERCEDES BENZ TURK GR I-II-III-IV	8.3	68.0	N.GAS	04/02/2005
2005	MODERN ENERJİ GR-III	8.4	62.9	N.GAS	14/06/2005
~~2005~~	~~MODERN ENERJİ (Revision)~~	~~(10.0)~~	~~(75)~~	~~N.GAS~~	~~14/06/2005~~
2005	MODERN ENERJİ GR-II	6.7	50.4	N.GAS+LPG	14/06/2005
~~2005~~	~~MOSB GR I-II-III (Dismantled)~~	~~(54.3)~~	~~(407.3)~~	~~F.OIL~~	~~01/05/2005~~
2005	MOSB GR I-II-III-IV-V-VI-VII	84.8	434.0	N.GAS	01/03 - 01/08/2005
2005	ORS RULMAN	12.4	99.4	N.GAS	25/08/2005
2005	PAK GIDA(Kemalpaşa) GR-I	5.7	45.0	N.GAS	07/12/2005
2005	TEZCAN GALVANİZ GR I-II	3.7	29.0	N.GAS	27/05/2005
2005	YONGAPAN(KAST.ENTG) GR-II	5.2	32.7	N.GAS	25/05/2005
2005	ZEYNEP GİYİM SAN. GR-I	1.2	9.0	N.GAS	07/07/2005
~~2005~~	~~OTOP Revision~~	~~0.0~~	~~0.0~~	~~RENEW.+WASTES~~	
~~2005~~	~~OTOP Revision~~	~~(0.2)~~	~~0.0~~	~~N.GAS~~	
~~2005~~	~~OTOP Revision~~	~~(7.2)~~	~~(55.2)~~	~~N.GAS+LIQUID~~	
~~2005~~	~~OTOP Revision~~	~~(1.0)~~	~~(6.0)~~	~~F.OIL~~	
~~2005~~	~~OTOP Revision~~	~~2.1~~	~~5.2~~	~~SOLID+LIQUID~~	
~~2005~~	~~OTOP Revision~~	~~0.1~~	~~0.0~~	~~LIGNITE~~	
~~2005~~	~~OTOP Revision~~	~~(0.3)~~	~~0.0~~	~~NAPHTHA~~	
~~2005~~	~~OTOP Revision~~	~~0.6~~	~~1.8~~	~~D.OIL~~	
2005	AK ENERJİ(K.paşa) GR- III	40.0	256.9	N.GAS	09/11/2005
2005	AK ENERJİ(K.paşa) GR I-II	87.2	560.1	N.GAS	30/04/2005
2005	ALTEK ALARKO GR I-II	60.1	420.0	N.GAS	14/10/2005
2005	BİS ENERJİ GR VII	43.7	360.8	N.GAS	18/03/2005
2005	CAN ENERJİ GR-I	3.9	28.0	N.GAS	25/08/2005
2005	ÇEBİ ENERJİ BT	21.0	164.9	N.GAS	27/08/2005
2005	ÇEBİ ENERJİ GT	43.4	340.1	N.GAS	23/08/2005
2005	ENTEK ELK.A.Ş.KOÇ ÜNİ.GR I-II	2.3	19.0	N.GAS	07/02/2005
2005	KAREGE GR IV-V	18.1	141.9	N.GAS	07/04/2005
2005	KARKEY(SİLOPİ-4) GR-IV	6.2	47.2	F.OIL	30/06/2005
2005	KARKEY(SİLOPİ-4) GR-V	6.8	51.9	F.OIL	23/12/2005
2005	METEM ENERJİ(Hacışıramat) GR I-II	7.8	58.0	N.GAS	29/01/2005
2005	METEM ENERJİ(Peliklik) GR I-II-III	11.7	89.0	N.GAS	29/01/2005
2005	NOREN ENERJİ GR-I	8.7	70.0	N.GAS	24/08/2005
2005	NUH ENERJİ-2 GR I	47.0	319.7	N.GAS	24/05/2005
2005	ZORLU ENERJİ KAYSERİ GR-I-II-III	149.9	1,144.1	N.GAS	22/07/2005
2005	ZORLU ENERJİ KAYSERİ GR-IV	38.6	294.9	N.GAS	26/10/2005
2005	ZORLU ENERJİ YALOVA	15.9	122.0	N.GAS	26/11/2005

	GR I-II				
2005	TEKTUĞ(Kargılık) GR I-II	23.9	83.0	RUN OF RIVER	25/04/2005
2005	İÇTAŞ ENERJİ(Yukarı Mercan) GR I-II	14.2	44.0	RUN OF RIVER	22/05/2005
2005	MURATLI GR I-II	115.0	444.0	DAM	03/06/2005
2005	BEREKET EN.(DALAMAN) GR XIII-XIV-XV	7.5	35.8	RUN OF RIVER	16/07/2005
2005	YAMULA GRUP I-II	100.0	422.0	DAM	31/07/2005
2005	SUNJÜT(RES) GR I-II	1.2	2.4	WIND	23/04/2005
2006	EKOTEN TEKSTİL GR-I	1.9	14	N.GAS	16/02/2006
2006	ERAK GİYİM GR-I	1.4	10	N.GAS	22/02/2006
2006	ALARKO ALTEK GR-III	21.9	158	N.GAS	23/02/2006
2006	AYDIN ÖRME GR-I	7.5	60	N.GAS	25/02/2006
2006	NUH ENERJİ-2 GR II	26.1	180	N.GAS	02/03/2006
2006	MARMARA ELEKTRİK (Çorlu) GR I	8.7	63	N.GAS	13/04/2006
2006	MARMARA PAMUK (Çorlu) GR I	8.7	63	N.GAS	13/04/2006
2006	ENTEK (Köseköy) GR IV	47.6	378	N.GAS	14/04/2006
2006	ELSE TEKSTİL (Çorlu) GR I - II	3.2	25	N.GAS	15/04/2006
2006	BARES IX. GRUP	13.5	43	WIND	20/04/2006
2006	SÖNMEZ ELEKTRİK (Çorlu) GR I – II	17.5	126	N.GAS	03/05/2006
~~2006~~	~~DENİZLİ ÇİMENTO (Revision)~~	~~0.4~~		~~N.GAS~~	~~04/05/2006~~
2006	MENDERES ELEKTRİK GR I	8.0	56	GEOTHERMAL	10/05/2006
2006	KASTAMONU ENTEGRE (Balıkesir) GR I	7.5	54	N.GAS	24/05/2006
~~2006~~	~~ÇIRAĞAN SARAYI (Deleted by the Ministry)~~	~~(-1.4)~~		~~N.GAS~~	~~24/05/2006~~
2006	BARES X. ve XX GRUPLAR	16.5	52	WIND	26/05/2006
2006	BOZ ENERJİ GR I	8.7	70	N.GAS	09/06/2006
2006	ADANA WASTEWATER TREATMENT PLANT	0.8	6	BIOGAS	09/06/2006
~~2006~~	~~AMYLUM NİŞASTA (ADANA)~~	~~(-6.2)~~		~~F.OIL~~	~~09/06/2006~~
2006	AMYLUM NİŞASTA (ADANA)	14.3	34	N.GAS	09/06/2006
2006	ŞIK MAKAS (Çorlu) GR I	1.6	13	N.GAS	22/06/2006
2006	ELBİSTAN B GR III	360.0	2340	LIGNITE	23/06/2006
2006	ANTALYA ENERJİ GR I - II - III - IV	34.9	245	N.GAS	29/06/2006
2006	HAYAT TEM. VE SAĞLIK GR I - II	15.0	108	N.GAS	30/06/2006
2006	EKOLOJİK EN.	1.0	6	LANDFILL GAS	31/07/2006

