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

CONTENTS

Annexes

Revision history of this document

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

SECTION A. General description of small-scale project activity

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

>>
9.97 MW BERKE Weir and Hydroelectric Power Plant- Turkey
Version number of document: 01
Date:

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

>>
Summary

BERKE Weir and Hydro Electric Power Plant project is planning to be implemented by Eser Energy Production INC. in Kastamonu Province, Cide District on Aydos River, which is in Western Black Sea Basin. The nearest settlements to the project region are Kuşçu, Düzköy, Çayüstü, Mencekli, Kumköy Villages. The total installed capacity of the plant is 9.97 MW. The annual electricity generation of the plant is 23,582 GWh total which consist of 484 GWh firm and 23,098GWh secondary energy. According to calculations based on electricity generation estimates, BERKE HEPP project will result in a CO_2 reduction of 14.140,9267 tons due to use of renewable resources annually. The necessary permits like Water Usage Agreement, EIA report and Construction permits have been taken. Table 1 shows the important milestones of the project.

Table 1: Milestones of the Project

TASK NAME	START	FINISH
BERKE HEPP	**01.01.2009**	**30.12.2011**
Legal Permits	**22.01.2009**	**10.07.2010**
Geological Researches	**01.01.2009**	**29.12.2009**
Project Design	**22.04.2009**	**16.05.2010**
Expropriation of the Project Area	**22.04.2009**	**31.07.2010**
Forming of the Construction Site and The Mobilization	**27.04.2010**	**25.06.2010**
Improvement and Construction of the Transportation Ways	**11.06.2010**	**09.08.2010**
Weir and Derivation Works	**27.05.2010**	**21.04.2011**
Transmission Channels and Other Works	**02.05.2010**	**30.07.2011**
Penstock	**30.09.2010**	**28.03.2011**
Construction of the Plant Building	**01.08.2010**	**26.02.2011**
Supplying and Installing the Hydro mechanical Equipments	**05.05.2010**	**01.09.2011**
Supplying and Installing the Electromechanical Equipments	**27.02.2011**	**25.08.2011**
Energy Transmission Lines	**27.02.2011**	**26.06.2011**
Finalizing The Construction and Final Test	**02.09.2011**	**31.10.2011**

Starting Up and Production	01.11.2011	30.12.2011

The only purpose of BERKE Weir and Hydroelectric Power Plant is to produce energy. A weir and water intake structure, total conveyance channel, loading pool, penstock and a facility having 9.97 MW installed power is proposed in the scope of the project. With the planned activity, the water taken by virtue of BERKE Weir shall be conveyed to the loading pool through the conveyance channel for balancing the flow and then conveyed to the HEPP by means of the penstock. The turbines converting the potential energy of water to mechanical energy to rotate the generators and the generators shall convert this mechanical energy to electrical energy; water passed from the turbines in the power station will be released back to Aydos creek. The energy generated by the project will be supplied to the national grid. No pollution source is anticipated during the construction and operation of the project. Small HEPP projects are among the projects with minimal impact on environment and local people. No environmentally harmful emission is anticipated. After the conversion of potential energy of water to electrical energy, the water flow will be maintained without any pollution. All regulations regarding protection of air quality will be followed during the construction. Any solid and liquid wastes formed during the construction and operation of the plant will be collected and discharged in accordance with the 'Control of Solid Wastes' and the 'Control of Water Pollution' Regulations.

Contribution to sustainable development

Currently, about one-third of the world's population has no access to electricity. Without concerted action at least 3.5 billion people, nearly 50% of the global community will face water scarcity by 2025. At the same time the world's energy systems, substantially based on fossil fuels, account for a significant proportion of the greenhouse gas emissions that are leading to climate change and global warming[1]. Contrary to this, hydro power plants offer energy generation with no emissions which means no negative contribution to climate change and global warming like conventional power plants do. Hydropower contributes one-fifth of the world's power generation, and provides the majority of supply in 55 countries. For several countries, hydropower is the only domestic energy resource. Its present role in electricity generation is substantially greater than any other renewable technology, and the remaining potential, especially in the less developed countries, is vast[2].

In this chapter, the possible effects of BERKE Weir and HEPP project will be assessed in the light of the knowledge bases of organization active in development such as UNDP etc.[3] as well as "Tool for the demonstration and assessment of additionality" version 05.2, EB39. The sustainable development matrix is defined within the conceptual and methodological framework of Tools. The scope of this matrix classified as three axes: (i) local/regional/global environment, (ii) social sustainability and development, (iii) economic and technological development.

Before the results from this matrix, the potential sustainable development benefits of BERKE Weir and HEPP project can be summarize by a holistic and general approach:[4]

[1]Retrieved from: http://www.sustainablehydropower.org/site/info/aboutsustainability.html
[2] Retrieved from: http://www.sustainablehydropower.org/site/info/aboutsustainability/roleofhydro.html
[3]GTZ, FAO, SNV, DFID, OXFAM, DANIDA, ODI.
[4] BERKE HEPP Project approach complies with the development plan of Turkey in macro level. In the Ninth Development Plan (2006-2013), Turkey's vision is declared as "A Turkey with stability in growth, more fair

• *Reduction of the greenhouse gas emissions* is achieved by the way of replacing electricity which is generated by fossil fuel resources with renewable energy sourced generation of electricity. The project has a contribution to the reduction of pollutants such as sulphur dioxide, nitrogen oxides and particles resulting from the electricity generation using fossil fuels in Turkey. With its dynamically expanding economy and growing population, Turkey is one of the region's biggest energy consumers. Electricity demand grows according to various parameters. The main parameters to affect the electricity demand are: GNP; population and demographic variations; developments in housing, industry, agriculture and transportation sectors etc. Almost 65 percent of that electricity is currently produced by thermal power plants[5]. With its limited oil and gas reserves, Turkey is a major fossil fuel importer. Turkey urgently needs to diversify its energy mix with renewable energy sources. Reduction of dependency on energy imports in Turkey is one of the other contributions of the Project. Turkey's chronic current account deficit has become a major issue facing the economy. The primary cause is high trade deficit taken root from oil and natural gases imported. Turkey has to promote investment and its long-term objective is to boosting capacity to utilize renewable energy resources.

• *Creation of local employment (decent work)* both during the construction and operational phases and procuring locally the construction equipments and subcontractors are an important contribution to local and regional economy. In this Project context, it is seen indirect and induced effects as well as direct effects on employment, local income and taxable capacity. There is no doubt; the most important problem for both regional economy and Turkey is unemployment reality. Especially, thanks to insufficient investments, young population migration from Kastamonu to big city like Istanbul has been seen in long term. Likewise Turkish economy couldn't create employment with sufficient level like the word economy in last decade. The unemployment rate of the average of the year 2010 is 13.2 %[6]. The economical development potential is related to unemployment rate, education opportunity, literacy rate, income per capita. Moreover, the balanced demographic composition is an important potential resource in the local development process. The local economy needs new capital investment taking into consideration current human resources. Therefore, the creations of decent work are fundamental to economic stability and development.

Distribution of income, global competitive power, which is converting into information society and has completed the harmonization process for accession to the EU". The following fundamental principles have adopted to achieve the determined Turkey vision. It is seen that the three principles are concerned to the BERKE Weir and Hydro Electric Power Plant Project. (i) An integrated approach towards economic, social and cultural fields is essential. (ii) A human oriented development approach is essential. (iii) Priority will be executed taking into account the limited sources during the development of policies, Under the light of the vision and principles brought by the Development Plan five economic and social improvement axis have been determined: (i) Competitive Power, (ii) Improvement of Employment, (iii) Social inclusion and social solidarity, (iv) Regional Development and tackling inequalities across regions, (v) Improvement of Quality and Efficiency in Public Services. Sector goals and objectives are included in the development axis. See details Communication Report in Appendix for BERKE HEPP Project approach.

[5]Retrieved fromhttp://www.teias.gov.tr/istatistik2009/7.xls

[6] Retrieved from http://www.tuik.gov.tr/Gosterge.do?metod=IlgiliGosterge&sayfa=giris&id=3536

• Thanks to *technology and know-how transfer*, the employees trained on maintenance, safety and operational issues. This is an important way to increase labour productivity and will cause an improvement in income distribution and growth in medium and long term. At the same time, the used technology at Project has environmental sensitivity and energy productivity. In the Project, electro mechanic equipment with highest efficiency was chosen between the alternatives.

Results from the sustainable development matrix:

According to the requirements of the Gold Standard, the project activity must be assessed against a matrix of sustainable development indicators. The contribution of the proposed project activity to sustainable development of the country is based on the local/global environmental sustainability, social sustainability & development and economic & technological development. The matrix is presented in Table 2.The environmental, sustainable, economical and technical aspects of the proposed project have been discussed with the stakeholders affected by the project.

Table 2: Sustainable Development Indicators Matrix for the Gold Standard

Component Indicators	**Score (-)to (+)**
Local/regional/global environment	
1. Water quality	0
2. Air quality (emissions other than GHG)*	+
3. Other pollutants (Total Suspended Particles, odours)	0
4. Soil condition (quality and quantity)	0
5. Biodiversity	0
Social sustainability and development	
6. Employment (job quality)*	+
7. Livelihood of the poor*	+
8. Access to energy services (electricity)	0
9. Human and institutional capacity*	+
Economic and technological development	
10. Employment (numbers)*	+
11. Balance of payments (sustainability)*	+
12. Technological self reliance*	+

*Added to monitoring plan

To be eligible under the Gold Standard the project must contribute positively to at least two of the three categories and neutral to the third category. All indicators have the same weight. The scores per main category of sustainable development impacts, thus per Environment, Social Development and Economic & Technological Development are added.

Those indicators that are either crucial for an overall positive impact on sustainable development or particularly sensitive to changes in the framework conditions are marked with asterisk and will be monitored.

Before the explanation of the indicators, we can reference the two dimensions of BERKE Weir and HEPP project. The first is the technical characteristics of the generator in Appendix especially in terms of environmental sensitivity and energy productivity. (i) group characteristics (standard equipments; command and control table; standard apparatus; automatic control panel automatic control system), (ii) motor characteristics, (iii) alternator characteristics (iv) diesel electrogen group cabinet with sound isolation (cabinet and insulation; exhaust system and silencer). The second is three social responsibility projects in Appendix 5: (i) contribution to environmental education social responsibility project, (ii) contribution to rural health services social responsibility project, (iii) contribution to village and forest roads rehabilitation social responsibility project.

The indicators that are given in Matrix are described in detail below:

Explanation of the indicators:

1 Water Quality (0): As compared to the baseline, no significant changes with regard to both ground and surface waters are expected because water will not be used (consumed) for construction and operation of hydroelectric power plant.[7]Wastewater produced by workers during construction and operation will not be released to the environment but will be collected in impermeable septic tank which will be constructed on the site. Later they will be periodically transferred via sewage truck by Cide Municipality for proper handling with required fee. This process will be handled according to the Regulation of Ministry of Environment and Forestry.[8]The statement for the minimum flow to be left in the river is also referred in the 'Agreement on Water Utilization' signed between the project developer and General Directorate of State Hydraulic Works (DSİ).This value will be respected by the project activity and the remaining water will be used for electricity production. In this respect corresponding flux meter calculations will be conducted in the water-bed, the water released in the river will be recorded. Since the project only aims energy production only, there will be no water consumption. Thus, the project does not have significant impacts on surface and ground water. Turbined water will be released back to Aydos River without any change in its quality and quantity.[9] In addition to these, the level of water and the quantity of water will be automatically recorded with flow meter and limigrapgh.

2 Air Quality (+): Electricity generated from the hydroelectric power plant partially substitutes electricity generation from thermal power plants that represent a large share of the Turkish grid generation mix. Thus, besides greenhouse gases, all other air pollutants like particle matters and VOC emissions are avoided by the project activity. Dust emergence appears only for a short time during the construction phase. Dust emission control will be handled complying with 'Regulation on Control of Excavation Soil, Construction and Debris Waste' and the 'Regulation

[7]BERKE Weir and HEPP, Environmental Impact Assessment (page 145)
[8]BERKE Weir and HEPP, Environmental Impact Assessment (page 145)
[9]BERKE Weir and HEPP, Environmental Impact Assessment (page 184)

on Control of Industrial Air Pollution'. According to these regulations, the excavation materials will be loaded, transferred and unloaded with minimum winnowing. Then they will be shaded with bale cloths to prevent possible dispersion.

The following measures will be taken for the control of dust emissions during the construction phase:

- The transporting vehicles will be covered with canvas
- The vehicle will not exceed 40 km/h speed
- Roads will be watered periodically

Regulatory limits will not be exceeded, which is confirmed by the Environmental Impacts Assessment (EIA) that was carried out in connection with license application.[10] The positive impact of hydro electrical energy on air quality will be monitored by calculating avoided NOx, CO and NMVOC emissions from electricity mix of Turkey in the year of calculation. The share of electricity generation from coal and fuel-oil will be taken from official statistics, as well as the total emission amounts for NOx, CO and NMVOC by electricity production.

3 Other Pollutants (0): During operation of the hydroelectric power plant, no positive or negative impacts are expected. No hazardous, toxic or flammable materials will be used during excavation and construction. In the context of the hydroelectric power plant, other pollutants are solid waste and noise:

a) Solid Waste: Both during the construction and operation phase, all waste caused by the workers and machines will be collected in separate closed bins (plastic, metals etc.) and then they will be collected by Cide Municipality or appropriate hauling company. Non recyclable wastes will be collected in impermeable closed bins. All solid wastes generated during the project will be handled complying with the related regulations of the Ministry of Environment and Forestry.[11]

b) Noise: There will be noise due to the operation of turbines and generators. However, noise will have no effect on the close settlements since turbines and generators will be within the powerhouse which is a sound insulated building. During the project, noise will be handled incompliance with the 'Regulation on Assessment and Management of Environmental Noise Pollution'.[12]

4 Soil Condition (0): The main problems with regard to the soil are; the rocky stony parts, significant water erosions and insufficient amount of soil. However, in the area in question, the significant part of the soil is I. Class Soil, therefore there are no risks such as erosion or rocky, stony fields. This type of soil is well drained and thin.[13] In other words, the area on which the project is located is included in class VII soil land. Soils included in this class have very severe

[10]BERKE Weir and HEPP, Environmental Impact Assessment (page 138-139)
[11]BERKE Weir and HEPP, Environmental Impact Assessment (page 146-147)
[12]BERKE Weir and HEPP, Environmental Impact Assessment (page 186)
[13]BERKE Weir and HEPP, Environmental Impact Assessment (page 45)

limitations hindering raising of cultivated plants such as steepness, erosion, shallow soil, rockiness, wetness, salinity or alkalinity. Its physical properties are not suitable for improvement, preservation and control applications such as seeding and liming, establishing contour furrows, drainage ditches, diversion structures and water distributors.[14]During the construction works, around 495.922 m^3 excavation wastes will be formed. It is foreseen that the 2% of those waste which means around 9.918m^3, will be plantal soil. This part of the soil will be protected against erosion, drying, weed and will be covered by meadow/pasture plants to survive. Around 16.178m^3 of the excavation material will be used for filling purposes of the regulator and the coffer-dam. And the 500m^3 part of this material will be used for the planned new road direction. The rest of the excavation material which is unnecessary for the construction works will be stored as of two parts temporarily. Afterwards, for the elimination of these materials the necessary regulations will be complied.[15]

5 Biodiversity (0): Species present in the project area and are mostly wide spread species. Therefore, it is not in question that the project will lead any species to become extinct.[16]Furthermore; fish passage will be constructed in order to protect diversity of aquatic organisms. In addition, environmental base flow will be provided in water course for the survival of aquatic life.[17]

6 Employment (job quality) (+): As is known, Millennium Development Goals (MDG) Target 1.B is achieving full and productive employment and decent work for all, including women and young people. This criterion is parallel to "decent work" standards of the International Labour Organization (ILO)'s. According to this, decent work is characterized by the following components: a) productive work; b) protection of rights; c) adequate pay and d) social coverage. A fifth and sixth essential element would have to be added: e) social dialogue, f) gender equality (especially accepted by the UNDP and UNIFEM).

Although the population is below the country average, the unemployment caused immigrations to other cities like Istanbul. The number of labour migrants who go out of their province is rapidly increasing. The capacity of absorbing rural labourers is very limited due to limited infrastructure and investments. 32.8% of the female employment and the 4.7% of the male employment are the unpaid family workers. The most of this employment are informal/ unregistered. They have not social security and are out of the Labour Law. Kastamonu province's share from national income is 0.4% and the share of agriculture for gross domestic product is %31.2, this ratio is 23% for transportation and communication; and 14.2% for industrial facilities.[18]

It can be seen details in Communication Report in appendix for the standards of jobs created in construction and operation periods under the management of Project. This standards is validated for both direct and indirect (subcontractor) employment. The working conditions of BERKE Weir and HEPP is rather sufficient in terms of "decent work" standards.