	(Kemerburgaz) GR I				
2006	EROĞLU GİYİM (Çorlu) GR I	1.2	9	N.GAS	01/08/2006
2006	CAM İŞ ELEKTRİK (Mersin) GR I	126.1	1008	N.GAS	13/09/2006
2006	ELBİSTAN B GR II	360.0	2340	LIGNITE	17/09/2006
2006	YILDIZ ENT. AĞAÇ (Kocaeli) GR I	6.2	40	N.GAS	21/09/2006
2006	ÇERKEZKÖY ENERJİ GR I	49.2	390	N.GAS	06/10/2006
2006	ENTEK (Köseköy) GR V	37.0	294	N.GAS	03/11/2006
2006	ITC-KA EN. MAMAK TOP.M. GR I-II-III	4.2	30	LANDFILL GAS	03/11/2006
2006	ELBİSTAN B GR IV	360.0	2340	LIGNITE	13/11/2006
2006	MARE MANASTIR RÜZGAR (X GRUP)	8.0	12	WIND	08/12/2006
2006	ÇIRAĞAN SARAYI GR I	1.3	11	N.GAS	01/12/2006
2006	ERTÜRK ELEKTRİK Tepe RES GR I	0.9	2	WIND	22/12/2006
2006	AKMAYA (Lüleburgaz) GR I	6.9	50	N.GAS	23/12/2006
2006	BURGAZ (Lüleburgaz) GR I	6.9	54	N.GAS	23/12/2006
~~2006~~	~~VAN 2~~	~~(24.7)~~	~~0~~	~~F.OIL~~	
~~2006~~	~~KARACAÖREN II~~	~~(0.8)~~		~~HYDRO~~	~~20/02/2006~~
2006	SEYHAN I-II	0.3	1.7	HYDRO	20/02/2006
2006	ŞANLIURFA GR I-II	51.8	124	HYDRO	01/03/2006
2006	BEREKET ENERJİ GÖKYAR HES 3 Grup	11.6	43.3	HYDRO	05/05/2006
2006	MOLU EN. Zamantı Bahçelik GR I - II	4.2	16.7	HYDRO	31/05/2006
2006	SU ENERJİ (Balıkesir) GR I - II	4.6	20.7	HYDRO	27/06/2006
2006	BEREKET EN.(Mentaş Reg) GR I - II	26.6	108.7	HYDRO	31/07/2006
2006	EKİN (Başaran Hes) (Nazilli)	0.6	4.5	HYDRO	11/08/2006
2006	ERE(Sugözü rg. Kızıldüz hes) GR I - II	15.4	31.6	HYDRO	08/09/2006
2006	ERE(AKSU REG.ve ŞAHMALLAR HES) GR I-II	14.0	26.7	HYDRO	16/11/2006
2006	TEKTUĞ(Kalealtı) GR I - II	15.0	52	HYDRO	30/11/2006
2006	BEREKET EN.(Mentaş Reg) GR III	13.3	54.4	HYDRO	13/12/2006
Total		**5,017**	**35,436**		

Table 19. Electricity Generation of Selected Recent Capacity Additions by Fuel Type

Capacity Additions by Fuel Type	Average Generation, GWh				
	2003	2004	2005	2006	Total
Coal	0	337.5	1,125.0	0.0	1,462.5
Lignite	0	0,0	4,420.0	7,020.0	11,440.0
Fuel Oil	0	466.2	99.1	0.0	565.3
Diesel oil	0	4.1	0.0	0.0	4.1
LPG	0	0.0	0.0	0.0	0.0
Naphtha & Aphaltite	0	322.9	0.0	0.0	322.9
Natural Gas	312.0	8,827.2	6,995.4	3,457.4	19,592.0
Renewables and wastes	0	0.0	85.0	42.0	127.0
Hydro	0	241.8	1,028.8	484.3	1,754.9
Geothermal & Wind	0	0.0	2.4	165.0	60.4
Total	**312**	**10,120**	**13,756**	**11,169**	**35,436**

Annex 4

MONITORING INFORMATION

MONITORING OF EMISSION REDUCTIONS:

The Project Activity will be connected to the 380 kV high voltage national grid at the Soma-B thermal plant transformer station. Wind turbines will be connected to the measurement instruments through a 380/22 kV transformer. The switchgear station, where the measurement instruments are read periodically by TEİAŞ, is only accessible to trained TEİAŞ staff. On the last day of each month, the TEİAŞ staff performs the reading, upon which the invoicing will be based.

There are two measurement instruments monitoring the generated electricity continuously. Furthermore, a SCADA system monitors and stores various data including the electricity generation of each wind turbine separately. The project participant is able to monitor the electricity generation data read by the SCADA system as well as the two measurement instruments from distance, however it has no control over or access to the measurement devices and cannot perform any type of maintenance or calibration.

The net electricity generated and delivered to the grid can be monitored from TEİAŞ invoices, from the Market Financial Settlement Centre (MFSC) website[19] or the SCADA system.

[19] http://www.teias.gov.tr/mali/maliuz.htm.

MONITORING OF GOLD STANDARD SUSTAINABILITY INDICATORS:

The following indicators will be monitored:

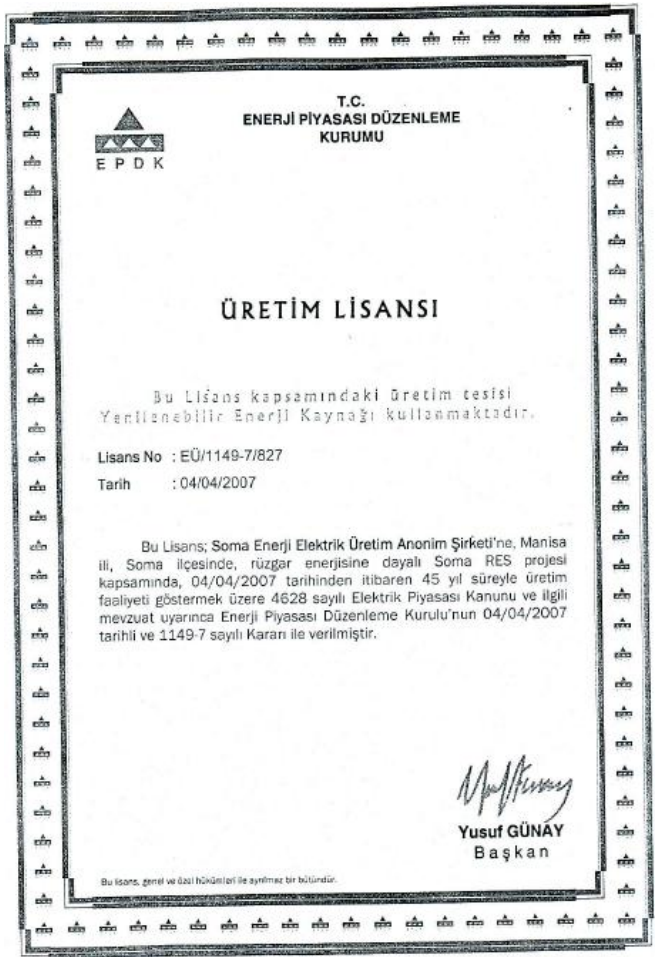
As required by the Gold Standard, sustainable development indicators shall be monitored:

ID number	SD indicator	Data Source, variable and unit	Measured (m), calculated (c), estimated (e)	Comment
1	Other Pollutants	Noise Pollution, in Sultaniye Village, Manisa. Unit : dBA	(e)	A noise pollution assessment report prepared by an engineering company suggests that the Project will not result in any noise above the national thresholds of 50 dBA. However, in one of the villages, the closest turbine will be located at 330 m distance and the maximum noise is expected to be 47.6 dBA, close to the upper limits. Other sites are not considered to be critical. The monitoring of noise in Sultaniye Village will be carried out by interviewing sample inhabitants in this area asking about the noise. In case of complaints, the actual noise level will be calculated or measured.
2	Biodiversity	Trees planted. Unit: number of trees	(e)	Ca. 300 trees will be cut down during construction. The Project owner will pay a one-time fee to the relevant authority with which new trees will be planted. Both tree types are widely common in the host country. The Project Owner will plant ca. 2500 new trees as a mitigation measure after project implementation. The payment of the aforestation fee will be monitored by providing payment invoices. The trees planted by the Project Owner will be monitored on site by providing pictures showing the trees are in good condition.

3	Employment (Quality)	Proper Employment Conditions	(e)	Health and Safety: • Health and safety equipment provided to the staff will be monitored. • Social security of the staff will be checked. • It will be checked whether the staff is subject to hazardous or dangerous tasks.
4	Employment (Number)	Creation of local jobs	(m)	The Project will employ several people for managerial, technical and support positions. The number of jobs created during operation will be monitored.

Annex 5

RELEVANT DOCUMENTS



T.C.
ENERJİ PİYASASI DÜZENLEME KURUMU

EPDK

ÜRETİM LİSANSI

Bu Lisans kapsamındaki üretim tesisi Yenilenebilir Enerji Kaynağı kullanmaktadır.

Lisans No : EÜ/1149-7/827

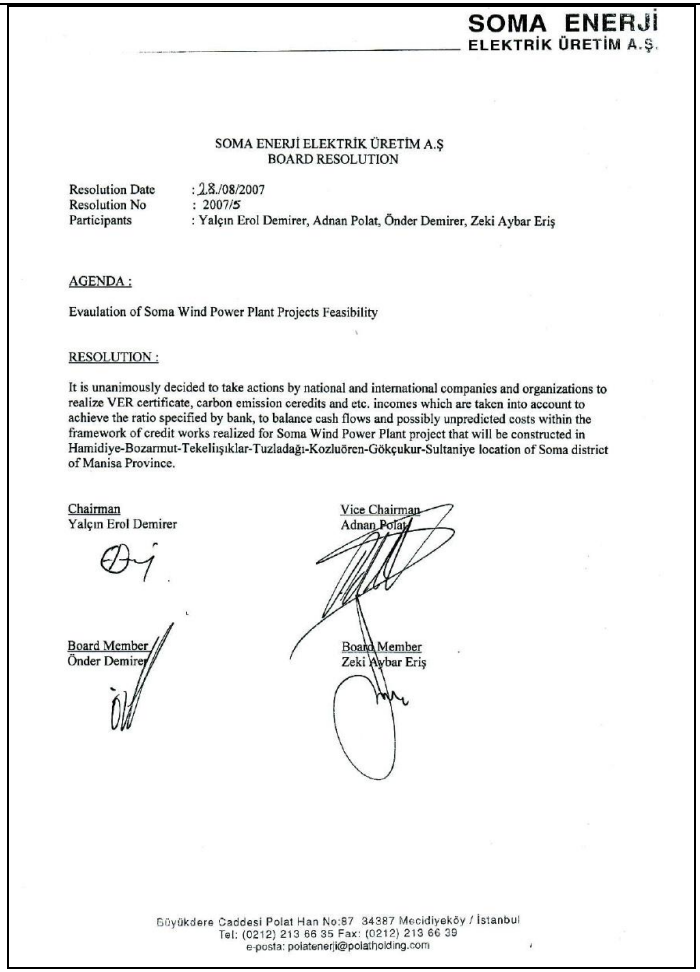
Tarih : 04/04/2007

Bu Lisans; Soma Enerji Elektrik Üretim Anonim Şirketi'ne, Manisa ili, Soma ilçesinde, rüzgar enerjisine dayalı Soma RES projesi kapsamında, 04/04/2007 tarihinden itibaren 45 yıl süreyle üretim faaliyeti göstermek üzere 4628 sayılı Elektrik Piyasası Kanunu ve ilgili mevzuat uyarınca Enerji Piyasası Düzenleme Kurulu'nun 04/04/2007 tarihli ve 1149-7 sayılı Kararı ile verilmiştir.

Yusuf GÜNAY
Başkan

Bu lisans, genel ve özel hükümleri ile ayrılmaz bir bütündür.

Figure 6. Generation License



SOMA ENERJİ
ELEKTRİK ÜRETİM A.Ş.

SOMA ENERJİ ELEKTRİK ÜRETİM A.Ş
BOARD RESOLUTION

Resolution Date : 18./08/2007
Resolution No : 2007/5
Participants : Yalçın Erol Demirer, Adnan Polat, Önder Demirer, Zeki Aybar Eriş

AGENDA :

Evaulation of Soma Wind Power Plant Projects Feasibility

RESOLUTION :

It is unanimously decided to take actions by national and international companies and organizations to realize VER certificate, carbon emission ceredits and etc. incomes which are taken into account to achieve the ratio specified by bank, to balance cash flows and possibly unpredicted costs within the framework of credit works realized for Soma Wind Power Plant project that will be constructed in Hamidiye-Bozarmut-Tekeliışıklar-Tuzladağı-Kozlueren-Gökçukur-Sultaniye location of Soma district of Manisa Province.