[14] BERKE Weir and HEPP, The Summary of EIA, page 3
[15]BERKE Weir and HEPP, Environmental Impact Assessment (page 126)
[16]BERKE Weir and HEPP, Environmental Impact Assessment (page 106)
[17]BERKE Weir and HEPP, Environmental Impact Assessment (page 140)
[18]BERKE Weir and HEPP, Environmental Impact Assessment (pages,117,118)

7 Livelihood of the poor (+): Generating electricity from resources that was not used before creates an additional income to the local community, influencing the poverty alleviation, particularly in the rural areas, and accelerates the regional economic development. As a measurable effect, the impact on the local economy shall be monitored and reported in form of contracts with and invoices from local subcontractors and businesses (cf. section G of the projects Gold Standard Passport). As it is known, the village and the forest roads are an important component of the welfare of rural populations. When the roads are secure, sufficient, etc. positive multipliers effects are revealed. The current situation is insufficient to meet transportation requirements of rural population. Therefore, Project participant will contribute to village and forest roads rehabilitation under the "Contribution to village and forest roads rehabilitation social responsibility project" (Refer to Annex 5 for details).

8 Access to energy services (electricity) (0): As a local energy source, hydro power improves the access to energy services. Turkey's main indigenous energy resources are hydropower. Turkey must base its energy strategy on developing the whole hydroelectric potential as soon as possible. In assessing life cycle costs, hydropower consistently compares favourably with virtually all other forms of generation. Electricity demand will increase greatly during the 21st century, not only because of demographic pressures, but also through an improvement in living standards in Turkey. As the domestic electricity supply improves, it is provided cheaper electricity for consumer usage.

9 Human and institutional capacity (+): Project development will promote the use of renewable energies in the region. It will require widespread education and skills improvement, as the local people will be incorporated in the development and maintenance of the project. The local public is intensively involved in the development and decision-making regarding the plant within the stakeholder consultation process, representing a new kind of institution as part of the development of a Turkish energy project. One measurable effect on human capacity is the improved skills of plant staff. Education and trainings are part of the monitoring as described in (cf. section G of the projects Gold Standard Passport)

Within the framework of strengthening the preventive and the protective health services, Project participant want to contribute this public service process. Especially deficiency in health infrastructure especially the needs of village clinic will be met after we consult government officials. Local priorities can be determined according to reduce child mortality rate and improve maternal health (goal 4 and goal 5 in the scope of the MDGs.)

10 Employment (numbers) (+): Installation of the hydroelectric power plant will provide employment to local people. At the construction stage of the project, approximately 100 persons will be employed; and at operation stage approximately 14 persons will be employed. Most of the employees who will work in construction stage will be local.[19] Indirect and induced effects as well as direct effects should be taken into account on employment. Direct effects are jobs created in construction and operation periods under the management of Project. Indirect effects are manufacturing and service jobs created in associated industries that supply intermediate goods for building, transportation. Induced effects are retail and wholesale jobs created when new

[19]BERKE Weir and HEPP, Environmental Impact Assessment, page 174

workers in construction, manufacturing, and service industries spend their earnings on other products in the economy.

11 Balance of payments (sustainability) (+): As it is known, the balance of payments accounts of a country record the payments and receipts of the residents of the country in their transactions with residents of other countries. The four main divisions on the balance of payments have been (i) the current account, (ii) the capital account, (iii) reserve account, (iv) net errors and omissions in the framework of Balance of Payments Methodology and Practice of Turkey. The current account shows the sum of the balance of trade (net earnings on exports – payments for imports), factor income (earnings on foreign investments – payments made to foreign investors) and cash transfers.[20]

Turkey's chronic current account deficit has become a major issue facing the economy. The primary cause is high trade deficit. The part of this deficit is taken root from oil and natural gases imported. It is widely accepted that Turkey is oil and natural gases importing; developing country. The interaction between oil prices/amounts and current account imbalances is strong. The current account balance at the same time is the difference between a nation's total (private and public) savings and total investment. Turkey's national savings rate should be increased in order to better management of the current economic problems and to place the growth of the Turkish economy on a more stable and sustained path. In order to raise national savings rate, import substitute investments have to promoted in energy sector

The BERKE Weir and HEPP Project and its role (like the other small hydro power investments) in strengthening the sustainable sector of electricity generation in Turkey tend to contribute to mitigation of import dependency. Electricity generation from renewable sources is completely independent from any imports and thus does not have any negative effects on the balance of payments. The positive effect of the small-scale hydro plants to the macro economic indicator will be seen in medium and long term.

12 Technological self reliance (+): As the hydroelectric power plant projects realize, the Turkish capabilities, competencies and self reliance regarding the introduction of innovative technologies are strengthened. The BERKE Weir and HEPP Project consider the investment into and the operation of a new technology in Turkey as a contribution to technological self reliance due to the gathered experience with the proposed project.

[20] The *capital account* records the net change in ownership of foreign assets. It includes the reserve account (the international operations of a nation's central bank), along with loans and investments between the country and the rest of world (but not the future regular repayments / dividends that the loans and investments yield, those are earnings and will be recorded in the current account).

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 country)	Eser Energy Production INC. (private company)	No

The Eser Energy Production INC. has the first priority on using the sustainable energy sources; building power plants regarding our know-how, high technology, international standards, clean environment and a good life. Eser Energy Production INC. meets the obligations in the quality, occupational health and environment areas of the whole field of activities and projects we perform not only for our society but also for our employers and employees. Eser Energy Production INC. tries to discharge our debt to the nature and society within the context of social responsibility. Especially in the last century, world is rubbed off irreversibly and mankind took from the nature more than it gave. Eser Energy Production INC .primarily aims to decrease the harm given to nature and then make contributions to nature. In this target, we started with our own activities; we built the green building as the first in Ankara and one of the pioneers in Turkey in this aspect. Eser Energy Production INC., focuses its' investments on one of the most needed of our country which is the renewable energy sources in energy sector. The projects based on renewable energy sources are given priority by Eser Energy Production INC. in today's world as the resources are depleting. Human health is another subject Eser is concerned about. Eser Energy Production INC. began to fight with cigarette in the first stage. Eser affords the charges of the treatment of smoking cessation of the employees who want to quit smoking. Eser Energy Production INC. aims to provide every kind of moral and material support within the context of social responsibility, as our employees volunteer to quit smoking. Apart from these, we undertake recycling projects for society especially in Turkey and the countries we have conducted projects. While we sometimes support the schools and villages, we are also making planting works at the regions we are working. Since we know the importance of education for the future of the countries, we give support to various organizations of universities.

ETS Eser Contracting and Industry Co. Inc.which is a subsidiary company of Eser Energy Production INC. is the member of the United Nations Global Compact. ETS Eser Contracting and Industry Co. Inc.submits to UN Global Compact communication report on progress within the regular period. This last report is given as an Annex to this report.

A.4. Technical description of the small-scale project activity:

Technical description of the small-scale project activity is classified as four sub-chapter (i) location (ii) type and category (ies) and technology/measure (iii) the amount of emission reductions over the chosen crediting period (iv) confirmation.

A.4.1. Location of the small-scale project activity:

A.4.1.1. Host Party (ies):

<<Turkey

Table 3: Coordinates of the Project Area

POINT NO (Reg.)	X (Easting)	Y (Northing)	Longitude	Latitude
1	510206.77	4635534.26	39.1229970919636	41.87166005763745
2	510271.34	4635560.90	39.123775656490736	41.87189916414015
3	510336.64	4635585.87	39.12456299454737	41.87212321437075
4	510377.79	4635570.69	39.125058610212754	41.87198595152692
5	510411.86	4635541.01	39.125468650477664	41.87171818048783
6	510403.76	4635529.54	39.12537083936962	41.871614978532996
7	510167.65	4635435.77	39.12252398184394	41.870773476891905
8	510153.82	4635437.46	39.12235735457093	41.87078887614154
9	510168.32	4635487.04	39.122532937470226	41.87123524948632
POINT NO (HEPP)	X (Easting)	Y (Northing)	Longitude	Latitude
1	506978.81	4642292.53	39.08417839092816	41.93256559653237
2	506996.97	4642320.34	39.08439776677532	41.932815913842816
3	507085.23	4642324.60	39.08546241294612	41.93285349521689
4	507110.78	4642219.31	39.08576932759	41.93190494323146
5	507117.02	4642219.31	39.08584459359799	41.93190488698559
6	507101.13	4642192.63	39.085652609157826	41.93166472962555
7	507013.15	4642188.66	39.08459136340479	41.93162975946311
8	506983.07	4642203.14	39.08422871576873	41.93176044414613

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

Black Sea Region/ Province of Kastamonu / Cide District

A.4.1.3. City/Town/Community etc:

Project is located in the province of Kastamonu, Cide district. The project area is 82 km at an air distance to Kastamonu city center. Project area is located on the east of Cide District with approximately 10 km air distance.

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

Figure 1: Location of Kastamonu Province, Cide Distinct in Turkey map

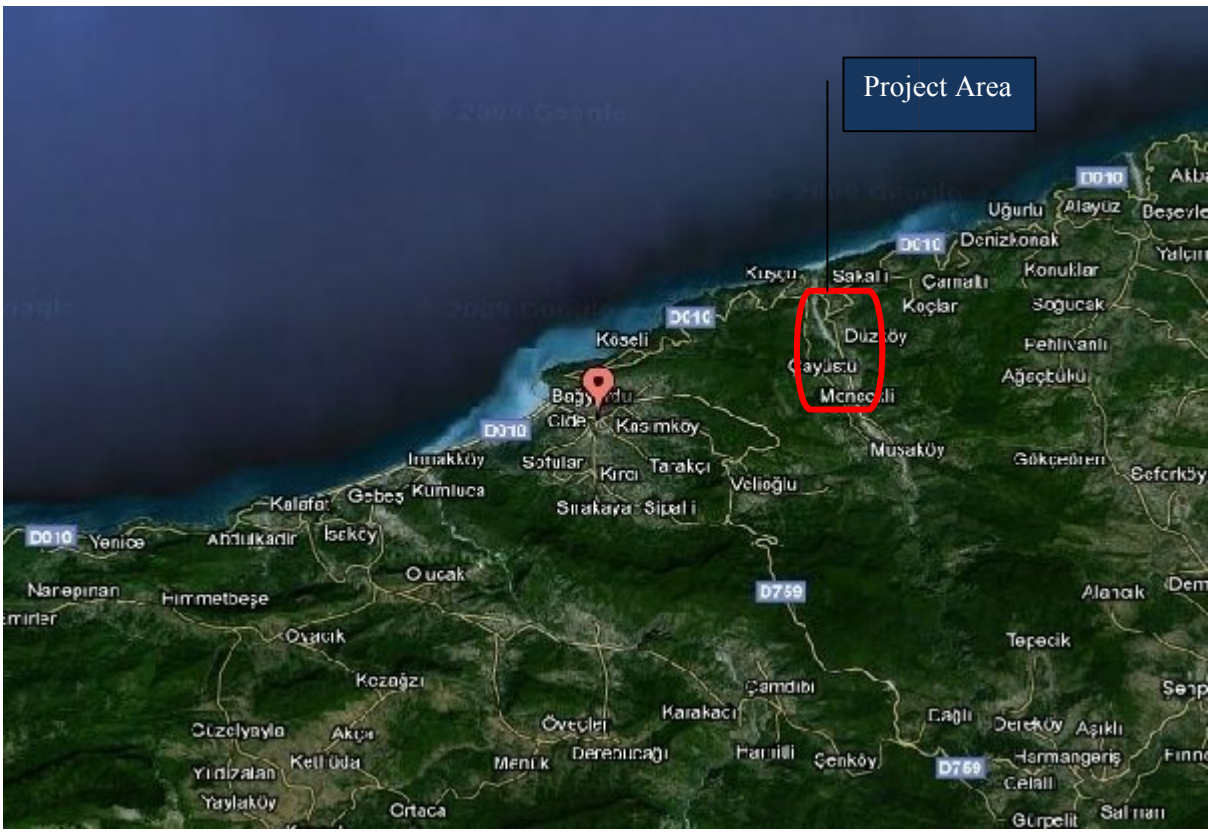

Figure 2: Identification of the project area

The area is located on Kastamonu E30-a4, Kastamonu E30-a1 number 1/25.000 Scale Map between 33°05'00"-33°07'30" latitude and longitude 41°52'00"-41°56'00". The nearest residential place to the weir area is the residence unit within Beldibi Quarter in the north-eastern direction of the area and about 100 m away. The nearest house to the Conveyance Channel is about 50 m away within Çayüstü Village and the nearest residence unit to HEPP area is in north-eastern direction of the area and about 400 m away within Kuşçu Village.

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

According to the latest Gold Standard VER Manual for Project Developers 15, the Project falls into the type A.1. - Renewable Energy. According to Appendix B of the UNFCC's published "Simplified Modalities and Procedures for Small-Scale Clean Development Mechanism Project Activities", category of this project activity is AMS-I.D: Grid Connected Renewable Electricity Generation.

Run of river hydroelectric technology uses the natural flow of water from a river to produce electricity. It has no associated large dam or reservoir. Run of River hydroelectric projects are very different from conventional hydroelectric projects (with reservoir) with regard to design, appearance and impacts. There are two main differences from the conventional HEPP: (i) there is no water storage other than the limited amount required to submerge the intake pipe; (ii) there is no alteration of downstream flows, since all diverted water is returned to the stream below the powerhouse.

In run of river hydroelectric power plants, a portion of the river's flow is diverted to a powerhouse before the water is returned to its natural watercourse. The water reaches the powerhouse through a tunnel or penstock, which drops from the intake. Once the water reaches the powerhouse, it is at a very high pressure and is directed into a turbine before it is released back into the river. The power generated is connected to a local power grid through a high voltage transmission line. The environmental footprint of run of river facilities is typically considered lower-impact when compared to large scale hydroelectric facilities that have large water storage reservoirs. With no large dam to alter the river's flow, the design attempts to mitigate the environmental concerns traditionally associated with commercial dam-based hydroelectric projects.

Technical Details

Table4: Components of the project and their characteristics

UNITS	CHARACTERISTICS
Weir and intake structure	• height from river bed: 5 m • crest elevation: 55 m
Supply canal	• length: 10,593 m • capacity:22,85 m^3/s
Forebay	• length: 50 m • width: 20 m
Penstock	• inner diameter: 2,5 m • length: 139,3 m
Hydropower plant	• installed capacity: 9,97 MW • tail water elevation: 3 m

The flow rate of the project is 22.85 m^3/s; gross elevation is 52 m and net elevation is 47.06 m. The total installed capacity of the plant will be 9.97 MW. The annual electricity generation of the plant will be 23.582 GWh total consisting of 0.484 GWh firm and 23.098 GWh secondary energy. The water extracted by BERKE Weir will be transmitted to the power plant and will generate power in the turbines. The HEPP plant will be constituted at 3 m tail water level. The energy generated will be given to the Turkish national grid and the region's energy demand will meet with the public interest by a solid project.

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

Table 5: Estimated amount of overall emission reductions by years

Year	Estimation of project activity emissions (tonnes CO_2-eq)	Estimation of baseline emissions (tonnes CO_2-eq)	Estimation of leakage (tonnes CO_2-eq)	Estimation of overall emission reductions (tonnes CO_2-eq)
Nov. - Dec. 2012	0	2356,82	0	**2356,82**
2013	0	14140,93	0	**14140,93**
2014	0	14140,93	0	**14140,93**
2015	0	14140,93	0	**14140,93**
2016	0	14140,93	0	**14140,93**
2017	0	14140,93	0	**14140,93**
2018	0	14140,93	0	**14140,93**
Jan. – Oct. 2019	0	11784,11	0	**11784,11**
TOTAL	0	98986,49	0	**98986,49**

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

The project does not obtain public funding. The project investment has been financed by 30% equity and 70% loan from a commercial private bank. Finance costs are not considered in the scope of investment analysis in the lights of Tool framework. Please see Annex 2 for relevant document.

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

The debundling is defined as the fragmentation of a large project activity into smaller parts. As highlighted in Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities, a proposed small-scale project activity shall be deemed to be a de bundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

- With the same project participants;
- In the same project category and technology/measure;
- Registered within the previous 2 years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

The subjects above are not valid for the project in question, thus the proposed project is not a part of a large project activity and is eligible to use the simplified modalities and procedures for small-scale CDM project activities. Hence, the project activity will follow the regular CDM modalities and procedures.