Chairman
Yalçın Erol Demirer

Vice Chairman
Adnan Polat

Board Member
Önder Demirer

Board Member
Zeki Aybar Eriş

Büyükdere Caddesi Polat Han No:87 34387 Mecidiyeköy / İstanbul
Tel: (0212) 213 66 35 Fax: (0212) 213 66 39
e-posta: polatenerji@polatholding.com

Figure 7. Early Consideration: Board Resolution of the Project Participant regarding VER financing

Annex 6

LOCATIONS OF WIND TURBINES[20]

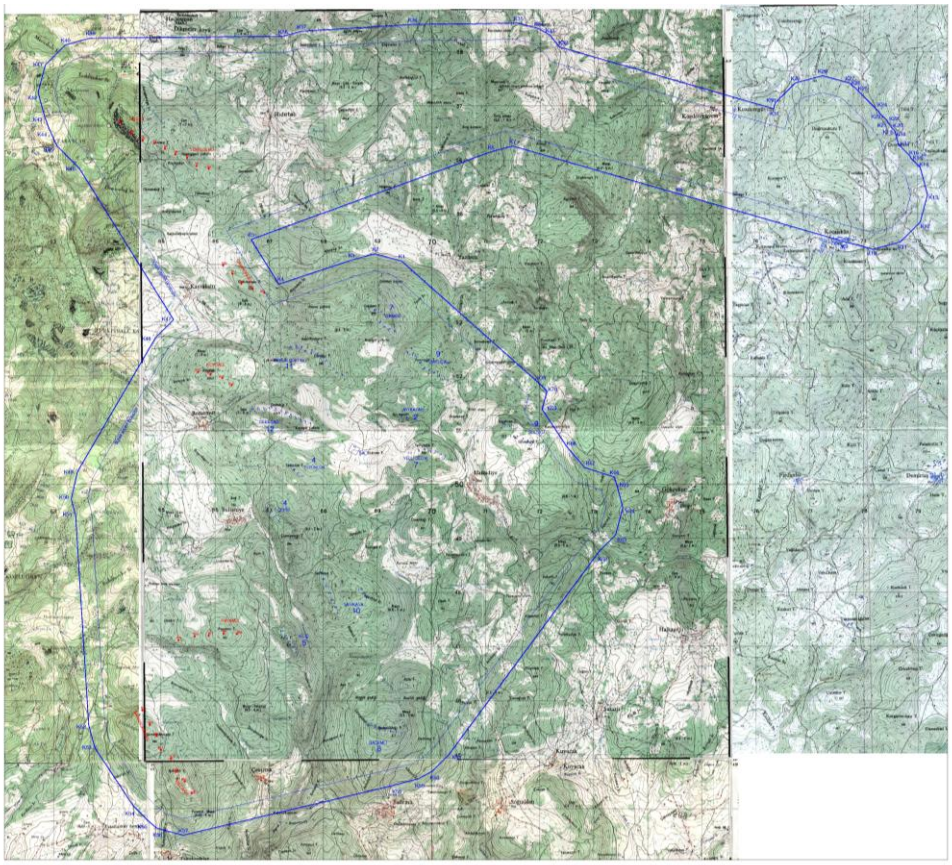


Figure 8. Location of the Project Activity

[20] Micrositing is not finalized and is under preparation

Annex 7

GOLD STANDARD INFORMATION

Soma - Polat Wind Farm Project, Turkey

Additional PDD Annex as required for Gold Standard validation

Version 3, February 26th, 2010

Contact persons:

Lale Capalov, Mavi Consultants, lale.capalov@maviconsultants.com, +90 212 327 09 22

Introductory Notes

This document contains the PDD Annex to validate the Project *Soma-Polat Wind Farm* against the Gold Standard.

The project activity comprises the installation of 156 units of 900 kW with a total capacity of 140.1 MW. The project activity implies a series of sustainable development aspects including technology transfer, environmental and social benefits.

In the scope of the project, local roads will be repaired and improved, an additional transmission line will be built. A significant amount of equipment (generator tower, blades, cable, transformer etc.) will be procured in Turkey, which will contribute to local development as well. In addition to environmental and social benefits the project will trigger locally, it will increase the share of renewable and clean energies in the Turkish electricity market, will reduce the dependency on foreign sources and will fuel the development of a wind energy sector in Turkey. The Project, located in the less developed area of Turkey, will also contribute to regional economic development and generate direct jobs during the operation of the plant and temporary jobs during the construction of the plant.

Soma - Polat Wind Farm Project is one of the biggest wind farm projects in Turkey, and will significantly contribute to the national electricity grid in terms of energy supply and will create considerable amounts of carbon emission reductions, which will help in climate change mitigation. These aspects will help to get more public attention on renewable energies and will create a more sound basis for the wind energy as a serious alternative in terms of reputation, dependability, electricity generation and local sustainable development. Thus, it will be able to open the path to further renewable energy projects in Turkey.

Project Type Eligibility Screen

GS Manual for VER Project Developers: **Section 3.2**

Wind energy projects fall into the renewable energy categories outlined in the pre-assessment section Box 1 in Chapter 2.2 of the Gold Standard Manual for CDM Project Developers as eligible project types.

Host Country Eligibility

GS Manual for VER Project Developers: **Section 3.2.2**

A Gold Standard voluntary offset project can be located in any country that does not have quantitative reduction target under the Kyoto Protocol. Turkey is one of the countries, which has signed the Kyoto Protocol without committing to emission reduction targets. Turkey's position can be described as follows:

As of today, Turkey is an Annex I country. Annex I countries are potential carbon credit buyers. Turkey has however not set any emission reduction target; hence it is not listed as an Annex B country of the Kyoto Protocol and cannot participate to the Clean Development Mechanism (CDM) nor to the EU Emissions Trading Scheme (EU-ETS). Under these circumstances, the non-Kyoto market, which involves Voluntary Emission Reductions (VERs), is emerging in the country.

As of today, there is no DNA in Turkey. The National Focal Point of Turkey is the Ministry of Environment and Forestry. The Turkish National Focal Point has been involved in the consultation process as described in the section 3.4.3. for the Gold Standard Voluntary Project Development, which significantly raised the awareness in the government about the issues around climate change and carbon trading. It is known that the subject is under discussion in Ankara now.

Gold Standard Additionality Screen

Previously announced projects screen

GS Manual for VER Project Developers: **Section 3.3.1**

There has been no public announcement of the project going ahead without the VER, prior to any payment being made for the implementation of the project.

Prior to the implementation of the project activity, the management of the project developer has concluded a decision about VER development on 28.08.2007. The project developer has also sent a letter to the Turkish National Focal Point stating its intention to register the project activity under GS VER in order to inform the Turkish National Focal Point about the project and asked for comments.

UNFCCC Tool for the demonstration and assessment of additionality (Version 04, EB 36, Annex 13)

GS Manual for CDM Project Developers: **Section 3.3.2**

The "Tool for the demonstration and assessment of additionality" (Version 05)[21] has been applied in Section B.4 and B.5 of the PDD.

ODA Additionality Screen

GS Manual for VER Project Developers: **Section 3.3.3**

Project financing for this project activity will not use any public funding nor Official Development Assistance (ODA) Funds as defined in the Gold Standard Manual for Project Developers. There are no loans or grants being provided by International Finance Institutions, which include ODA.

Conservative Approach

GS Manual for VER Project Developers: **Section 3.3.3**

The baseline scenario selection and the calculation of green house gas emission reductions have been carried out in a conservative manner:

- Project proponents have used approved methodologies by the CDM Executive Board (ACM0002, Version 07 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" and the "Tool to calculate the emission factor for an electricity system") in order to determine the baseline scenario and calculate emission reductions.
- When no appropriate data is available, the assumptions are made conservatively by making choices which lead to the lowest emission reductions for the sake of conservatism.
- All calculations are based on official and publicly available data. Data sources have all been referenced in the PDD. Calculations have been done in a transparent manner providing full documentation and references to data sources to the DOE.

Please refer to the PDD Sections B.3, B.4, B.5 and B.6 for more details on project boundary definition, baseline scenario selection and emission reductions calculation.

Sustainable Development

Sustainable Development Assessment

GS Manual for CDM Project Developers: **Section 3.4.1**

[21] http://cdm.unfccc.int/methodologies/PAmethodologies/AdditionalityTools/Additionality_tool.pdf

The matrix below is based on a comparison of the project activity versus the baseline scenario described in the PDD, which is basically the continuation of the current situation. The Sustainable Development Matrix draft has been discussed during the Initial Stakeholder Meeting with the stakeholders in order to finalise the scoring of the 12 indicators. Results from the initial stakeholder consultation have been considered when defining the scores for the indicators below.

Component Indicators	**Score** (-2 to +2)	**Explanation**
Local / Regional / Global Environment		
• Water quality and quantity	0	As compared to the fossil fuel fired power plants in the baseline scenario, risks of groundwater contamination due to process wastewater leakages into the groundwater are reduced. The amount of discharging of cooling water into the surface waters would decrease. "In Turkey, 2.72 billion m^3 of water was used by thermal power plants in 2006. The amount of wastewater discharged in 2006 was 2.66 billion m^3"*. The amount of discharging of cooling water into the surface waters and the water consumption of cooling towers in the baseline will be decreased. Source*: Turkish Statistical Institute (*www.turkstat.gov.tr/PreHaberBultenleri.do?id=1927)* Regulation of Water Pollution Control Official Journal: 25687, Date: 31.12.2004, Table:9.3
• Air quality (emissions other than GHG)	+1	Air quality is improved substantially as compared to the emission levels of fly ash, SO_x and NO_x related to the thermal energy generation. Regulation of Air Quality Control "In the Aegean Region, the annual average CO2 load from all the sources is around 40 million tonnes. The highest emission is due to the thermal power plants. (…) The highest emissions for two plants are observed in 1999 with 8.4 million tonnes from Afşin-Elbistan

		and 6.5 million tonnes from Soma." The Project is located in the Aegean Region, in Soma City. Source: "Estimation of CO_2 Concentration Over Turkey by Using Dispersion Model", p.3 *(www.ukidek.org/bildiriler/Cozumler_2.doc)* Official Journal: 19269, Date: 2.11.1986, Annex 8, List A & B
• Other pollutants (including, where relevant, toxicity, radioactivity, POPs, stratospheric ozone layer depleting gases)*	0	Apart from water, soil and air pollutants mentioned in this matrix, metal compounds as Co, Cd, Zn, Pb and Cu in the flue gas as well as in the waste ash will be prevented. Waste Oil: Oil consumption of the turbines is minimal, as the Enercon turbines work gearless. From former experiences of the Project Owner, the oil consumption (mainly to compensate oil loss, rather than oil change) is estimated to be around 2400 liters/year for the whole Project. Therefore, waste oil is insignificant. In case of such a need, the waste oil will be disposed of properly by assigning licensed disposal companies. Noise: A noise pollution assessment report prepared by an engineering company suggests that the Project will not result in any noise above the national thresholds of 50 dBA**. However, in one of the villages, the closest turbine will be located at 330 m distance and the maximum noise is expected to be 47.6 dBA, close to the upper limits. Other sites are not considered to be critical. Noise in this community will be monitored. Justification: Regulation of Hazardous Wastes Control Official Journal: 25755, Date: 14.3.2005, Annex 7 section 10 Source*: Project Owner. Source**: Noise Pollution Regulation, Table 4
• Soil condition (quality and quantity)	0	As compared to the baseline scenario, besides the wind turbine basements having low area requirements

		as compared to other power plants having similar electrical production capacity, the wind power plant will not produce any waste, which decreases soil condition in quality and quantity. Justification: Regulation of Soil Pollution Control Official Journal: 25831, Date: 31.5.2005, Annex 1 A
• Biodiversity (species and habitat conservation)*	0	As compared to the baseline, no significant change in biodiversity is expected.  Figure 9. Sheep feeding on the ash-storage area of the lignite-fuelled power plant in Soma city (March 2008) Trees: It is estimated that ca. 1300 oak and 600 pine will be cut down during the construction. Both tree types are widely common in the host country. The Project Owner will pay all necessary aforestation fees and also plant ca. 2500 new trees after project implementation.
Sub Total	**+1**	
Social Sustainability and Development		
• Employment (including job quality, fulfilment of labour standards)*	+1	Some permanent full time positions are foreseen for operation and maintenance of the wind power plant. The exact number is unknown, as it depends on the final turbine locations and the requirements of TEİAŞ. Several temporary jobs will be generated during the construction of the project activity. The employment of the skilled staff has a significant impact on job

		quality in the rural context of the project. Local economy dominantly relies on agricultural activities. Health and Safety trainings will be given to employees to ensure safe operation of the Project. The employment of the skilled staff will have an impact on job quality and promote education in the rural context of the Project. The jobs do not include tasks related to hazardous materials or dangerous works. The Project will employ people, local if possible and will fulfill relevant safety and labor standards, ensuring social security, health and safety of the Project staff.
• Livelihood of the poor (including poverty alleviation, distributional equity, and access to essential services)	0	As compared to the baseline, no significant change is expected.
• Access to energy services	0	It does not improve the coverage of reliable and affordable clean energy services in the region as the wind power plant supplies to the national electricity grid. Hence, no significant change is expected as compared to the baseline National Load Balancing Centre (TEİAŞ) Electricity Market Balancing and Settlement Regulation, 21.12.2004, Official Gazzette Nr. 25677
• Human and institutional capacity (including empowerment, education, involvement, gender)	0	As compared to the baseline, no significant change is expected.
Sub Total	**+1**	
Economic and Technological Development		
• Employment (numbers)*	+1	As compared to the baseline, the Project is expected to create new employment opportunities.
• Balance of payments	+1	Electricity generation from renewable energy sources substitutes the electricity generated from fossil fuels

(sustainability)		and thus decreases fossil fuel consumption overall. MYTM* is responsible** for actively balancing the electricity supply throughout the generation companies and technically manages the supply of each power plants real time. It would decrease the import of fossil fuels and therefore have a positive effect balance of payments. Justification: *National Load Balancing Centre (TEİAŞ) **Electricity Market Balancing and Settlement Regulation, 21.12.2004, Official Gazzette Nr. 25677
• Technological self reliance (including project replicability, hard currency liability, institutional capacity, technology transfer)	0	Improvement of technical adequacy of companies working in the wind energy sector and creation of high quality technical labour force. Justification: Recent development of wind energy equipment (tower, blades, etc.) production and services after wind park installations in Turkey. In-house trainings will be given to the employees of the project activity which includes instructions regarding technical, environment and security issues as well as operation and maintenance. Moreover, TEIAS will train the staff regarding the switchgear station.
Sub Total	**+2**	
Total	**+4**	

As can be seen from the matrix above the project activity shows a positive performance in all sustainable development categories. The project activity fulfils all Gold Standard criteria since none of the indicators above have a score of -2, there is no negative sub-total, and the total score is positive.