SECTION B. Application of a baseline and monitoring methodology

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

Applied approved baseline and monitoring methodology:
• AMS-I.D "Approved Small Scale Methodology for Grid Connected Renewable Electricity Generation'', version 16, EB 54

Used tools:
• ''Tool for the demonstration and assessment of additionality'' version 05.2, EB39.
• ''Tool to calculate the emission factor for an electricity system'' version 02, EB50.

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

Methodology AMS-I.D "Approved Small Scale Methodology for Grid Connected Renewable Electricity Generation'', version 16'' is applicable to the proposed project activity because it fulfils the required criteria:

- The project comprises renewable energy generation by means of hydro power.
- It is a grid-connected electricity generation project.
- The installed capacity of the proposed project activity is 9, 97 MW which is lower than 15 MW.

B.3. Description of the project boundary:

The physical, geographical site of the renewable generation source delineates the project boundary according to the methodology AMS-I.D '''Approved Small Scale Methodology for Grid Connected Renewable Electricity Generation'', version 16''. The project site and the power plants which are connected to the Turkish National Grid are included within the project boundary.

B.4. Description of baseline and its development:

According to the methodology AMS-I.D "Approved Small Scale Methodology for Grid Connected Renewable Electricity Generation, version 16", the baseline is the kWh produced by the renewable generating unit multiplied by an emission factor.

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

Where:

BE_y = Baseline Emissions in year y (tCO_2)
$EG_{BL,y}$ =Energy baseline in year y (kWh)
EF_{CO2} =CO_2 Emission Factor in year y (t CO_2e/kWh)

Emission factor can be calculated in a transparent and conservative manner as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system, version02"

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

As required in the Gold Standard "Voluntary Emission Reductions Manuel for Project Developers", the project additionality is demonstrated through use of the "Tool for the demonstration and assessment of additionality, version 05.2".

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations
Realistic and credible alternatives to the project activity that can be a part of the baseline scenario are defined through the following steps:

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

The alternatives to the proposed project activity are listed in Table 5 below.

Table 6: Alternatives to the project activity

Alternative A	Proposed project developed without the VER revenues
Alternative B	Same amount of electricity produced by other facilities not under the control of project participant (No action from the investors)
Alternative C	Construction of a thermal power plant with the same installed capacity or the same annual power output.

Alternative A which is the implementation of the project without carbon revenue is not financially attractive as discussed in investment analysis section below. Alternative B is the baseline scenario and implementation of the proposed project as a VER activity would be additional to this scenario. Alternative B does not seem as a realistic option due to expected

energy demand increase in Turkey. Energy demand of Turkey is expected to expand at an average of 6.3% - 7% until 2018[21] in addition; the Figure 3 below shows the energy demand projection (conservative scenario) between 2010 and 2019 prepared by TEIAS (Turkish Electricity Transmission Company). Based on this fact, the electric generation in Turkey should be increased anyway in accordance with the expected energy demand. Therefore, no action alternative is not a plausible option and HEPPs should be constructed in order to generate clean energy where applicable.[22]

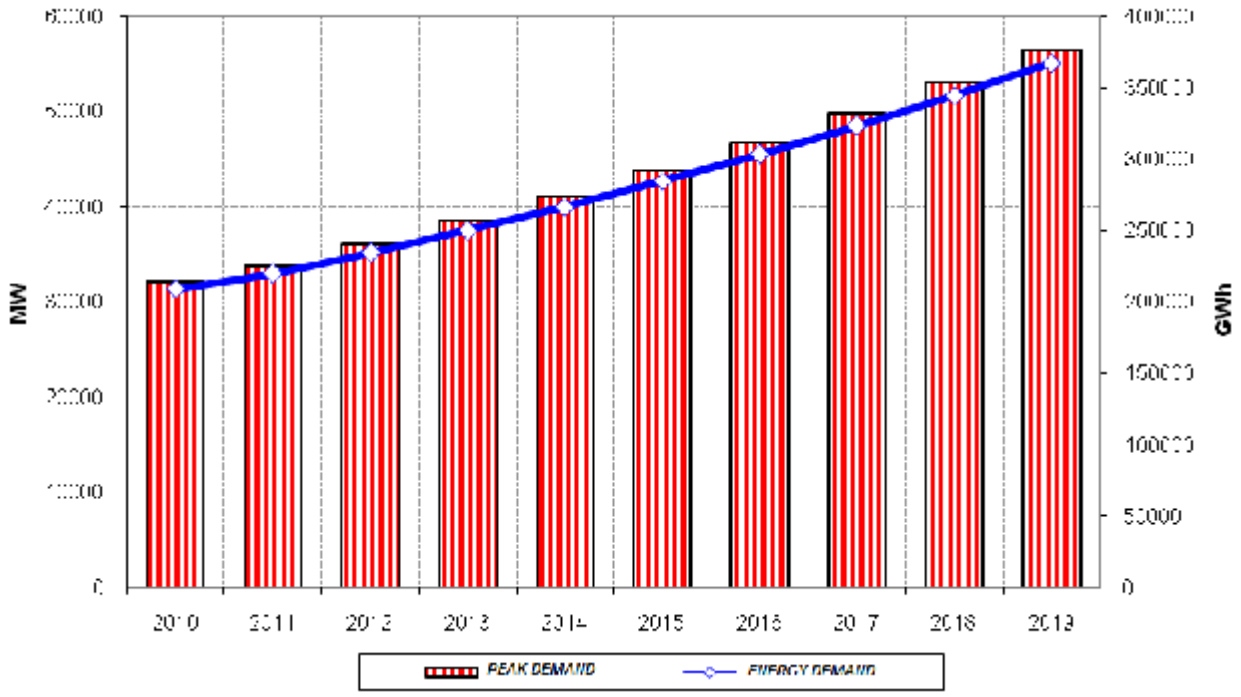

Figure 3: The energy demand projection between 2010 and 2019(low demand)[23]

The last alternative, Alternative C, is considered as a significant alternative to the project activity. Since the share of thermal plants in the installed capacity of Turkey is considerably high which corresponds to 29339.1 MW of total 44761.2 MW installed capacity according to 2009 Turkish electrical statistics taken from TEIAS.[24]

[21] E. KAVUKÇUOĞLU, Türkiye Elektrik Enerjisi Piyasası2010-2011, Deloitte Turkey
[22]Electrical Energy Production Planning Study on Turkey 2005-2010, TEİAŞ, www.teias.gov.tr
[23] Retrieved from http://www.teias.gov.tr/projeksiyon/KAPASITE%20PROJEKSIYONU%202010.pdf, Page 13
[24] Retrieved from http://www.teias.gov.tr/istatistik2009/7.xls

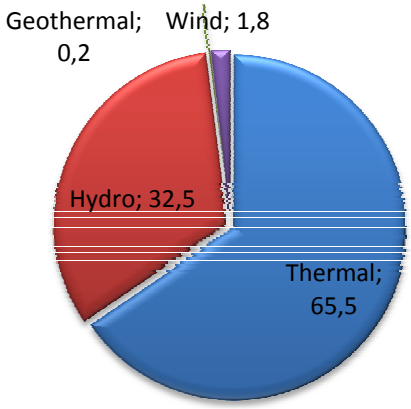

Figure 4: The distribution of installed capacity of Turkey by primary energy sources in 2009[25]

Outcome of Step 1a

Three alternatives are considered for the proposed project. However due to the increasing electricity demand in Turkey, Alternative B, which is the continuation of the current situation is an unrealistic option. Therefore, Alternatives A and C are the two alternatives to be evaluated.

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

The following applicable mandatory laws and regulations have been identified:

1. Electricity Market Law [Law Number: 4628 Ratification Date: 20.02.2001 Enactment Date: 03.03.2001][26]
2. Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy [Law Number: 5346 Ratification Date: 10.05.2005 Enactment Date: 18.05.2005][27]
3. Environment Law [Law Number: 2872 Ratification Date: 09.08.1983 Enactment Date: 11.08.1983][28]
4. Energy Efficiency Law [Law Number 5627, Enactment Date 02/05/2007][29]
5. Forest Law [Law Number 6831, Enactment Date 31/08/1956][30]

All the alternatives to the project outlined in Step 1a above are in compliance with applicable laws and regulations.

[25] Retrieved from http://www.teias.gov.tr/istatistik2009/7.xls
[26] Retrieved from http://www.epdk.gov.tr/english/regulations/electricity.htm
[27] Retrieved from http://www.eie.gov.tr/duyurular/YEK/LawonRenewableEnergyReources.pdf
[28] Retrieved from http://rega.basbakanlik.gov.tr
[29] Retrieved from http://www.eie.gov.tr/english/announcements/EV_kanunu/EnVer_kanunu_tercume_revize2707.doc
[30] Retrieved from http://web.ogm.gov.tr/birimler/merkez/kadastro/Dokumanlar/KD1/Mevzuat/6831%20ORMAN%20KANUNU.pdf

Outcome of Step 1b

Mandatory legislation and regulations for each alternative are taken into account in sub-step 1b. Based on the above analysis, the proposed project activity is concluded not to be the only alternative amongst the ones considered by the project participants that is in compliance with mandatory regulations. Therefore, the proposed VER project activity is considered as additional.

Step 2- INVESTMENT ANALYSIS

The investment analysis for BERKE HEPP in this Step 2 will be evaluated via the following four sub-steps: (i) Determine appropriate analysis method; (ii) Apply analysis method; (iii) Calculation and comparison of financial indicators; (iv) Sensitivity analysis.

Sub-step 2a - Determine appropriate analysis method
Benchmark analysis (option III) as a suitable method for this Project type and decision making context will be used to analyze. Compared with other method (the simple cost analysis and investment comparison analysis) currently in use, the proposed method can be seen the best option. Benchmark Analysis is provided with a realistic viewpoint relatively to give our in assessing project for economic viability and financial sustainability. There is no doubt that each method has its own advantages.

Sub-step 2b: Option III. Apply benchmark analysis
According to the "Tool for the demonstration and assessment of additionality", a relevant benchmark IRR(Internal Rate of Return) can be derived from government bond yield and interest rates increased by a suitable risk premium. It is also widely recognized and accepted that government bonds yield and interest rate can be used as benchmark. Especially, since the liberalization of capital flows in 1989, the most valid benchmark has become in Turkey.

Government bonds yield and interest rate responds quickly to changes in macroeconomic conditions. Besides, this benchmark for investors facilitates comparison for long term evaluation purposes. Since IRR calculations are based on US Dollar, Turkish Eurobond Yield (USD) was selected as benchmark. Turkish Eurobonds refers to debts securities denominated in foreign currencies and in issued in markets abroad by the Undersecretaries of Treasury of the Republic of Turkey.

Turkish Eurobond Yield from web page of Banking Regulation and Supervision Agency (BDDK) has been used as given in table below.[31]

Table 7: The Benchmark Sources

The Benchmark Sources	04.04.2005	03.04.2006	02.04.2007	02.04.2008
USD 5-Year Maturity Treasury Bond Yield (%)	4,12	4,83	4,53	3,60
Turkish Eurobond Yield (USD) (Maturity 2034) (%)	8,35	7,16	7,26	7,62
Turkish Eurobond Price (Maturity Date 2034)	96,125	110,000	108,563	104,250

[31] Retrieved from http://www.bddk.org.tr/WebSitesi/english/Statistical_Data/Daily_Reports/Daily_Reports.aspx

It can be seen that Eurobond has average yield of 7.34% for the period 2006-2008. Eventually the benchmark will be 7.34%.[32] Despite possible limitations – due to the difficulty in selecting benchmark IRR in the face of market volatility (government bond rates etc.), its changes over time and project type has its own characteristics (supply, demand, price etc.) – this accepted benchmark IRR provides a more accurate and conservative view of the investment analysis effort.

Sub-step 2c: Calculation and comparison of financial indicators

The internal rate of return (IRR) calculation is a convenient technique for Berke Weir and HEPP in benchmark analysis. As it is known, IRR is a percentage figure that describes the yield or return of an investment over a multiyear period. For a given series of cash flows, the IRR is the discount rate that results in a net present value (NPV) of zero.

IRR can be calculated using directly the main parameters of project and other relevant financial items.

Table 8: Main parameters used for investments analysis

Parameters	Unit	Data Value
Installed Capacity	MW	9.97
Grid Connected output	GWh	23,58
Capital Investment	Million $	13,6
Corporate tax rate	%	20
Expected Tariff	€ Cents/kWh	5,5
Expected VERs price	€/ tCO2e	5

(1) EURO/USD ratio =1.32

The main parameters and items have been considered in the table above for the cash inflow and cash outflow of the Project:

(i) The cash inflow or income stream

The primary legislation for a reasonable projection of income stream is the "Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy (No.5346)". According to Article 6 of the Law, the price to be applicable to the electrical energy to be purchased within the scope of Law for each year shall be the Turkish average wholesale electricity price in the previous year determined by the Energy Market Regulatory Agency (EPDK). This applicable price may not be less than the Turkish Lira equivalent of 5 euro cent per kWh and may not be more than the Turkish Lira equivalent of 5.5 euro cent per kWh. However legal entities (project participant) that hold licenses based on renewable energy resources and which have the opportunity to sell above the limit of 5.5 euro cent per kWh in the market shall benefit from this opportunity.

[32] A yield of 7,34 % to investor is the one of the lowest yields among the Turkish Eurobond issues in Global format. The International Monetary Fund's Global Financial Stability Report (April 2010) is show that the global liquidity cycle started in 2003 and accelerated from the second half of 2007. These dynamics dropped in government bonds yields and interest rates in this period.

We considered 1 USD = 1.5 TL and 1 EURO= 1.98 TL (exchange rate/selling). This means that 1.713.625 $ is produced for 5.5 Cents/kWh and annual generation has been taken as 23.58 GWh. It is assumed constant selling price of electricity during the 50 years of operation.

In the framework of Project, the Government gave guarantee to Berke Weir and HEPP to buy 100 percent of power to be generated from power plant only first ten years. After the first 10 yearly periods, electricity sales prices and amounts will depend on electricity market condition. As it can be seen above, main assumption (conservative approach) is to adopt the same income stream projections in both the first 10 years and following 40 years. Besides, there is no export competence in the scope of license and the Project is derived from regional market potential (EU etc.). So income stream projections are based on rather the conservative assumptions.

(ii) The cash outflow and costs (investment costs & operation costs)

Costs can be classified into two categories: Investment costs and operational costs. DSI unit prices is used (except electromechanical equipments) in calculations. Total investment cost of this Project is 13.632.315 USD and is itemized as follows:

Table 9: BERKE WEIR and HEPP Project Estimated Investment Costs (USD)

	DEFINITION	TOTAL
1	WEIR	1.207.618
2	TRANSMISSIONS CHANNEL	3.430.273
3	HEADPOND	342.302
4	PENSTOCK	298.987
5	POWERHOUSE	996.093
6	ROADS	107.100
7	HYDRO-MECHANICAL EQUIPMENT	1.162.021
8	ELECTRO-MECHANICAL EQUIPMENT	3.663.975
9	ENERGY TRANSMISSION LINE	140.000
10	FACILITY COST	11.348.369
	DESIGN-INSPECTION	567.418
		11.915.787
	EXPROPRIATION	366.000
	PROJECT COST	12.281.787
	VAT	1.350.528
	TOTAL PROJECT COST (USD)	**13.632.315**

(iii) Difference (net cash inflow) and corporate tax

Corporate income tax is applied at 20 % rate on the net cash inflow. However taxpayers pay provisional tax at the rate of corporate tax, these payments are deducted from corporate tax of current period. It is important that when business profit (dividend) is distributed company holders as project participants, the income tax is levied on the income of these persons from business activities as well as corporate tax liability. The rates of income tax are progressive. It is not considered this point in investment analysis.

(iv) Net present value (NPV) and Internal Rate of Return (IRR)

As it is known, for a given series of net cash flows (the difference between the present value of cash inflows and cash outflows),Equity IRR of the BERKE HEPP (%) is the discount rate that results in an NPV of zero. Equity IRR of the BERKE HEPP has been calculated as 7,28 % based on the parameters given above without considering the carbon revenue.

It is also assumed 50 years of operation with no residual value of the BERKE HEPP. So, the salvage value is 0. However, in reality, the lifetimes of hydroelectric power plants (75-100 years) are more than 50 years and salvage value > 0. In here, it is not considered to this point in analysis. When we consider to today's technology, high capital stock will be transferred from Project to the public. So, this salvage value can be seen positive impact on community (public utility) in terms of sustainability development matrix.