EIA requirements

GS Manual for CDM Project Developers: **Section 3.4.2**

EIA Gold Standard Requirements according to section 3.4.2 in the Gold Standard Manual apply to the project activity as follows:

1. Host country EIA requirements
   It is not mandatory in Turkey to conduct an EIA for this type of project activity.
2. Gold Standard Initial Stakeholder Consultation
   The Gold Standard Initial Stakeholder Consultation was held in the Wedding Hall of Soma Municipality 21 March 2008. The results of the Gold Standard Initial Stakeholders Consultation did not show any significant environmental and/or social impact (see Initial Stakeholder Consultation report below).
3. None of the indicators in the Sustainable Development Assessment Matrix scores -1.

By reducing fossil fuel consumption indirectly, the Project Activity will help in decreasing pollutants, which are being generated by thermal power plants, resulting in improved air quality.

Public consultation procedures

GS Manual for VER Project Developers: **Section 3.4.3**

Initial Stakeholder Consultation

The initial stakeholder consultation was held in Wedding Hall of Soma Municipality 21 March 2008. The meeting was attended by representatives from the local authorities, local residents, local media, local entrepreneurs and employees of the project activity. In addition to the local meeting, Gold Standard supporting NGOs in Turkey have been invited by email to send their comments on the project activity.

The overall response to the project, from all invited stakeholders, was encouraging and positive. It is evident from the stakeholder consultation process, that the project is perceived as a good example for the energy generation in Turkey and that it contributes to sustainable development of the country. No major environmental concerns were raised during the entire initial stakeholder consultation process. No adverse reaction, comments or clarifications related to socio-economic aspects have been received during the Initial Stakeholder Consultation process.

A detailed report on the Initial Stakeholder Consultation is available in **Annex 8** to this document.

Main Stakeholder Consultation

The Gold Standard Main Stakeholder Consultation is based on a set of additional criteria in addition to UNFCCC requirements. Full documentation of the project activity will be made publicly available for two months prior to conclusion of validation at www.maviconsultants.com and www.southpolecarbon.com/goldstandard.htm, including:

- The original and complete PDD
- A non-technical summary of the project design document (in appropriate local language)
- Relevant supporting information

During the consultation period, stakeholders are invited to submit their comments and questions related to the project activity. About giving a comment, the websites www.maviconsultants.com and www.southpolecarbon.com/goldstandard.htm provide further information.

The project stakeholders are invited on May 2nd, 2008 through E-mail and fax notification to provide their comments. Furthermore, the draft PDD and the non-technical PDD in local language have been provided on the websites mentioned above. The process has been closed on July 1st, 2008. During the Main Stakeholder Consultation process, no comments have been provided by stakeholders.

Complementary Stakeholder Consultation

The Project design has been revised after its submission to the Gold Standard, therefore there have been some changes in the information that had been given to stakeholders at the GS Initial Stakeholder Consultation. This change results in the erection of fewer turbines than previously thought. Subsequently, the geographical layout of the Project has also been changed. As this change could have resulted in changes in terms of sustainable development on stakeholders and the environment, an additional stakeholder consultation is organized to inform local people about this design change and to ask their opinions between 14.08.2010 and 23.08.2010. The local stakeholders are identified in the following ways:

1. All villages that have been represented at the Gold Standard Initial (Local) Stakeholder Consultation (on 20/03/2008 in Soma city) have been invited.
2. All villages that are actually close to the Project but have not attended the ISC (LSC) meeting are also invited.

The comments in the signed distribution list suggest the following:

- 15 villages believe that the Project will do no harm,
- 3 villages believe that the Project is beneficial.

No local stakeholder stated that the Project's design change would have any impact on them. The stakeholders have not come up with any issue which might have an implication on the sustainable development indicators, whether social, environmental or economical. This complementary consultation is separately reported and submitted to the Gold Standard.

Gold Standard Monitoring Criteria

GS Manual for VER Project Developers: **Section 3.5.1**

According to the Gold Standard Manual for CDM Project Developers, Gold Standard monitoring requirements in addition to regular CDM monitoring procedures are defined based on the outcomes of the stakeholder consultation meeting and the Sustainable Development Assessment conducted above. The Sustainable Development Assessment Matrix shows that there are no indicators, which would be critical for a positive contribution of the project to Sustainable Development or that are particularly sensitive since there is no indicator scoring below zero.

Local stakeholders have indicated no issues of potentially significant importance related to questions from the Gold Standard Public Consultation Checklist (Appendix E to the Gold Standard Manual for VER Project Developers) during the initial stakeholder consultation. A detailed report of the issues raised and the answer provided by the project owner are provided in the Initial Stakeholder Consultation Report (Attachment 1 to this Annex).

From the Attachment 1 to this Annex it can be concluded that the indicated issues of potentially significant importance during the stakeholder consultation cannot be converted into additional monitoring requirements because:

- the monitoring requirements already prescribe monitoring of all relevant parameters, or
- the indicated issues cannot be influenced by the project owner during the operation of the plant (e.g. risk of seismic activities), or
- the indicated issues are considered to be positive (social impact) or neutral (visibility of the project).

Therefore, no additional Gold Standard specific monitoring criteria have been added to the regular monitoring plan.

Annex 8

INITIAL STAKEHOLDER CONSULTATION REPORT

PURPOSE OF THE CONSULTATION

The objective of the Gold Standard initial stakeholder consultation is to enable potentially affected and concerned institutions and individuals to express their point of view on the proposed carbon offset project and to consider general concerns and recommendations on the project activity.

Two stakeholder consultations must be held during the project cycle in order to fulfill the criteria of the Gold Standard, which stands for environmental, economic and social integrity of carbon offset projects. An initial consultation in the early stages of documentation preparation and a main consultation after completion of the final project documentation have to be carried out.

Although the Turkish legislation exempts wind energy projects from the obligation to perform an Environmental Impact Assessment and accordingly a stakeholder meeting, an initial stakeholder consultation meeting has been conducted according to Gold Standard criteria in order to identify and evaluate the opinions and comments in favor of and against the project. In parallel, the conducted consultation aimed also at discovering potential Corporate Social Responsibility activities in the region.