(v) Comparison IRR with and without the VER income and the benchmark

When we include the carbon revenue in the cash flow, equity IRR increases to nearly 7.38%. Consequently the proposed Project activity can only become acceptable with the VER credit income. Considering the fact that the benchmark in Turkey is 7.34% and comparing these rates with the calculated IRR values for the project activity with and without the VER income, it may be concluded again that the project becomes acceptable with VER revenues.

Sub-step 2d: Sensitivity Analysis

Sensitivity analysis is used to determine how different values of independent variables will impact dependent variables under a given set of assumptions. This subchapter can cover a diversity of complexities and difficulties that may arise in an investment analysis, including issues of electricity generation, electricity price, and corporate tax and other financial burdens, electricity demands etc. The aim is to bring to the attention of persons concerned a number of issues that are known in cash flows circles and IRR calculations.

Independent variables and accepted affecting IRR as a dependent variable is assessed below.

(i) The cash inflow or income stream

■Constant selling price of electricity during the 50 years of operation
Average electricity wholesale price = 10,9Ykr/kWh,
Average electricity wholesale price = $ 6,6/kWh
1 USD = 1,5 TL, 1 EURO= 1,98 TL (exchange rate/selling).

Independent variables affecting pricing: The price level in the market is mostly determined by the Government as the main driver. Due to slow progress in market liberalization, there may not be change in this situation in short and medium term. It is generally expected that the public sector borrowing requirement (PSBR) to be rise, pressure on the level of electricity price to increase. After the global crises, Turkish Government's manoeuvring ability within the budget is very limited. Moreover, significant opposition from consumers (household, industry etc.) may meet the increasing electricity price. Therefore, price movement may remain flat in the coming years.

On the other hand, privatization of the important parts of Turkey's Electricity Distribution Industry has carried out recently. The privatization of electricity distribution companies will aid the fight against illegal electricity usage in Turkey. The rate of illegal electricity usage in Turkey increased from 14.4 percent to 17.7 percent from 2008 to 2009, according to the recent data from the Turkish Electricity Distribution Company (TEDAŞ). Therefore, increased energy costs to consumers and public fall. As the rate of illegal electricity usage decreases, institutional structure of market; transparency is strengthening. Right price signals lead to efficient choices among existing alternatives for consumer, producer and the Government.

■ Constant annual generation of electricity (23.58 GWh) during the 50 years of operation

Independent variables affecting generation: We consider to the two independent variables. First are the climatic conditions and catastrophic risks. As it is known, the estimated electricity generation based on historical hydrological data. Big deviation can be seen in the context of global climate change. So, these effects on generation may be negative or positive. Both of them are risks of Project. Second is the constituted water usage agreement between Project participant and DSİ (The State Water Supply Administration). According to the agreement, DSİ can always pump from the Creek for agricultural irrigation and fresh water. This means decreasing generation and income for the project.

■ It is assumed that annual generation (%100) will be sold during the 50 years of operation. It is not considered the demand conditions of electricity market. Besides, there is no export competence in the scope of license and the Project is derived from vast market potential (EU etc.).

Independent variables affecting the demands: To assess the predictions for demands of using more realistic assumptions, it is needed to develop a framework of multi dimensional analysis. For instance, growth scenarios, a short and long run the price and income elasticity of demand for electricity etc. are main subjects.[33] There is no doubt that it is not possible to handle the dimensions with all its aspects. We only underline importance of GDP and industrial (especially manufacturing) sector in the demand context.

[33] The price elasticity of demand is, by definition, the percentage change in demand that is caused by a one per cent change in price. This definition is also validated for the income elasticity.

In Turkey, growth rate is an important variable which affected the electricity consumption positively in the long term.[34] Export-led growth as model is valid in Turkey.[35] The growth performance predominantly depends on global demand and falling global demand could have a major impact. Industry (especially manufacturing) with input-output connections is also the key sector in terms of growth performance and constituted more than 40% of total Turkey electrical consumption. So the electricity demand conditions of domestic market are drastically affected by the global economy cycles. On the other hand the largest elasticity is found in industry. Household demand for electricity is much less elastic than industrial energy use.[36] After the first ten years, income stream of Project will be able to fluctuate.

(ii) The cash outflow and costs

■ Investment costs: Construction costs calculations based on DSI unit prices.

Independent variables affecting investment costs: Especially important differences between predicted construction costs and realized construction costs can be revealed in unfavor and favor of the Project.

■ Operational costs: Constant annual wages during the 50 years of operation is assumed. In other words, it is not considered possible reel wage increases and decreases. Indeed real wages that have been adjusted for inflation is more than predicted (constant) level in order to prosperity over time.

Independent variables affecting operational costs: the possible changes of wages, and other current expenses, the fiscal liabilities (especially levied by the local administration) are not considered in baseline analysis.

(iii) Corporate tax

■ Corporate tax rate is 20%.
Independent variables affecting corporate tax rate: Corporate tax rate reduced from 33% to 20% in the conditions of positive macroeconomic performance in Turkey as of July 2006. After the global crises, there is an uncertainty about this rate as is the other fiscal burdens in terms of medium and long term.

Despite possible limitations – especially in absence of compound effects and probability distribution – this sensitivity analysis provides a general outlook of the investment analysis effort. A range of 10% fluctuations in parameters (electricity price and costs) can be taken in this analysis.

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[34]KAPUSUZOGLU, Ayhan and KARAN, Mehmet Baha (2010), "An Analysis of the Co-integration and Causality Relationship between Electricity Consumption and Gross Domestic Product (GDP) in the Developing Countries: An Empirical Study of Turkey", *Business and Economics Research Journal,* Volume 1, Number 3.

[35] BİLGİN, Cevat and SAHBAZ, Ahmet (2009): "Türkiye'de Büyüme ve İhracat Arasındaki Nedensellik İlişkileri",published in *Gaziantep Üniversitesi Sosyal Bilimler Dergisi*, Vol. 8, No. 1 (2009): pp. 177-198. This paper is to investigate the relations between export and growth for Turkey by using 1987-2006 monthly data. According to the test results, export-led growth is verified for the specified period.

[36] ACKERMAN, Frank, (2008). "Carbon Markets and Beyond: The Limited Role of Prices and Taxes in Climate and Development Policy," *G-24 Discussion Papers 53*, United Nations Conference on Trade and Development.

Table 10: Sensitivity Analysis for BERKE WEIR and HEPP Project (without carbon revenue)

50 years				
		Cost variations		
Revenue variations		10%	0%	-10%
	-10%	5,03	5,97	7,07
	0%	6,07	7,07	8,22
	10%	7,07	8,11	9,34

It may be seen from the sensitivity analysis that considering the base (average) case and worst case, the 50 years Equity IRR value for the proposed project activity is less than the benchmark IRR (7.34%). Base case with the VER credit income (%7.38) can become acceptable for investment. Best case is also seen as an acceptable project. However, this analysis has not been considered a projection about Turkish Eurobond yields (benchmark IRR) in the light of budget deficits, current account deficits, saving deficits, public and private debt stock etc. of Turkey economy.

Table 11: The estimated IRR related to the analysis under the three scenarios

	IRR
Base (average) Case	7,07 %
Best Case	9,34 %
Worst Case	5,03 %

Despite possible limitations, it is considered that costs are more sensitivity than revenues in terms of equity IRR value of BERKE Weir and HEPP Project.

Outcome of Step 2:
The investment and sensitivity analysis shows that the VER revenues will improve the Equity IRR and make the project more attractive for investors. Considering that figures above do not precisely reflect the investment risk (systematic and unsystematic risks) the role of the carbon income is significant to enable the project to proceed and for a favourable investment decision taken. Based on the analysis and information above, it is concluded that investing in the project is not the most attractive option considering the alternative investment opportunities. Therefore, Project can be considered as additional to the baseline scenario.

Step 3: Barrier analysis
This step is used in order to determine whether the proposed project activity faces barriers that:

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

The following sub-steps are pursued for the barrier analysis:

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

The following barriers partly apply in general to all Hydro Electric Power Plant projects, partly to projects in the specific regions and again partly are project specific.

Investment barriers

In Turkey, lack of financial incentives and facilities is the primary barrier against renewable energy investments. Carbon market contributes to emergence of an environment for electricity generation by use of renewable sources and leads to overcome this investment barrier for the renewable energy projects to some extent.

The following are the barriers applied to hydro power projects in Turkey:

- ***High level of initial financing and long payback period***

With movement toward more price-competitive electricity markets in the world, hydropower projects are forced to compete on a short-term price basis with other technologies. While hydropower has the advantage of having most costs fixed over a project's operating life, it has the disadvantage of having higher initial development costs than thermal alternatives. Hydropower has both higher construction costs per unit of capacity and higher interest during construction due to longer construction periods.[37]

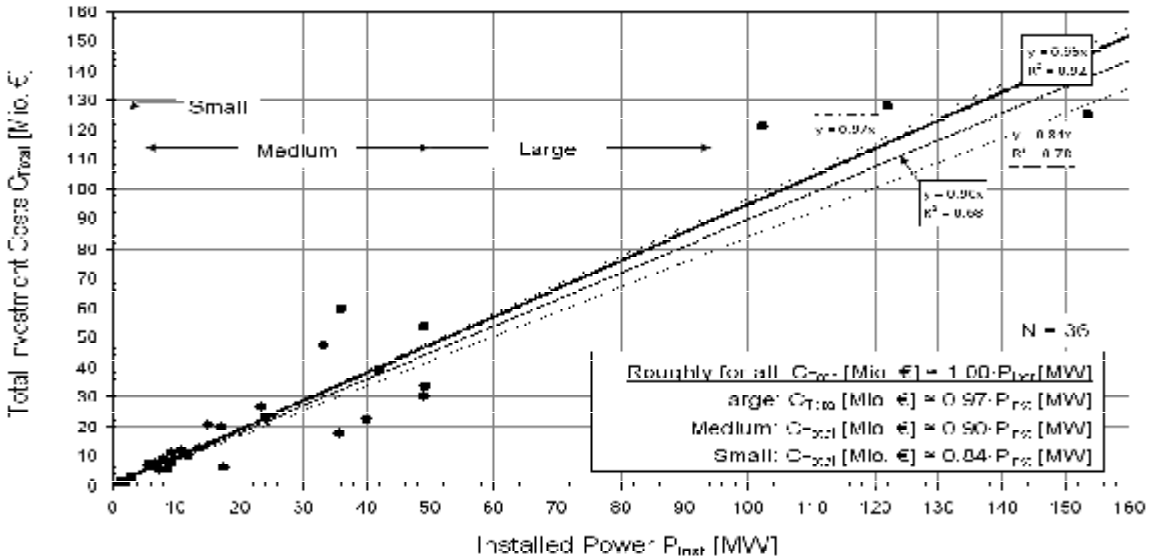

Figure 5: Investment costs of 36 hydropower plants in Turkey related to installed power[38]

Figure 5 shows that, the investment cost of a small sized HEPP-10MW installed capacity is 10 million Euros generally in Turkey. Berke Weir and HEPP have a capital investment of 13.632.315 which is financed by 30% equity and 70% loan from a commercial private bank.

[37] Retrieved from http://www.usea.org/Archive/AGBREPGConf2000/pdf/b4f_p_p.pdf

[38] Ronald Haselsteiner, Evaluation of small and medium hydropower in Turkey in consideration of economical aspects, pg. 14, 2009, http://www.dr-haselsteiner.de/papers/Haselsteiner_paper045.pdf

Even if the small scale HEPPs of which investment cost is relatively low as compared to large scale plants, the high initial investment cost of hydropower plants leads to long payback period and higher investment risks on project financing which discourage the investors.

Moreover, Turkish Eurobond Yield (USD) is accepted as a benchmark in investment analysis. Actually capital cost is higher than yields and validated. Even though lower fuel and operating costs may make renewable energy cost-competitive on a life-cycle basis, higher initial capital costs can mean that renewable energy provides less installed capacity per initial dollar invested than conventional energy sources. Thus, renewable energy investments generally require higher amounts of financing for the same capacity. Depending on the circumstances, capital markets may demand a premium in lending rates for financing renewable energy projects because more capital is being risked up front than in conventional energy projects. Renewable energy technologies may also face high taxes and import duties. These duties may exacerbate the high first-cost considerations relative to other technologies and fuels.[39]

- ***Limited incentives for renewable energy***

Law of Using the Renewable Energy Resources for Electricity Production permits trading at competitive prices above the € .055/kWh threshold. However, since a majority of power plants in Turkey are still owned by the State, the latter can control supply and hence influence the prices. Overall, competition for "must run" HEPPs is difficult since their control on resources and generation is limited compared to conventional power plants. Since, they can adopt generation to actual demand and price more easily.

- ***Low project IRR***

Internal Rate of Return (IRR) of Berke Weir and HEPP is 7.28 % which is below the determined benchmark without VER revenue. The detailed explanation is given in the investment analysis part of this report.

Construction Barriers

Topography of the region is taken into account while determining location of the hydropower plants. Therefore, HEPP faces barriers such as construction of the plant, auxiliary structures like access roads or transmission line. BERKE Weir and HEPP Project lies within the *Second Degree Earthquake Band*.

[39] Retrieved from http://www.martinot.info/Beck_Martinot_AP.pdf

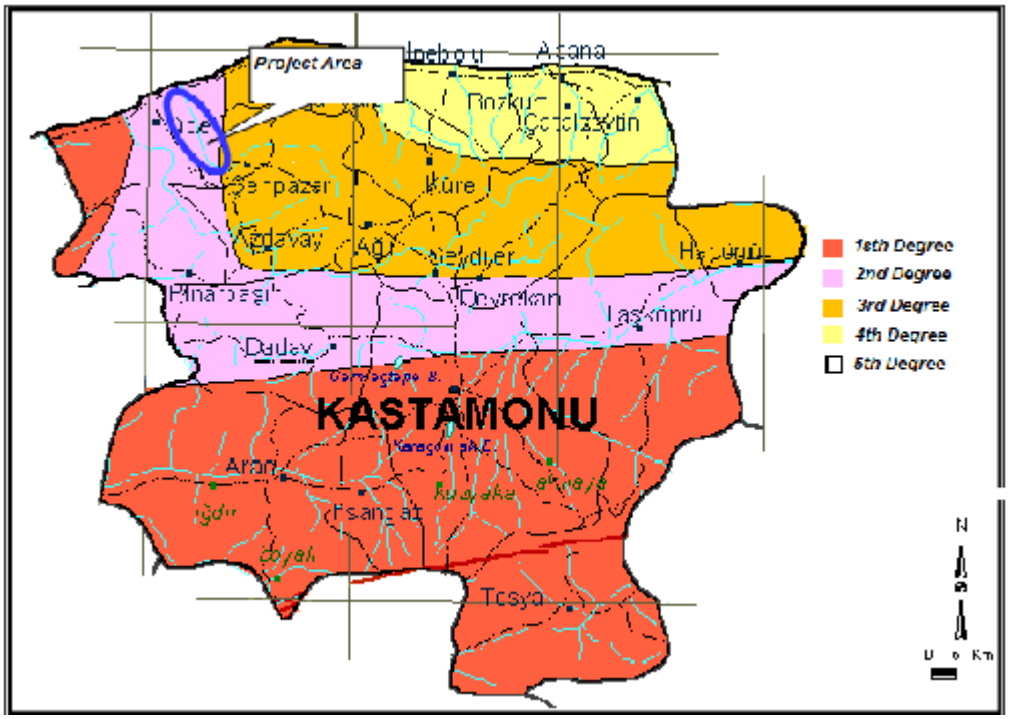

Figure 6: Kastamonu Seismicity Map

Therefore, earthquake risk and necessary precaution parameters are taken into account and earthquake resistant design is selected for the proposed Project. Furthermore, according to the feasibility study conducted for the proposed Project, investment cost for connection roads is predicted to be 113,333 USD.

- ***Country risk***

As is known, the global crisis was characterized by a steep drop in economic activity, mainly driven by shrinking external demand, tighter financial conditions, and rising precautionary saving. The sharp contraction in economic activity and the collapse of commodity prices have brought down inflation rates across the world, including Turkey. In this respect, energy and processed food prices, which are particularly sensitive to commodity price developments, have displayed a sharp decline.[40] Turkish economy has very large volume of external trade and is negatively affected from global volatility.

Installed electricity generation capacity in Turkey reached 44761.2 megawatts (MW) as of 2009. Fossil fuels account for 65.5% of the total installed capacity and hydro, geothermal, and wind account for the remaining 32.5%.[41] Electricity demand in Turkey has been above the average rate of GNP growth over the last few years. This combined with the lack of investment in the sector, mainly due to the Government of Turkey's control over prices and slow progress in market liberalization, increased concerns regarding electricity shortages. Official data indicated that Turkey would face electricity shortages as of 2009; however, the Government of Turkey revised its projections after experiencing reductions in demand in late 2008, due to the global

[40] Retrieved from http://www.tcmb.gov.tr/yeni/eng/
[41] Retrieved from http://www.teias.gov.tr/istatistik2009/1.xls

economic crisis. In 2008, the Government of Turkey passed new legislation to encourage investment in the sector, which introduces incentives for companies bringing their facilities online by 2012. Turkey was able to privatize four of its electricity distribution facilities in 2008, and intends to continue these privatizations in 2009. Privatization of the generation facilities is next in line. The speed of these privatizations will depend on investment appetite and availability of financing.[42]

- **Turbine Sizes:** The project participant would choose to use greater turbines considering the historical precipitation measurements where greater turbines with good precipitation rates correspond to much income for all HEPP projects. However they choose to use these types conservatively, to not to disorganize the region.

- **Increasing Agricultural and Domestic water Demands:** Turkey is one of the most water rich countries of the Mediterranean. However due to the enormous population increase from 28 million in the 1960s to 68 million in 2000 the availability of water resources has already decreased from around 4,000 m³ to 1,500 m³ per capita/per year today.[43] Water demand in Mediterranean countries has doubled in the second half of the last century. Turkey is one of the countries experiencing the greatest population growth. The following two figures illustrate the population growth in the southern Mediterranean countries and available fresh water per capita in southern Mediterranean countries.

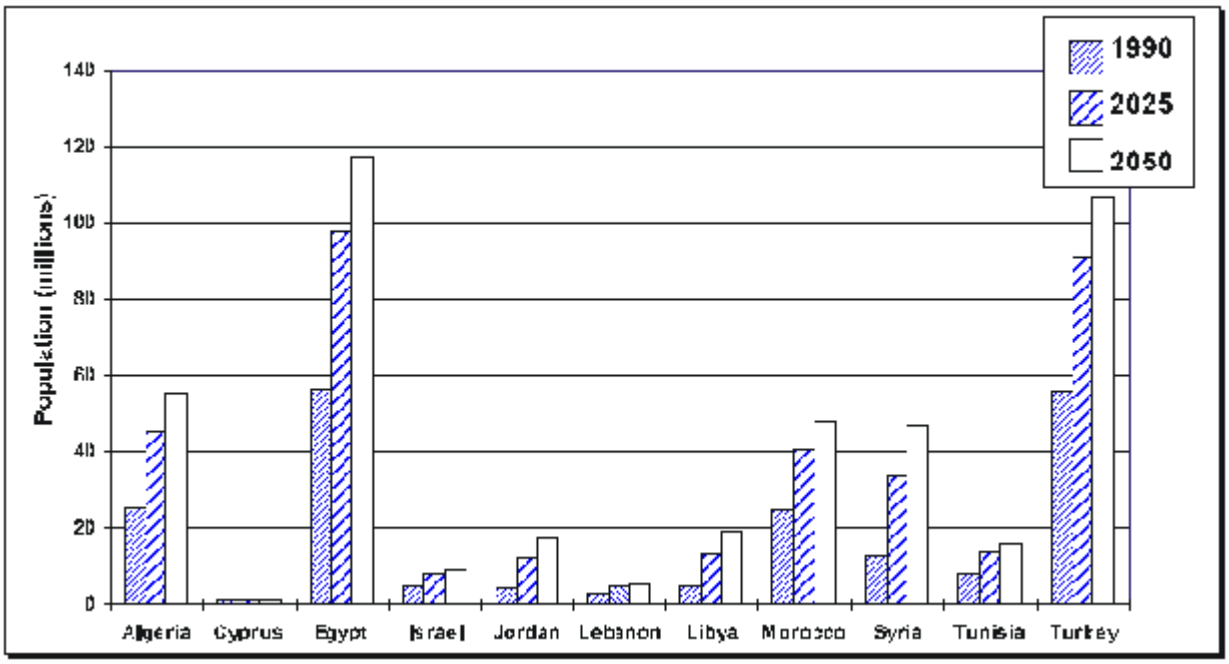

Figure 7: Population growth in the southern Mediterranean countries, 1990–2050[44].

[42] Retrieved from http://www.state.gov/r/pa/ei/bgn/3432.htm
[43] Retrieved from http://assets.panda.org/downloads/wwf_drought_med_report_2006.pdf
[44] Retrieved from: http://www.idrc.ca/en/ev-42818-201-1-DO_TOPIC.html

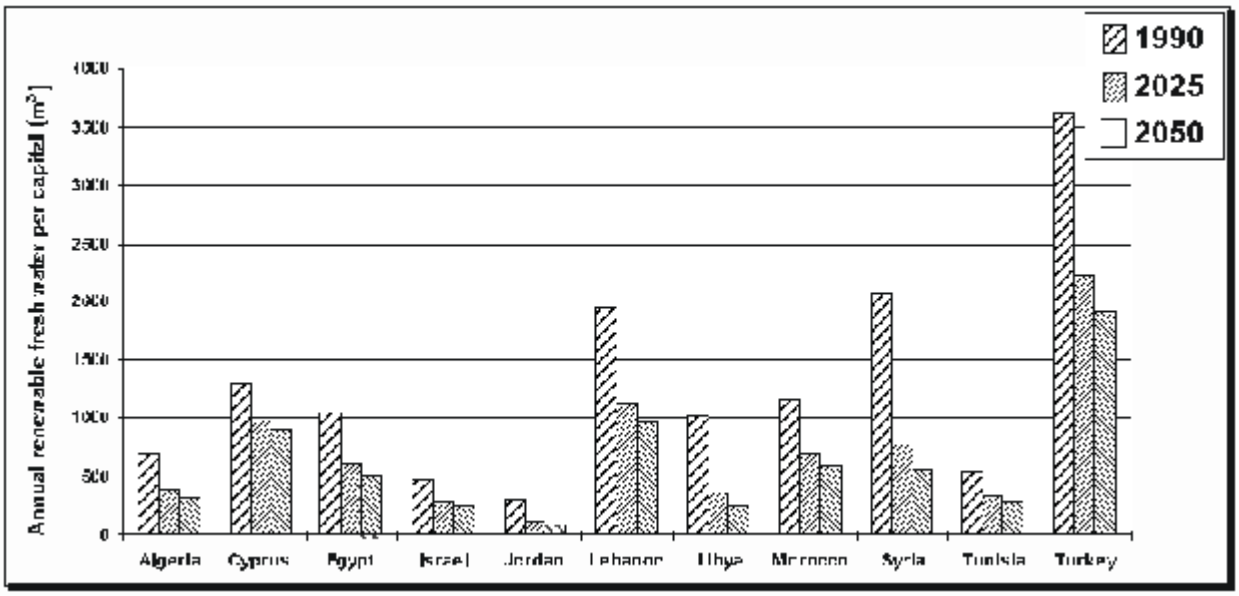

Figure 8: Available fresh water per capita in southern Mediterranean countries[45]

In addition to that, due to the regional problems, some people would choose to immigrate to other cities from Kastamonu in past. However, the people are turning back to their lands, when we consider last years. In parallel with increasing population, the water demand is increasing as well.

Considering the issues above, increasing population is a significant risk for hydroelectric power plants because of the fact that the project participant has to provide the water demand of the stakeholders as per the agreement on the water usage rights and management rudiments which must be signed with The General Directorate of State Hydraulic Works[46]before the license application to EMRA (Energy Market Regulatory Authority)[47]. The mentioned agreement indicates that, during the whole operation process, the determined value of water must be provided to stakeholders for agricultural, domestic, drinking purpose (if any) and protection of natural life and habitat by means of flow released after regulator named as minimum flow. Even if the upstream flow decreases because of any reason, the minimum flow which is determined as %10 of the long term water flow, by the Directorate of Nature Conservation and Natural Parks, must be the released anyway, even if it causes to close down the plant. Consequently, the decreasing flow (by means of population and/or climatic conditions as detailed in the section below) means decreasing income for the project participant and this may be considered as a significant risk/barrier for the project participant.

[45] Retrieved from: http://www.idrc.ca/en/ev-42818-201-1-DO_TOPIC.html
[46] Refer to Annex 8 for the Water Usage Agreement
[47] Retrieved from http://www.mevzuat.adalet.gov.tr/html/21493.html

Technical barriers

- **Climatic Conditions:** Drought and unstable rainfall pattern will be a barrier for realization of hydropower plants in the region. Droughts are estimated to become worse and more frequent in the light of global climate change.

Although the project participant considered the historical pattern of the precipitation rates while taking the investment decision; it is always a risk to invest on HEPP projects where the climate changes problems increasing as the day goes on Despite that, when we consider the thermal power plants, they never face mentioned risk. The income is always certain depends on the reserve of the fossil fuels with the provided measurements from the project site. As understood from the table below, the income for hydro electric power plants depends on the precipitation rates, unlike the thermal power plants.

Table 12: Turkey's Long Term Electric Supply Projection[48]

Plant Type	2010			2015			2020		
		Rainy	Droughty		Rainy	Droughty		Rainy	Droughty
	MW	Billion KWh		MW	Billion KWh		MW	Billion KWh	
Thermal	30583	211	211	45603	314	314	62273	426	426
Hydro	18234	62	46	25670	89	60	34076	118	77

Furthermore, the global average temperature rose by 0.6ºC during the 20th century while Europe's average rose by 0.95ºC. For the Mediterranean, the future developments are possibly worse than for the worldwide average: With a global warming forecast of 1°C by 2025, the temperature in the Mediterranean region is likely to increase 0.7-1.6° implying less harsh winters and hotter summers[49], which results to irregular precipitations.

All of the facts above constitute a barrier for the operation of proposed hydropower plant in Turkey.

Prevailing Practice

Electricity demand of Turkey has been growing continuously since the last decade due to the rapid growth in economy. In 2008, the electricity demand was 198,085 GWh which corresponds to an increase of 4.3% compared to the previous year. The increase or decrease rates for electricity are presented in Table 13 below.

[48] Retrieved from http://www.dsi.gov.tr/hizmet/enerji.htm
[49]Retrieved fromhttp://assets.panda.org/downloads/wwf_drought_med_report_2006.pdf page 8

Table 13: The energy demand and increase rates between years 2000-2009[50]

Year	Energy Demand (GWh)	% increase
2000	128276	8,3
2001	126871	-1,1
2002	132553	4,5
2003	141151	6,5
2004	150018	6,3
2005	160794	7,2
2006	174637	8,6
2007	190000	8,8
2008	198085	4,3
2009	194079	-2,0

Even if the energy demand has decreased from 2008 to 2009, it must be noted that it is because of the fact that a significant economic crisis has occurred in 2008 and the energy consumptions decreased accordingly. Nonetheless, the energy demand is again expected to increase when we consider the capacity projection of TEIAS. [51] (Refer to Figure 3 of this report).

Table 14: Breakdown of installed capacity of Turkish grid, 2009[52]

Primary Energy Source	MW	% of installed capacity, 2009
Thermal	29339,1	65,5
Hydro	14553,3	32,5
Geothermal	77,2	0,2
Wind	791,6	1,8
TOTAL	**44761,2**	**100,0**

Based on the facts above, it can easily be concluded that hydro power constitutes the lower share of the total electricity generation capacity of Turkey. This results in barriers for the development of hydroelectric power plant as a result of limited experience in construction and operation of hydroelectric power plant.

[50]Retrieved from http://www.teias.gov.tr/projeksiyon/KAPASITE%20PROJEKSIYONU%202010.pdf, page 4
[51]Retrieved from http://www.teias.gov.tr/projeksiyon/KAPASITE%20PROJEKSIYONU%202010.pdf
[52] Retrieved from http://www.teias.gov.tr/istatistik2009/7.xls

Other Barriers

- **Bureaucratic and legislative Uncertainties in the market:** The legal basis of renewable energy generation, including wind energy, is laid down in the ''Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy'' enacted on 18 May 2005. This law provides a guaranteed electricity price over a period of time, which is defined as 49 years. However the guaranteed electricity sales price is limited to a max value of 5.5 €cent/kWh for renewable energy. Taking into consideration the competitive market values for the electricity, the guaranteed price is deficient. Despite that the project participant would have to choose the guaranteed price since the bank that gives the loan (%70 of the total investment) requires that.

Conclusion

All of the facts above constitute a barrier for the operation of proposed hydropower plant in Turkey. In addition to the investment and technological barriers; barriers due to prevailing practice have been identified as well. These barriers prevent the project activity from being implemented without the CDM.

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):
The same amount of electricity produced by other facilities not under the control of the project participants is not hindered by the identified barriers.

Step 4: Common practice analysis

Sub-step 4: Analyze other activities similar to the proposed project activity:
At the moment, 761 licenses for hydro power plants are issued by EPDK[53], the "Electricity Market Regulation Agency". 391 of the HEPPs are small-scale projects which have installed power in between 1 MW and 15MW. The 284 of these 391 HEPPs are in construction stage.[54] Recently, there are accumulated installed capacity of HEPPs that are under construction in Turkey. Based on the EMRA data, the operating hydro power plants are accounted less than 34 % of the total number of HEPP licensed in Turkey. According to Figure 9 below, it is observed that thermal power plants have shown a rapid growth in parallel with the demand for electricity whereas hydroelectric power generation has grown at a far slower rate. Furthermore, the percentage of Turkey's total installed capacity is examined in Figure 10 below.

[53]Retrieved fromhttp://www2.epdk.org.tr/lisans/elektrik/lisansdatabase/verilentesistipi.asp

[54] Retrieved from http://www2.epdk.org.tr/lisans/elektrik/ilerleme_proje.htm

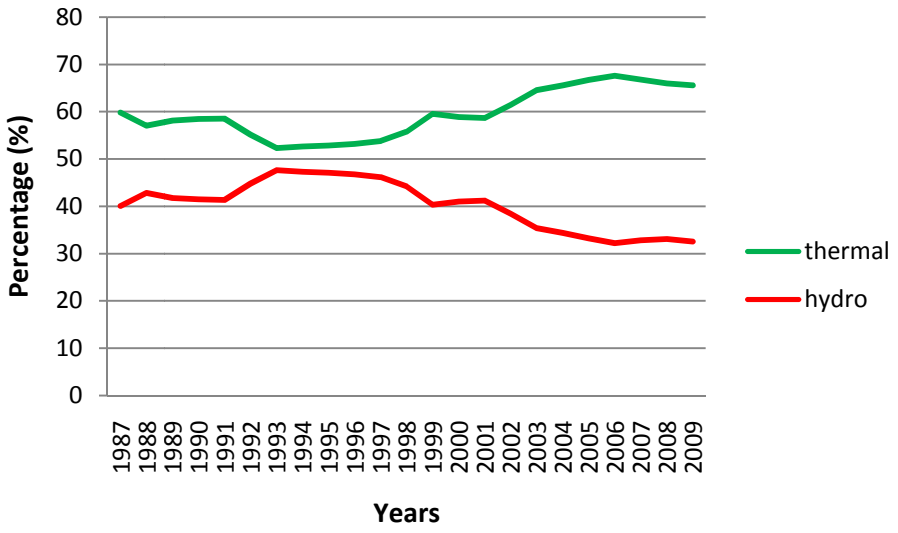

Figure 9: Annual development of Turkey's Thermal and Hydro Power[55]

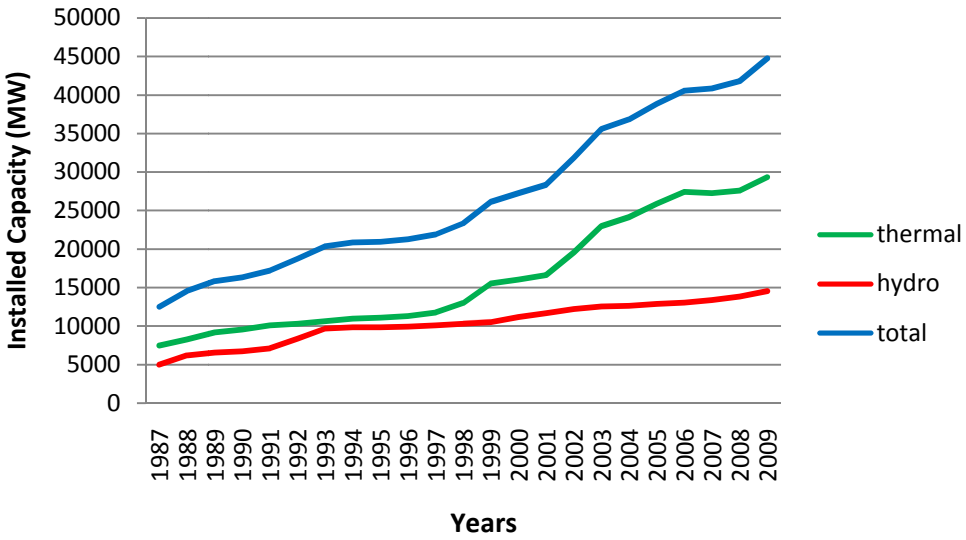

Figure 10: Annual development of Turkey's Installed Capacity[56]

[55]Retrieved from http://www.teias.gov.tr/istatistik2008/1.xls
[56] Retrieved fromhttp://www.teias.gov.tr/istatistik2008/1.xls

Table 15: Number of HEPP facilities licensed to private production companies and completed over a certain completion ratio[57]

	Number of HEPP project
Small scale HEPP project licensed	391
Small scale HEPP licensed and ongoing construction	284
(80-100) % completion of projects	14
(60-80)% completion of the project	10
(40-60)% completion of project	15
(20-40)% completion of project	38
(0-20)% completion of project	167

As seen in the table above, only 24 of the HEPP project were completed with a ratio higher than 60%. The 8% of the HEPP at construction could achieve a high completion ratio than 60 percent. The low rate of completion of the projects confirms that, even HEPP licensing was achieved and the willingness to green electricity has a high level, the effect of barriers elaborated above are significant and crucial. Therefore, it proves that the electricity generation from HEPP business is not a common practice.