The following stakeholders must be invited to participate in both consultation processes: Local policy makers, local people impacted by the project, (if applicable) local NGOs, local and national NGOs that have endorsed the Gold Standard and the Gold Standard itself.

PROCEDURE OF THE INITIAL STAKEHOLDER CONSULTATION

The Gold Standard Initial Stakeholder Consultation has been conducted by the project owner Soma Enerji Elektrik Üretim A.Ş. with assistance from MAVI Consultants. Stakeholder groups as defined in the Gold Standard procedures have been identified and informed through oral and written means about the meetings.

The Gold Standard Initial Stakeholder Consultation consisted of a public meeting and E-mail consultation with the stakeholders. According to the Gold Standard requirements, local stakeholders were identified including local people, local and national NGOs, project developers and entities involved in implementation and operation of the project activity. A list of project participants invited for the stakeholder consultation meeting is enclosed under "Annex II: Invited Stakeholders" to this report. These stakeholders have been invited either by E-mail or fax asking for participation in the public meeting and for submission of comments on the project. Furthermore, Mercy Corp. and REEEP Head Quarters have been asked to address representatives in Turkey to be involved in the consultation process. As of the date of the report being written, no response has been received.

The project has been presented by a local newspaper and the Soma city web-page as well with positive comments. Local people have been invited by an announcement published in two local newspapers ("Kurtuluş" in Soma on 05.03.2008 and "Yeni Balikesir" on 05.03.2008). The relevant stakeholders from both Soma (Manisa) and Savastepe (Balikesir) and the villages around those two cities have been invited.

As a result of a wide-reaching announcement, 35 participants were present and other than the local authorities, several village headmen and local people attended the meeting. In addition to these 35 participants, the mayor and the governor of Soma also attended the meeting, although they did not sign

the list. The participants have been asked to fill a presence list with their name, address and occupation, which has been attached to the "Annex V: List of Participants". The newspaper announcements and their translation can be found in "Annex III: Meeting Invitation on Local Newspapers" of this report.

The invitations have been sent to stakeholders on 10.03.2008 by E-Mail. On March 11th, 2008 the call has been sent by fax to the governor of Savaştepe and mayor of Soma, since they do not have an E-Mail address. The stakeholder list and further details are given in "Annex II: Invited Stakeholders". Along with the invitation, a project description and the questionnaire have also been sent to all stakeholders. The list of the meeting participants can be found in "Annex V: List of Participants".

We want to thank the Mayor of Soma Mr. Hasan Ergene and the Governor of Soma Mr. Mehmet Öklü as well as the local consultant Ms. Ebru Arıcı for the generous support of the meeting organisation and providing the Wedding Hall.

CONSULTATION MEETING

A consultation meeting has been conducted for all stakeholders:

Date	March 20, 2008
Duration	13:30 – 15:30
Place	City Wedding Hall, Soma
Language	Documentation and meeting was held in Turkish

Meeting Procedure

- Opening (15 min)
- Purpose of the consultation (5 min)
- Description of the project and environmental impacts (20 min)
- Questions and Answers session (10 min)
- Completing checklists (Appendix E to the Gold Standard Project Developer's Manual) (20 min)
- General feedback (15 min)

Meeting Participants

1. Hakan Köylü	2. Hidayet Uysal
3. Fahri Çelik	4. Hamit Çakar
5. Celalettin Atılkan	6. Özel Yeşil
7. Adil Yörük	8. Mustafa Köse
9. Mehmet Ali Eker	10. Mehmet Ali Kurt
11. Hasan Ali Karaman	12. Yusuf Suer Hatun
13. Abdülkadir Akbaş	14. Osman Kupi
15. Arif Çetin	16. Nurettin Şakrak
17. Sadık Pala	18. Yılmaz Kuru
19. Şenol Bay	20. Bahadır Çiftçioğlu
21. Ebru Arıcı	22. Alkım Bağ
23. H.İbrahim Okur	24. Mustafa Bayraktar
25. Ünol Şen	26. Recep Değirmencioğlu
27. Şule Yüksel	28. Öden Yapıcı
29. Ahmet İzgin	30. Feridun Çakmak
31. Hüseyin Avcı Çiftçi	32. Naci Arslan Çiftçi
33. Nihat Şehit	34. Şerif Acep
35. Mehmet Gümüş	

Presentations held during the meeting

Mr. Ahmet Aracman from Demirer Enerji explained the objective of the meeting and the overall procedure. Afterwards, Mr. Aracman made an oral presentation about global warming, which is an article written by Prof. Osman Demircan, Canakkale University. General information about renewable energy and wind parks has been given and the project itself has been introduced. The articles about drought, climate change and global warming which are partially read in the meeting is available for the DOE, if required.

In this respect, the presentation did not only inform the participants about the project, but also contained awareness raising components regarding environmental and social issues, and what individuals can do to mitigate the global warming.

The blades, towers and electrical equipment (cable, transformer, etc.) are being procured in Turkey, which indicates the know how and technology transfer as a result of these activities. It further helps in the creation of technical staff and experience build-up.

Mr. Zeki Eriş from Polat Enerji focused on the sustainable development dimensions of the project. Ms. Lale Capalov from MAVI Consultants explained the concept of Sustainable Development and why it is important in the framework of the Project Activity. Mr. Yagmur Karabulut from MAVI Consultants

explained the scoring and indicators of the Sustainable Development Matrix, and two participants have scored the matrix (no negative scores at all, total scores +6 and +12).

The following documents have been distributed to the participants:

- Project Information
- Documentation on social and environmental impacts of the project
- Sustainable Development Matrix (Box 3, Section 3.4.1 of the Gold Standard Project Developer's Manual)
- Questionnaire (Environmental and Social Impact Checklist as defined in Appendix E of the Gold Standard VER Manual for Project Developers)

The questionnaires have been collected at the end of the meeting, and interested participants have been given the project description text. Moreover, as the participants showed interest in the wind energy technology, some exemplary photographs of another wind park have been shown. These documents are available as hardcopies and will be handed over to the designated operational entity (DOE) conducting the Gold Standard validation process.

The participants have been asked to fill in the check list, if they have any comments on the social and environmental aspects. In general, the overall reaction and opinions of the participants was positive. This can be attributed to the lignite-fired Soma thermal power plant in operation in the city; after the meeting some participants complained about the negative environmental impacts of the thermal power plant and its adverse effects on human health in the region (see picture below). During the meeting, comments on present air pollution have also been remarked and the cleanness aspect of wind energy is emphasized in a constructive way. Except of the consultation meeting, no comments have been received through other means.