As a part of its energy policy, Turkey started a liberalization process in its electricity market in 90's. The liberalization process commenced with electricity production although is not completed yet, and full privatization of state-owned distribution and production assets are completed. Formerly, all energy plants but especially the HEPPs have been built and operated by the State.

Participation of private sector in the electricity generation from hydro-electrical power plant market is a new concept in Turkey. Since, the increasing energy demand cannot be afforded by the State in accordance with investment and operation cost, especially The State started to outsource the construction of those plants through licenses at 2001 in order to facing the growing demand for electricity and because of lacking the capital to realize hydro investment. Until the renewable energy law was enacted in 2001, companies had not been responsible for the whole process (planning and financing of the project, choosing the technology and operating of HEPPs) and not taken all the risks. Moreover, the private companies that invest in HEPPs in Turkey are generally active in other sectors like textile, cement etc.[58]

According to the table below, the contribution of renewable energy produced by private production companies to Turkey's total renewable energy production is 20,5% in 2009.

[57]Retrieved fromhttp://www.epdk.gov.tr/lisans/elektrik/proje/yenilenebilir.xls

[58] Retrieved from http://e-imo.imo.org.tr/Portal/Web/new/uploads/file/menu/HESRapor.pdf

Table 16: Annual development of Turkey's installed capacity produced by private companies and the share of Renewable Energy capacity development by private companies to Turkey's installed capacity.[59]

		2006	2007	2008	2009
Installed Capacity by Private Production comp (MW)	Thermal	10321,7	10688,8	11208,9	13421,0
	Hydro + Geothermal + Wind	1374,5	1624,3	2181,5	3168,7
	Total	11696,2	12313,1	13390,4	16589,7
	The percentage of renewable energy resourced installed capacity in total installed capacity (%)	11,8	13,2	16,3	19,1
Total Installed Capacity of Turkey (MW)	Thermal	27420,2	27271,6	27595,0	29339,1
	Hydro + Geothermal + Wind	13144,6	13564,1	14222,2	15422,1
	Total	40564,8	40835,7	41817,2	44761,2
	The percentage of renewable energy resourced installed capacity in total installed capacity (%)	32,4	33,2	34,0	34,5
	The percentage of renewable energy resourced installed capacity of private production companies to Turkey's total installed capacity	10,5	12,0	15,3	20,5

Thus, most of the private companies in Turkey have little experience and know-how in the management and operation of HEPPs - also renewable energy sources -which proves that HEPP project implementation by private companies is not a common practice for Turkey.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

The emission reductions resulting from the proposed project are calculated according to AMS I D ''Approved Small Scale Methodology for Grid Connected Renewable Electricity Generation'', version 16.

Baseline emissions are multiplications of net electricity supplied to grid by project activity and CO_2 emission factor. Emission factor has been calculated in a conservative way as requested by the methodology. Basic assumptions made are;

- Based on selection of ex-ante option, emission factor remains same over the crediting period,

[59] Retrieved from http://www.teias.gov.tr/istatistik2009/6.xls

- Emission factor of fuels sources is retrieved from IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter 1 of Volume 2 (Energy) of the 2006 IPCC Guidelines for National Greenhouse Gas Inventory.

The Additionality Assessment of the project activity has been demonstrated using the latest version of the, ”Tool for Assessment and Demonstration of Additionality, ver. 5.2” .

According to the ‘‘Tool to calculate the emission factor for an electricity system, ver. 02’’, in calculating the operating margin ($EF_{grid, OM, y}$), project developers have the option to select from four potential methods:

(a) Simple OM, or
(b) Simple adjusted OM, or
(c) Dispatch Data Analysis OM, or
(d) Average OM.

Options (b) and (c) are not preferred due to the scarcity of data for Turkey. Option (d) is not preferred since low-cost/must run resources do not constitute more than 50% of total grid generation. As described in the tool, the Simple OM (a) can only be used if low-cost/must run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production. . Low-cost/must run resources include hydro, geothermal, wind, low-cost biomass, nuclear and solar generation which are defined as power plants with low marginal generation costs or power plants and dispatched independently of the daily or the seasonal load of grid. There is no indication that coal is used as a must-run and no nuclear energy plants are located in Turkey. The following table shows the share of low-cost/must-run production for the last 5 years. The low-cost/must run resources constitute less than 50% of total grid generation in average of the five most recent years, 21,09%. Therefore the requirements for the use of the Simple OM calculations (option a) are satisfied.

Table 17: Total electricity generation and from low-cost/must run resources (2005-2009). [60]

Electricity Gene. (GWh) / Year	**2005**	**2006**	**2007**	**2008**	**2009**
Thermal Total	122242,30	131835,10	155196,17	164139,30	156923,44
Hydro + Geothermal + Wind Total	39713,90	44464,70	36361,92	34278,70	37889,47
Turkey's Total	161956,20	176299,80	191558,09	198418,00	194812,92
Share of low-cost/must-run production	24,52	25,22	18,98	17,28	19,45
Average share (%)	**21,09**				

[60] Retrieved from http://www.teias.gov.tr/istatistik2009/37(06-09).xls and http://www.teias.gov.tr/istatistik2009/36(01-05).xls

Ex-ante option is chosen to calculate the simple OM. The calculations based on ex-ante option to determine CO_2 Emission are expressed in B.6.3, step 3.

Furthermore, the capacity addition is composed of the set of power units in the electricity system commissioned between 2009 and 2006 and 7 plants with latest starting date to operation at 2005whose additional generation comprises 20% of the system generation in 2009. The capacity addition used to calculate the build margin emission factor. (see B.6.3, annex 3)

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

Data / Parameter:	**EGy**
Data unit:	GWh
Description:	Net electricity generated and delivered to the grid by all power sources serving the system, excluding low-cost/must-run units/plants, in year y
Source of data used:	TEIAS (Turkish Electrical Transmission Company) Annual development of Turkey's gross electricity generation of primary energy sources between 1975 and 2009, Annual development of electricity generation-consumption-losses in Turkey between 1984 and 2009. http://www.teias.gov.tr/istatistik2009/32(75-09).xls http://www.teias.gov.tr/istatistik2009/30(84-09).xls
Value applied:	Table 17; Table 19
Justification of the choice of data or description of measurement methods and procedures actually applied :	According to ''Turkish Statistics Law and Official Statistics Program'' TEIAS, Turkish Electricity Transmission Company is the official source for the related data, hence providing the most up-to-date and accurate information available.
Any comment:	

Data / Parameter:	**$EG_{y\ ,\ Berke}$**
Data unit:	GWh
Description:	Net Electricity delivered to the grid by BerkeHEPP in year y
Source of data used:	Berke HEPP EIA Report
Value applied:	23,582
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data used for emission reduction estimation

Any comment:	

Data / Parameter:	**$EF_{grid,OMsimple,y}$**
Data unit:	tCO_2/MWh
Description:	Simple operating margin CO_2 emission factor in year y
Source of data used:	Calculated by formula (1)
Value applied:	0,65046 by Table 20
Justification of the choice of data or description of measurement methods and procedures actually applied :	The used data in formula is taken from justified sources as is seen from other tables in part B.6.2 of this PDD.
Any comment:	

Data / Parameter:	**$FC_{i,y}$**
Data unit:	m^3 / tons (m^3 for gaseous fuels)
Description:	Amount of fossil fuel consumed in the project electricity system by generation sources in year *y*
Source of data used:	TEIAS (Turkish Electricity Transmission Company) Fuels consumed in thermal power plants in Turkey by the electric utilities for year y http://www.teias.gov.tr/istatistik2009/44.xls
Value applied:	Table 18
Justification of the choice of data or description of measurement methods and procedures actually applied :	According to ‘‘Turkish Statistics Law and Official Statistics Program’’ TEIAS, Turkish Electricity Transmission Company is the official source for the related data, hence providing the most up-to-date and accurate information available.
Any comment:	

Data / Parameter:	**Heat Value**
Data unit:	TJ
Description:	Amount of heat produced by the consumption of a unit quantity of fuel types consumed in thermal power plants
Source of data used:	TEIAS (Turkish Electricity Transmission Company) Heating values of fuels consumed in thermal plants in Turkey by the electricity utilities (2009) http://www.teias.gov.tr/istatistik2009/46.xls for 2009 data

Value applied:	Table 18
Justification of the choice of data or description of measurement methods and procedures actually applied :	According to ‘‘Turkish Statistics Law and Official Statistics Program’’ TEIAS, Turkish Electricity Transmission Company is the official source for the related data, hence providing the most up-to-date and accurate information available. Heat value is divided by FC to determine NCV.(The formula is taken from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1 of Volume 2,Box 1.1)
Any comment:	1J = 0,238846 cal.

Data / Parameter:	**$NCV_{i,y}$**
Data unit:	GJ/tonnes
Description:	Net calorific value (energy content) of fossil fuel type *i* in year *y*
Source of data used:	TEIAS (Turkish Electricity Transmission Company) Heating values of fuels consumed in thermal plants in Turkey by the electricity utilities (2009) http://www.teias.gov.tr/istatistik2009/46.xls for 2009 data
Value applied:	Table 18
Justification of the choice of data or description of measurement methods and procedures actually applied :	According to ‘‘Turkish Statistics Law and Official Statistics Program’’ TEIAS, Turkish Electricity Transmission Company is the official source for the related data, hence providing the most up-to-date and accurate information available.
Any comment:	In order to convert the data source units to the required units; 1J = 0,238846 cal. and the density of natural gas is considered to be 0,695kg/m^3

Data / Parameter:	**$EF_{C02,i,y}$**
Data unit:	tCO_2/GJ
Description:	CO_2 emission factor of fossil fuel type*i* in year *y*
Source of data used:	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter 1 of Volume 2 (Energy) of the 2006 IPCC Guidelines for National Greenhouse Gas Inventory http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.htm
Value applied:	Table 18; Table 22; Table 23
Justification of the choice of data or description of	There is no information on the fuel specific default emission factor in Turkey, hence, IPCC values has been used as referred in the ‘‘Tool to calculate the emission factor for an electricity system (version 02)’’.

measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	**$EF_{grid,BM,y,}$**
Data unit:	tCO2/MWh
Description:	Build margin CO_2 emission factor in year y
Source of data used:	Calculated by equation 3 at table 21
Value applied:	0,548838
Justification of the choice of data or description of measurement methods and procedures actually applied :	Calculated *ex-ante* and comprised the capacity addition is composed of the set of power units in the electricity system commissioned between 2009 and 2006 and 7 plants with latest starting date to operation at 2005whose additional generation comprises 20% of the system generation in 2009 according to the "Tool to calculate emission factor for an electricity system" version 02, EB50 Annex 14.
Any comment:	

Data / Parameter:	**$EF_{EL,m,y}$**
Data unit:	tCO_2e/MWh
Description:	CO_2 emission factor of power unit *m* in year *y*
Source of data used:	Calculated by equation 4 (Table 20)
Value applied:	Table 23; Table 24
Justification of the choice of data or description of measurement methods and procedures actually applied :	Calculated *ex-ante* according to the "Tool to calculate emission factor for an electricity system" version 02, EB50 Annex 14.
Any comment:	

Data / Parameter:	**$\eta_{m,y}$**
Data unit:	-
Description:	Average net energy conversion efficiency of power unit m in year y
Source of data used:	Atlas of Environment, Ministry of Environment and Forestry, 2004, page 197 http://www.cedgm.gov.tr/CED/Files/cevreatlas%C4%B1/atlas_metni.pdf Tool to calculate the emission factor for an electricity system, ver. 02, Annex 1

Value applied:	Table 21; Table 23
Justification of the choice of data or description of measurement methods and procedures actually applied :	The atlas was prepared by Ministry of Environment and Forestry. The most up-to-date energy efficiency of power units in Turkey is tabulated at the atlas. The weighted average of efficiencies of power units gave us the efficiency of power units by fuel type. Since there is no efficiency of power units used up Naphtha and LPG at Environment Atlas, the efficiency values of Naphtha and LPG are retrieved from Tool, ver. 02, Annex 1 as 45%.
Any comment:	

Data / Parameter:	**$EG_{m,y}$**
Data unit:	GWh
Description:	Net quantity of electricity generated and delivered to the grid by power unit *m*, in year *y*
Source of data used:	TEIAS (Turkish Electrical Transmission Company) Annual development of Turkey's gross electricity generation of primary energy sources between 1975-2009 http://www.teias.gov.tr/istatistik2009/32(75-09).xls
Value applied:	Table 24
Justification of the choice of data or description of measurement methods and procedures actually applied :	According to ''Turkish Statistics Law and Official Statistics Program'' TEIAS, Turkish Electricity Transmission Company is the official source for the related data, hence providing the most up-to-date and accurate information available. The electricity generation from all different sources included in capacity addition used in the equation 3.
Any comment:	

Data / Parameter:	**$EF_{grid,CM,y}$**
Data unit:	tCO_2e/MWh
Description:	Combined margin CO_2emission factor in year *y*
Source of data used:	Calculated data applied to the equation 5
Value applied:	0,599649
Justification of the choice of data or description of measurement methods and procedures actually applied :	Calculated *ex-ante* according to the "Tool to calculate emission factor for an electricity system" version 02, EB50 Annex 14.
Any comment:	

Data / Parameter:	**Electricity Imports**
Data unit:	GWh
Description:	Electricity transfers from connected electricity systems to the project electricity system by years (2007-2009)
Source of data used:	TEIAS (Turkish Electrical Transmission Company) Annual development of Turkey's gross electricity generation-imports-exports and demand http://www.teias.gov.tr/istatistik2009/23.xls
Value applied:	Table 19
Justification of the choice of data or description of measurement methods and procedures actually applied :	According to ''Turkish Statistics Law and Official Statistics Program'' TEIAS, Turkish Electricity Transmission Company is the official source for the related data, hence providing the most up-to-date and accurate information available.
Any comment:	

Data / Parameter:	**Capacity additions**
Data unit:	Name of the plant; Installed capacity (MW); Fuel type; Generation (GWh);
Description:	Capacity additions to the grid that comprises 20% of the total generation (2006-2009)
Source of data used:	TEIAS (Turkish Electricity Transmission Company) Generation units put into operation in 2005;2006;2007;2008;2009 Capacity Projection Report 2010-2019, Annex-2, for 2009 http://www.teias.gov.tr/projeksiyon/KAPASITE%20PROJEKSIYONU%202010.pdf Capacity Projection Report 2009-2018, Annex-2, for 2008 http://www.teias.gov.tr/projeksiyon/KAPASITEPROJEKSIYONU2009.pdf Capacity Projection Report 2008-2017, Annex-2, for 2007 http://www.teias.gov.tr/projeksiyon/KAPASITEPROJEKSIYONU2008.pdf Capacity Projection Report 2007-2016, Annex-2, for 2006 http://www.teias.gov.tr/projeksiyon/KAPASITE%20PROJEKSIYONU%202007.pdf Capacity Projection Report 2006-2015, Annex-2, for 2005 http://www.teias.gov.tr/projeksiyon/KAPASITE%20PROJEKSIYONU%202006.pdf
Value applied:	Table 24; Annex 3:Table 28, 29, 30, 31, 32, 33
Justification of the choice of data or description of measurement methods and procedures	According to ''Turkish Statistics Law and Official Statistics Program'' TEIAS, Turkish Electricity Transmission Company is the official source for the related data, hence providing the most up-to-date and accurate information available. Since the summation of capacity additions between 2006 and 2009 are not

actually applied :	sufficiently large, the capacity generation of 7 plants with latest starting date to operation should be added to meet the %20 of total generation at 2009.
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

The emission factor is determined as follows; a combined margin (CM), combining the operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the Emission Factor for an electricity system' version 02 by seven steps;

Step 1: Identification of the relevant electricity system

According to the ''Tool to calculate the emission factor for an electricity system, ver. 02'', a *project electricity system* should be defined by 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. The *project electricity system* in this project activity includes the project site and all power plants attached to the Interconnected Turkish National Grid.