Soma Coal (Lignite) Fired Thermal Power Plant in Soma (March 20, 2008)

E-MAIL AND PHONE CONSULTATIONS

An invitation was sent to representatives of Gold Standard supporting organizations in Turkey on March 10, 2008. The same call for initial stakeholder consultation procedure has been applied for them, which included an invitation to the meeting, project description along with its social and environmental benefits, the Sustainable Development Matrix and the questionnaire. The Turkey offices of Greenpeace, REC and WWF have been invited to give their opinions about the project. They did not participate the meeting.

The consultation process has started on March 10th, 2008 and ended on March 24th, 2008. As a component of the overall procedure, the Gold Standard organization has been invited on March 10th, 2008.

Information letter to the DNA

There is no DNA in Turkey. A letter has been sent to the National Focal Point of Turkey, the Ministry of Environment and Forestry, to inform them about the project. This letter has been received by the Ministry on March 21st, 2008.

SUMMARY OF THE COMMENTS RECEIVED

The people consulted by E-Mail did not comment. The response in the meeting was positive and supporting. The questions raised were rather about getting more information about the project and wind energy in general. In total, 30 questionnaires (based on Appendix E of the Gold Standard Manual for Project Developers) were turned in out of 35 participants. 5 people did not turn in the questionnaires. 4 questionnaires have been (fully or partially) filled in, others were mostly blank, only read and signed. The issues highlighted by participants in the questionnaire are as follows:

The questions, as defined in Appendix E of the Gold Standard manual, which ask whether there is an expected negative impact in connection with the project have either been left blank or answered with a "No", and these answers have not been included below for simplicity. Only questions with relevant answers have been included here. The highlighted answers given in the questionnaire (including all answers involving criticism) are quoted below:

Environmental Impacts	***Yes / No***	***Comment written***	***Comment of the Project Developer***
4. Will the project cause noise, vibration or release of light, heat energy or electromagnetic radiation that could adversely affect the environment?	*Yes (1)*	*"The project might cause a noise or a mechanical sound"*	The noise is about the bedroom standards (39 db) in a distance of 150-200 m from a wind park in general terms.
16. Will the project result in social changes, for example in demography, traditional lifestyles, employment?	*Yes (1)*	-	This answer is most probably given in a positive sense since unemployment is high in the region.

19. Is the project in a location where it is likely to be highly visible to many people?	*Yes (1)*	-	This answer is most probably given in a positive sense since the exemplary wind park photographs distributed during the meeting raised interest among participants and the project covers a wide area visible to several towns.
23. Is the project location susceptible to earthquakes, subsidence, landslides, erosion, flooding or adverse climatic conditions e.g. temperature, fogs, severe winds, earthquakes, which could cause the project to present socioeconomic problems?	*Yes (1)*	*"Earthquake"*	This answer is most probably given in a general sense and not related to the project itself.
Additional Questions			
24. What is your relation with the project?	*"The project location is close to our livelihood. Agricultural areas in our town have been confiscated for lignite mining and the people are mostly unemployed."* *"I am personally interested and informed about wind energy and I myself have built a small wind turbine."*		
25. What are your expectations in this project?	*"Provision of sustainable, clean, renewable energy and minimization of dependency on foreign resources."* *"Generation of clean energy without destruction of agricultural lands and creation of jobs for the local people."* *"Thank you for introducing clean energy to local people, they will visually be informed and interested."*		
26. What are possible effects of this project to your environment?	*"Appropriate measures need to be taken for:* • *disposal of solid waste and waste water stemming from the project and its social facilities* • *forest fire prevention* • *traffic management during the*	The solid waste and waste water, which will be generated by the project, is limited to the houses of the security guards. Wind turbines are equipped with lightning arresters. The construction phase is	

	construction phase" *"The project will likely cause a positive socio-economic dynamism in the region and will create pleasure among local people because of ecologic conservation and clean energy generation. Will there be employment opportunities for the uneducated?* *It will generate energy from the untapped wind resources in a useful way."*	distributed over a long period of time and a wide area with different access roads, so no traffic problem is expected.

Oral Comments

Oral Comments have been received during the meeting as well, which are summarized as follows:

Question asked in the meeting	**Answer given in the meeting**
What is the noise level of the project?	The noise level changes much based on wind speed, at high wind speeds one can hear a cleaving sound. The wind technology has advanced so that the noise is about the bedroom standards (39 db) in a distance of 150-200 m from a wind park in general.
How many households will be supplied with the electricity generated by this wind park?	The generated electricity will be connected to the national grid. It is difficult to say that. As a rough idea, the electricity consumption per household can be assumed as 200 kWh/month and the annual generation of the project is forecasted as around 582,5 million kWh.
How much waste oil will be generated and how will it be disposed of?	The Enercon wind turbines incorporate the unique gearless electricity generation technology, which minimizes oil use and is low compared to other turbines. The annual oil consumption is comparable with common diesel busses and will be disposed of by the maintenance crew.
How will the wind blades be disposed of?	When maintained properly, the wind blades have a life span of 50-60 years. In sandy areas, the winds can be abrasive, which is not the case here.
Will trees be cut for the construction?	The turbine foundations are small and the turbines will be placed such that necessary precautions will be taken to minimize cuts. Roads will also be constructed with maximum care. Relevant fees for cutting trees is also being paid.
How much costs a turbine?	One turbine costs around 1,5 million YTL. A wind park investment is much costlier than a thermal power plant investment.
Will precautions for forest fires be taken?	The turbines are expensive and we take all necessary precautions to prevent fires. Turbines are equipped with lightning arresters, security guards oversee the whole area all the time and all necessary precautions will be taken. We even experienced before regional forest observation towers being abandoned

	in our project areas.
What is the average distance between two turbines?	It varies, but on average it is 100-130 m.
How many jobs will be created?	It is not decided yet. In another wind park of us with an installed power of 30 MW, 10 people are employed. For this project, we expect to employ more people, and it also depends on TEİAŞ's requests. During construction, there will probably be several opportunities as well.
Will the municipality be paid a fee?	Wind energy investments are being subsidized by the Turkish government; therefore it is exempt from such a fee.
Will there be a traffic problem during the construction?	Each month 10-12 MW capacity will be installed, therefore the logistics load will be distributed over time. To overcome any issues with road quality and size, new roads will be constructed for the project. As the project covers a wide area, different access roads will be used for different segments of the project.
Will the local people, who are mostly uneducated, be employed?	We prefer local employees, as they look after the project as if their own, especially as security personnel. Concerning the construction period, the subcontractors prefer local workers as well, since accommodation is less expensive for them. Food and some equipment are generally procured locally as well during construction. As the region will probably be more touristy, new stores will be opened. Therefore, several jobs will be created during and after the construction directly or indirectly.
Does Soma have very particular wind conditions which we should be aware of?	In general, technical wind conditions in Turkey are good. We prefer locations, which are not very steep and which are geographically parallel to the east-west direction allowing lining-up of wind turbines. Soma is appropriate in this regard.

Overall, various questions addressing technical, social and environmental aspects of the project have been asked and Mr. Ahmet Aracman from Demirer Enerji given the answers. In general, all questions and issues raised could be justified or answered, with no need to change the project