A *connected electricity system*, e.g. national or international is defined as electricity that is connected by transmission lines to the project electricity system. For the case of the project "the project electricity system" and "the connected system" are the same. As also confirmed by TEIAS (Turkish Electricity Transmission Company Inc.), the Turkish transmission system is interconnected. There is an independent regional grid system neither in Kastamonu nor in Black Sea Region.

In addition to this, since DNA in the host country did not publish a delineation of the project electricity system and connected electricity system, the suggested criteria at "Tool to calculate the emission factor for an electricity system, Version 02" were used. According to this,

1- The capacity usage figure for the transmission line should be checked.
2- Spot market prices of different systems in the country should be compared.

Since there is no published data on capacity usage of transmission lines, the first criterion "The transmission line is operated at 90% or more of its rated capacity during 90% percent or more of the hours of the year." could not be proved.

Besides, in Turkey, no spot electricity market is available, as suggested in the second criterion "In case of electricity systems with spot markets for electricity: there are differences in electricity prices (without transmission and distribution costs) of more than 5 percent between

the systems during 60 percent or more of the hours of the year." Hence, this criterion is not viable as well.

As suggested in "Tool to calculate the emission factor for an electricity system, Version 02", "if these criteria do not result in a clear grid boundary, use a regional grid definition in the case of large countries with layered dispatch systems (e.g. provincial / regional / national)." However, there are no layered dispatch systems in the host country-Turkey. As a result the national grid was used as the project electricity system. Hence, the estimation of OM (Operating Margin) and BM (Built Margin) are based on the definition of the Turkish electricity network as one single interconnected system.

Electricity transfers from connected electricity systems to the project electricity system are defined as *electricity imports* and electricity transfers to connected electricity systems are defined as *electricity exports*.

For the purpose of determining the build margin emission factor, the spatial extend is limited to the project electricity system, except where recent or likely future additions to transmission capacity enable significant increases in imported electricity.

For the purpose of determining the operating margin emission factor, 0 tCO_2/MWh is used as the CO_2 emission factor for net electricity imports ($EF_{grid,\ import,\ y}$) from a connected electricity system within the same host country. Electricity exports should not be subtracted from the electricity generation data used for calculating and monitoring the electricity.

Step 2: Choose whether to include off-grid power plants in the project electricity system

According to the ''Tool to calculate the emission factor for an electricity system'' version 2, project participants may choose between the following two options to calculate the operating margin and build margin emission factors.

Option I: Only grid power plants are included in the calculation.
Option II: Both grid power plants and off-grid power plants are included in the calculation.

For the proposed Project, Option I is selected and only grid power plants are included in the calculation.

Step 3: Selection of an operating margin (OM) method

The simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating power plants serving the system, not including low-cost / must-run power plants / units. According to the ''Tool to calculate the emission factor for an electricity system, ver. 02'' it is allowed to select one of the options below;

- ***Ex ante option:*** If the *ex-ante* option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emission

factor during the crediting period is required. For grid power plants, a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation, without requirement to monitor and recalculate the emissions factor during the crediting period.

- ***Ex post option:*** For *ex post* option, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emission factor to be updated annually during monitoring. The year, in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

For this proposed project the ex-ante option is selected. Data for calculating the three year average is obtained from the period 2005 - 2009 which are the most recent data available at the time of preparation of the PDD.

Step 4: Calculation of the operating margin emission factor according to the selected method.

The simple OM may be calculated:

Option A: Based on the net electricity generation and a CO_2 emission factor of each power unit;

Or

Option B: Based 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.

Option B can only be used if; (1) no necessary data for option (A), (2) only nuclear and renewable power generation are considered as low-cost/must-run power sources and the quantity of electricity supplied to the grid by these sources is known, (3) off-grid power plants are not included in the calculation.

For the project in question, ***Option B*** is preferred since,

- Electricity generation and CO_2 data for individual power units are not available.
- Only renewable power generation are considered as low cost/must run resources.
- Off-grid power plants are not included in calculations.
- The fuel consumption of different fuel type data for power plant / unit are available in the official source, TEIAS.

Under Option B, the simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must run power plants / units, and based on fuel type(s), and total fuel consumption of the project electricity system, and OM simple is determined as follows;

$$EF_{grid,OMsimple,y} = \frac{\sum_i (FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y})}{EG_y} \quad (1)$$

Where:

$EF_{grid, OMsimple, y}$	= Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$FC_{i, y}$	= Amount of fossil fuel type *i* consumed in the project electricity system in year *y* (mass or volume unit)
$NCV_{i, y}$	= Net calorific value (energy content) of fossil fuel type i in year y (GJ / mass or volume unit)
$EF_{CO2, i, y}$	= CO_2 emission factor of fossil fuel type *i* in year *y* (tCO_2/GJ)
EG_y	= Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost / must-run power plants / units, in year *y* (MWh)
i	= All fossil fuel types combusted in power sources in the project electricity system in year *y*
y	= the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex ante option) on data vintage in step 3.

The subscript *m* refers to the power plants/units delivering electricity to the grip, **not including low-cost/must-run power plants/units, and including electricity imports to the grid -** electricity imports should be treated as one power plant *m*-.

In order to calculate the OM emission factor, CO_2 emission value is calculated using the equation as below since the 2010 data is not available;

$$\sum_i (FC_{i,y} \times NCV_{i,y} \times EF_{CO2_{i,y}}) \quad (2)$$

Table 18: Heat Values, FC, NCV and EF_{CO2} values of each fuel source in 2009

Fuel Type	FC (tones)[61]	Heat Value (MJ)[62]	NCV (MJ/kg=GJ/tones)[63]	EF_{CO2} (Kg/TJ = tones/ GJ)[64]
Coal	6621177	146982896224	22,19891	87300
Lignite	63620518	408574172080	6,42205	90900
Fuel-Oil	1594321	63429039558	39,78436	75500
Diesel-Oil	180857	7657666742	42,34100	72600
LPG	111	5154689	46,43864	61600
Naphtha	8077	352288669	43,61628	69300
Natural Gas[65]	20978040	779336254324	37,15010	54300

The values of 2007 and 2008 can be found in Annex 3 in a tabular form.

In order to calculate the OM, the net electricity generated and delivered to the grid by all sources excluding the low-cost/must run resources is required. However, net generation national data is only available for total of power sources. Due to this fact, the internal consumption ratio is used to identify the net electricity generation by thermal sources. The difference of low-cost/must-run generation and supplied to grid amount is the generation by thermal sources. The internal consumption of thermal plants is determined by means of ratio. The thermal generation excluding internal consumption gives the net generation excluding low-cost/must-run as is followed by Table 19. After addition of import electricity, the EGy is determined.

Table 19: Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost / must-run power plants / units, in year *y* (GWh)[66]

Electricity Generation (GWh)	Supplied to grid	Low-cost/ must-run	Thermal	Internal consumption (%)	Internal consumption of thermal	Net generation (-) low-cost/must-run	Import	**EG y (GWh)**
2007	184204,0	36361,92	155196,2	4,3	6673,43531	148522,7347	864,3	**149387,035**
2008	190551,3	34278,7	164139,3	4,4	7222,1292	156917,1708	789,4	**157706,571**
2009	187431,3	37889,47	156923,4	4,2	6590,78448	150332,6555	812	**151144,656**

[61] Retrieved from http://www.teias.gov.tr/istatistik2009/44.xls
[62] Retrieved from http://www.teias.gov.tr/istatistik2009/46.xls
[63] The formula is taken from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1 of Volume 2,Box 1.1
[64] 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1 of Volume 2,Table 1.4
[65] Density of natural gas is taken as 0.695kg/m^3
[66] Retrieved from http://www.teias.gov.tr/istatistik2009/32(75-09).xls and http://www.teias.gov.tr/istatistik2009/30(84-09).xls

Table 20: Weighted $EF_{grid, OMsimple, y}$ (tCO_2/MWh)

	2007	2008	2009
	EF grid, OMsimple,y,i(tCO_2/MWh)		
Coal	0,07551	0,07715	0,08490
Lignite	0,25541	0,26100	0,24572
Fuel Oil	0,04532	0,04128	0,03168
Diesel Oil	0,00105	0,00256	0,00368
LPG	0	0	0
Naphtha	0,00023	0,00021	0,00016
Natural Gas	0,27319	0,27235	0,27998
Total	0,65071	0,65455	0,64613
3-year generation weighted average (tCO2/MWh)	**0,650460395**		

$$EF_{grid, OMsimple, y, i} = 0,6505\ tCO2/MWh$$

Step 5: Identifying the group of power units to be included in the build margin

The sample group of power units *m* used to calculate the build margin consists of either:

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

(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.

The selected set of power units should comprise the larger annual generation. Thus the capacity addition is selected from year 2006 to 2009 with addition of seven plants from the year 2005, and **option b** is preferred.[67] Power plants registered as CDM projects should be excluded from the set.

The list of the power plants is defined under Annex 3, Table 25-29 of this PDD.

Step 6: Calculation of the build margin emission factor.

The build margin emissions 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:

[67]Refer to part B.6.2, capacity addition, for detailed information.

$$EF_{grid,BM,y} = \frac{\sum_{m} EG_{m,y} \times EF_{EL,m,y}}{\sum_{m} EG_{m,y}} \quad (3)$$

$EF_{grid, BM, y}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh)

$EG_{m, y}$ = Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)

$EF_{EL, m, y}$ = CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)

m = Power units included in the build margin

y= Most recent historical year for which power generation data is available

The CO_2 emission factor of each power unit *m* ($EF_{EL,m,y}$) should be determined as per the guidance in Step 4 (a) for the simple OM, using options A1, A2 or A3, using for *y* the most recent historical year for which power generation data is available, and using for *m* the power units included in the build margin.

Option A2 is preferred because plant specific fuel consumption data is not available for Turkey. The calculation of the CO_2 emission factor for each power unit m ($EF_{EL,m,y}$) is shown below.

$$EF_{EL,my} = \frac{EF_{CO_2,m,i,y} \times 3.6}{\eta_{m,y}} \quad (4)$$

Where:

$EF_{EL,m, y}$ = CO_2 emission factor of the power unit m in year y (tCO_2/MWh)

$EF_{CO2,m,i,y}$ = Average CO_2 emission factor of fuel type I used in power unit m in year y (tCO_2/GJ)

$n_{m,y}$ = Average net energy conversion efficiency of power unit *m* in year *y* (ratio)

y = the relevant year as per the data vintage chosen in Step 3

Table 21: Average net energy conversion efficiency by energy sources (%)[68]

Average Net Energy Conversion Efficiency by Energy Sources (%)						
Coal	Lignite	Fuel-oil	Diesel-oil	LPG	Naphtha	Natural Gas
0,336	0,328	0,351	0,275	0,450	0,450	0,460

Table 22: Average CO_2 emission factor by fuel types (tCO_2/Tj)

$EFCO_2$ (tCO_2/GJ)[69]						
Coal	Lignite	Fuel-oil	Diesel-oil	LPG	Naphtha	Natural Gas
0,0873	0,0909	0,0755	0,0726	0,0616	0,0693	0,0543

Table 23: $EF_{EL,m,y}$ Calculation

Fuel Type	$EFCO_2$ (tCO_2/Gj)	η Generation Efficiency(%)	$EF_{EL,m,y}$(tCO_2/MWh)
Coal	0,0873	0,336	**0,9354**
Lignite	0,0909	0,328	**0,9977**
Fuel Oil	0,0755	0,351	**0,7744**
Diesel Oil	0,0726	0,275	**0,9504**
LPG	0,0616	0,450	**0,4928**
Naphtha	0,0693	0,450	**0,5544**
Natural Gas	0,0543	0,460	**0,4250**

The multiplication of emission factor and electricity generation of capacity addition by source is the amount of emission by source which is divided by total capacity addition between year 2005-2009 which comprises 20% of total generation, excluding projects registered to CDM, gives the build margin CO_2 emission factor (see equ. 3). Table 21 shows the data applied.

$$\mathbf{EF}_{\mathbf{grid,\ BM,\ y}} = 20.663{,}62 / 37.649{,}76 = \mathbf{0{,}\ 54884tCO_2/MWh}$$

[68]For detailed information please look at part B.6.2

[69] Retrieved from http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.htm, for more detail please look at B.6.2

Table 24: BM calculation by capacity addition

Fuel Type	Electricity generation Capacity addition (GWh)	EF,EL,m,y (tCO_2/MWh)	Emission by source
Coal	3.993,33	0,9354	3735,1897
Lignite	7.023,00	0,9977	7006,7272
Fuel-oil	1.651,49	0,7744	1278,8461
Diesel Oil	21,20	0,9504	20,14848
LPG	0	0,4928	0
Naphtha	578,60	0,5544	320,7758
Natural Gas	19.535,96	0,4250	8301,9315
Wind	2.006,91	0	0
Geothermal	69,80	0	0
Hydro	4.343,15	0	0
Renewable + Waste	220,02	0	0
Total	39.756,45		**20.663,62**
Excluding VER projects generation	2.106,69		
Total EG m,y	**37.649,76**		

Step 7: Calculation of the combined margin emissions factor.

The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM} \quad (5)$$

Where:

$EF_{grid, CM, y}$ = Combined margin CO_2emission factor in year *y*(tCO_2/MWh)
$EF_{grid, OM, y}$ = Operating margin CO_2emission factor in year *y* (tCO_2/MWh)
$EF_{grid, BM, y}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh)
w_{OM} = Weighting of the operating margin emission factor (%)
w_{BM} = Weighting of the build margin emission factor (%)

"Tool to calculate the emission factor for an electricity system, ver. 02" states that;
The following default values should be used for $\mathbf{w_{OM}}$ and $\mathbf{w_{BM}}$:

• Wind and solar power generation project activities: $\mathbf{w_{OM}}$ = 0.75 and $\mathbf{w_{BM}}$ = 0.25 (owing to the irintermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods;

• All other projects: $\mathbf{w_{OM}}$ = 0.5 and $\mathbf{w_{BM}}$ = 0.5 for the first crediting period, and $\mathbf{w_{OM}}$ = 0.25 and $\mathbf{w_{BM}}$ = 0.75 for the second and third crediting period, unless otherwise specified in the approved methodology which refers to this tool.

Since the proposed project is HEPP, the weighs for the operating margin and build margin emission factors are 0.50 and 0.50 respectively.

$$\mathbf{EF_{grid,\,CM}} = (0{,}65046 x\ 0{,}50) + (0{,}548838 x\ 0{,}50) = \mathbf{0{,}\ 59965\ tCO_2/MWh}$$

Project emissions (PE_y)

Project emission is calculated as per "ACM0002Consolidated baseline methodology for grid-connected electricity generation from renewable sources, ver. 12.1"
For most renewable power generation project activities, PEy = 0. However, some project activities may involve project emissions that can be significant.

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} \qquad (6)$$

The formula indicated total project emission where:

PE_y = Project emissions in year y (tCO2e/yr)

$PE_{FF,\,y}$ = Project emissions from fossil fuel consumption in year y (tCO2/yr)

$PE_{GP,\,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO2e/yr)

$PE_{HP,\,y}$ = Project emissions from water reservoirs of hydro power plants in year y (tCO_2e/yr)

$PE_{FF,y}$ and $PE_{GP,y}$are both irrelevant with the project activity and therefore assumed "0", as the proposed project activity is a new grid-connected run-of-river hydro power plant.

The project will have some internal electricity consumption and this internal electricity consumption of the power house will be met from the project's own electricity generation. When there is no generation, the electricity need will be provided from generators.

Furthermore, "ACM0002, ver. 12.1" suggests that project proponents shall account for CH4 and CO_2 emissions for the reservoir. Although the project does not have a reservoir and result in only a small lake which is attached to the regulator of the facility, the proposed calculations were run to prove the fact that the project's emissions can be assumed "0".

The Project emissions due to reservoir are calculated with the formula;

$$PE_{HP,y} = \frac{EF_{Res} \cdot TEG_y}{1000} \quad (7)$$

where:

$PE_{HP,y}$= Emission from reservoir expressed as tCO_2e/year

EF_{Res} = Default emission factor for emissions from reservoirs of hydro power plants in year y (CO_2e /MWh)

TEG_y = Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (MWh).

If the power density (PD) of the hydro power plant is above 10 W / m^2, PEy is 0.

The power density of the Project activity is calculated as equation below:

$$PD - \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} \quad A_{BL}} \quad (8)$$

where:

PD = Power density of the project activity, in W/m^2

Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W)

Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero.

A_{PJ} = Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full. (m^2)

A_{BL} = Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m_2). For new reservoirs, this value is zero.

Cap_{PJ} = 9970000 W

Cap_{BL} = 0 (Justification: The project is a new hydro power plant)

Since run-of-river type HEPP do not have reservoir structure, the sedimentation pool and forebay are accounted.[70]

A sedimentation pool = 60*21= 1260 m^2 [71]
A forebay = 50 * 20 = 1000 m^2 [72]

Total A_{PL} = 2260 m^2 (area may cause CH_4 and CO_2 emission)
A_{BL} = 0 (Justification: The project is a new hydro power plant)

Therefore;

PD = (9970000 – 0)/ (0 – 2260) = 4394 W/m^2

Since the power density of the project is greater than 10 W/m^2, PE_y is assumed to be 0 as suggested in ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources, ver. 12.1.

Leakage

The energy generating equipment is not transferred from or to another activity. Therefore leakage does not have to be taken into account and is taken as 0 tCO_2/year.

Emission Reductions (ER_y)

Emission reductions are calculated as follows:

(9)

Where:

ER_y = Emission reductions in year y (t CO_2e/y)
BE_y = Baseline Emissions in year y (t CO_2e/y)
PE_y = Project emissions in year y (t CO_2e/y)
LE_y = Leakage emissions in year y (t CO_2e/y)

Baseline emissions are the product of electrical energy baseline EG_{BL},y expressed in MWh of electricity produced by the renewable generating unit multiplied by the combined margin emission factor, EF_{CM}.

Therefore; the **emission reductions** are:

[70]Berke Weir and HEPP EIA, page 8, 179
[71] Berke Weir and HEPP EIA, page 176
[72] Berke Weir and HEPP EIA, page 178

(23582MWh/y x 0, 59965tCO_2e/MWh) – 0 – 0 = **14140,9267t CO_2e/y**

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

Table 25: Summary of the ex-ante estimation of emission reductions

Year	Estimation of project activity emissions (tonnes CO_2-eq)	Estimation of baseline emissions (tonnes CO_2-eq)	Estimation of leakage (tonnes CO_2-eq)	Estimation of overall emission reductions (tonnes CO_2-eq)
Nov. - Dec. 2012 (2 months)	0	2356,82	0	**2356,82**
2013	0	14140,93	0	**14140,93**
2014	0	14140,93	0	**14140,93**
2015	0	14140,93	0	**14140,93**
2016	0	14140,93	0	**14140,93**
2017	0	14140,93	0	**14140,93**
2018	0	14140,93	0	**14140,93**
Jan.– Oct. 2019 (10 Months)	0	11784,11	0	**11784,11**
TOTAL	0	98986,49	0	**98986,49**

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

B.7.1 Data and parameters monitored:

Data / Parameter:	**$EG_{y, Berke}$**
Data unit:	GWh
Description:	Net Electricity generated and delivered to the grid by the BERKE Hydroelectric Power Plant in year "y"
Source of data to be used:	Metering devices used in power plants, monthly records signed by TEIAS and plants manager and invoices will be used.
Value of data	23,58 GWh/year
Description of measurement methods and procedures to be applied:	Generation data will be recorded by two metering devices continuously. These records will provide the data for the monthly invoicing to TEIAS. Each month, an officer from TEIAS and the manager/electricity technician of the plant will record the readings and sign. This record will form the basis for monthly invoicing.

QA/QC procedures to be applied:	Two calibrated ammeters will act as backup for each other. Maintenance and calibration of the metering devices will be made by TEIAS periodically. If the difference between the readings of two devices exceeds 0,2%, maintenance will be done before waiting for periodical maintenance.
Any comment:	

Data / Parameter:	**Qmin**
Data unit:	m^3/s
Description:	The minimum flow released to the downstream of creek after regulator structure.
Source of data to be used:	Will be measured via flow meter.
Value of data	Between July-November; 0,6; between December-June; 1,which should be at least 10% of the project flow rate.
Description of measurement methods and procedures to be applied:	During the operation of HEPP, the flow is measured continuously by a flow meter which is placed after the regulator. As well, the reports of monthly values of minimum flow will be reported to The Provincial Directorate of Environment and Forestry.
QA/QC procedures to be applied:	The minimum flow is controlled by Kastamonu Provincial Directorate of Environment and Forestry.
Any comment:	

Data / Parameter:	**Employment (Job quality)**
Description:	Trainings are an important issue to improve the job quality of employees.
Description of measurement methods and procedures to be applied:	Respective staff is trained regarding health and safety issues and first aid. There is also technical training regarding the operation of the equipment. The trainees receive a certificate after these trainings. Therefore the training given to the respective staff will be monitored by the certificates that they will obtain following their education.
Proof	Respective certificates are available to the DOE.
Frequency	Annually
QA/QC procedures to be applied:	The trainees receive a certificate after these trainings.
Any comment:	

Data / Parameter:	**Employment (Job quantity)**
Description:	The project activity will create a substantial number of jobs in the project area.
Description of measurement methods and procedures to be applied:	The personnel employed will be registered in the Social Security Institution (SSK). The number of the personnel will be monitored by the domicile and Social Security Institution documents. Domicile documents will prove how many people had been employed in the region. Apart from the documents the registration of an employee to the Social Security Institution may be monitored by the web portal of SSK by simply entering the ID number of the respective employee.
Proof	Domicile and social security records or via the web portal of SSK.

Frequency	Annually
QA/QC procedures to be applied:	The trainees receive a certificate after these trainings.
Any comment:	

Data / Parameter:	**Air quality**
Description:	The avoided SO_2 and NOx/KWh by project activity which substitutes electricity generation from thermal power plants.
Description of measurement methods and procedures to be applied:	The impact of wind energy to air quality will be monitored by calculating avoided NOx and SO2 emissions from electricity mix of Turkey in the year calculation.
Proof	The official data will be chosen.
Frequency	Annually
QA/QC procedures to be applied:	The share of electricity generation from coal and fuel oil will be taken from official statistics, as well as the total emission amounts for NOx and SO2 by electricity production. (referred from TUİK)
Any comment:	

Data / Parameter:	**Livelihood of the poor**
Description:	Generating electricity from resources that was not used before creates an additional income to the local community, influencing the poverty alleviation, particularly in the rural areas, and accelerates the regional economic development.
Description of measurement methods and procedures to be applied:	The impact on the local economy shall be monitored and reported in form of contracts with and invoices from local subcontractors and businesses.
Proof	Contracts with local people employed or local subcontractors
Frequency	Once for crediting period or annually
QA/QC procedures to be applied:	The contracts will be in consensus with QA/QC procedures.
Any comment:	

Data / Parameter:	**Human and institutional capacity**
Description:	The use of renewable energy in the region will require widespread education and improvement in skills of plant staff, as the local people will be incorporated in the development and maintenance of the project.
Description of measurement methods and procedures to be applied:	Educations and trainings are part of monitoring. The measurement of improved skills of plant staff by the way of training certificates is the method of measurement.

Proof	The number and evaluation of training certificates
Frequency	Once for crediting period or annually
QA/QC procedures to be applied:	The training certificates will be in consensus with QA/QC procedures.
Any comment:	

Data / Parameter:	**Balance of payments (sustainability)**
Description:	The project and its role in strengthening the sustainable sector of electricity generation in Turkey tend to contribute to mitigation of import dependency. . Electricity generation from wind sources is completely independent from any imports and thus does not have any negative effects on the balance of payments.
Description of measurement methods and procedures to be applied:	Through comparing electricity generated by the proposed project and natural gas, liquid fuel amount that would be used to produce the same amount of electricity. The positive effect of this project to this indicator will be monitored by calculation of avoided natural gas and liquid fuel import amount for electricity production.
Proof	The avoided natural gas and liquid fuel import amount for electricity production
Frequency	Annually
QA/QC procedures to be applied:	The share of electricity generation from natural gas and liquid petroleum fuels, total natural gas and liquid petroleum fuels amounts used for electricity production and electricity production amount of natural gas and liquid petroleum fuels will be taken from official statistics.
Any comment:	

Data / Parameter:	**Technological self reliance**
Description:	The investments and the operation of a new technology in Turkey are as a contribution to technological self reliance due to the gathered experience with the proposed project.
Description of measurement methods and procedures to be applied:	A certificate will be provided to the DOE. This certificate will be relevant to each new employment for the proposed project. It comprises name, age, gender, contact details, hiring date, working hours, last working experience, and initial qualification at the time of hiring, number of training hours since the hiring date. All data collected will be and archived electronically and be kept at least for 2 years after the end of the last crediting period.
Proof	The number of training hours provided by the manufacturer.
Frequency	After one year of operation, annually
QA/QC procedures to be applied:	The trainings will be in consensus with QA/QC procedures.
Any comment:	

B.7.2 Description of the monitoring plan:

A professional monitoring system is required for the plant to verify the actual emission reduction. Therefore the emission reductions have to be verified continuously for the whole operation process.

In order to demonstrate the emission reduction, the required data are the amount of electricity generated by the project activity and consumption for the auxiliary diesel generator (IPCC guidelines will be used as data source for calculating the project emissions due to diesel fuel consumption.)since the emission of the diesel generator should be excluded (if any) from the emission reductions, according to the tool.

The generated electricity will already be measured and recorded by both TEIAS and the project owner so no new additional protocol will be needed to monitor the emission reduction. The Plant Manager will be responsible for the electricity generated, gathering all relevant data and keeping the records monthly. They will be informed about VER concepts and mechanisms and how to monitor and collect the data which will be used for emission reduction calculations.

The generation data collected during the crediting period will be submitted to EN-ÇEV Energy Environmental Investments and Consultancy Limited Company who will be responsible for calculating the emission reduction subject to verification: Generation data will be used to prepare monitoring reports which will be used to determine the emission reduction from the project activity. These reports will be submitted to the duly authorized and appointed Designated Operational Entity –DOE- before each verification period.

TEIAS will be responsible for both installing the meters and monitoring. Two metering devise will be used for the project; one as the main metering devise, the second one will be the spare (cross check). In case of discrepancy between the two devices, TEIAS will conduct the necessary calibration works or the maintenance.

In case of a major failure at both metering at the same time, electricity generation by the plant since the last measurement will be able to be monitored by another metering device at the inlet of the main substation operated by TEIAS where the electricity is fed to the grid.

In addition to this metering system, the generated electricity may be cross checked from the website[73] of TEIAS-PMUM (Market Financial Settlement Centre).However it must be noted that PMUM web page will show the net electricity generated; less transmission loss, in order to match the data, the figures taken from PMUM web site must be multiplied by transmission loss factor of the grid.

The net electricity fed to the grid will be measured continuously and recorded monthly by the TEIAS and plant staff. For consistency, recorded data will be compared with electricity sale receipts. All data collected will be recorded daily and archived both as electronically and as hard copy for at least two years.

[73]Please see http://pmum.teias.gov.tr

The potential sustainable development benefits of Berke Weir and HEPP will be monitored as per effected indicators of sustainable development matrix. Those indicators are either crucial for an overall positive impact on sustainable development or particularly sensitive to changes in the framework conditions.

The environmental development of monitored by the indicator; air quality. The parameter of air quality is calculating avoided NO_x and SO_2 emissions from electricity mix of Turkey in the year calculation.

The economic and technological development is monitored by the way of indicators; technological self-reliance, balance of payments and job quantity. Parameter of technological self-reliance is the number of training hours. Parameter of balance of payments is calculation of avoided natural gas and liquid fuel import amount for electricity production. Parameter of job quantity is number of personnel from Social Security Institution documents.

The social development is monitored by the way of indicators; human and institutional capacity, livelihood of the poor and job quality. Parameter of human & institutional capacity and job quality is number of acquired certificates of trained personnel (training certificates). Parameter of livelihood of the poor is contracts invoices with or from local subcontractors and businesses. These parameters will be monitored annually.

All of these parameters will be monitored annually. Based on the monitoring plan, the data will be gathered and will be reported on the sustainable development attributed to the Project. For detailed information please refer to tables at section B.7.1.

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

Date of completing the final draft of this baseline section:05/03/2011
Name of entity determining the baseline:
EN-ÇEV Enerji Çevre Yatırımları ve Danışmanlığı Ltd. Şti.

Address: Mahatma GandiCaddesi, No: 92/2-3-4-6-7 06680 G.O.P – Ankara/ TURKEY
Tel: +90 312 447 26 22
Fax: +90 312 446 38 10

Contact Person: Özer Emrah Öztürk
E-mail: emrah@encev.com.tr

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:

27.April.2010

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

Life time of the project: 50 years

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

Renewable crediting period is chosen.

C.2.1. Renewable crediting period

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

N.A

C.2.1.2. Length of the first crediting period:

7 years, 0 months

C.2.2. Fixed crediting period:

Fixed crediting period is not chosen.

C.2.2.1. Starting date:

C.2.2.2. Length:

SECTION D. Environmental impacts

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

The project will contribute to improve the environmental situation in the region and in the country. Avoiding fossil fuel-based electricity will enhance the air quality and help to reduce the adverse affects on the climate. Renewable technologies and hydro power based electricity will be introduced and sustainable development will be promoted. The project activity itself will not have any significant negative impacts on humans, plants, animal life and biodiversity.

In Turkey it is mandatory to assess projects and construction activities such as power plants, factories, mining projects and large buildings in terms of physicochemical aspects, ecology, socio-economy, socio-culture and public health. This assessment called EIA (Environmental Impact assessment). The EIA of Berke Weir and HEPP were prepared as per the national EIA Regulations-EIA Required Projects, Article 7-1-b. This assessment interprets the impacts of the HEPP project to project site and environment.

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

The project has been assessed by its environmental and social affects and has been granted Ministry's decision on the environmental acceptability of the project based on the findings of the Environmental Assessment Committee. There have not been identified any significant environmental impacts of the Project.

SECTION E. Stakeholders' comments

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

According to the Gold Standard Toolkit, the project proponent EN-ÇEV Enerji Çevre Yatırımları ve Danışmanlığı Ltd. Şti invited local residents, local/national policy makers, and local/national/international NGOs via mail and follow-up calls. Individual invitees are listed in the Table 26.

Table 26: List of Invitees

Category Code	Organization (if relevant)	Name of invitee	Way of invitation	Date of invitation	Confirmation received? Y/N
B	Grand National Assembly of Turkey	Musa Sıvacıoğlu	Fax	17.06.2009	Y
B	Headman	Sadık Karan	Mail	17.06.2009	Y
B	Headman	Mehmet Yıldırım	Fax	17.06.2009	Y
B	Grand National Assembly of Turkey	Mehmet Serdaroğlu	Fax	17.06.2009	Y
B	Grand National Assembly of Turkey	HakkıKöylü	Fax	17.06.2009	Y
F	Regional Environmental Centre-Turkey	Yeşim A. Çağlayan	Fax	17.06.2009	Y
B	Governor of Kastamonu Province	Mustafa Kara	Fax	17.06.2009	Y
B	Headman	RaifBakan	Mail	17.06.2009	Y
B	Headman	RemziYılmaz	Mail	17.06.2009	Y
B	Head Office of Cide District	Mustafa Ayhan	Fax	17.06.2009	Y
B	Headman	Hasan Altın	Mail	17.06.2009	Y
C	Republic of Turkey Ministry of Environment and Forestry	Mustafa Şahin	Mail	17.06.2009	Y
F	Green Peace Turkey	Hilal Atıcı	Fax	17.06.2009	Y
F	WWF Turkey	Filiz Demirayak	Fax	17.06.2009	Y

B	Grand National Assembly of Turkey	Hasan Altan	Fax	17.06.2009	Y
B	Environment and Forest Management of Kastamonu Province	Yaşar Polat	Fax	17.06.2009	Y
B	Municipality of Kastamonu Province	Turhan Topçuoğlu	Fax	17.06.2009	Y

An invitation letter was sent out in Turkish fax/mail to the above mentioned stakeholders mentioned above. Furthermore, an invitation letter was published in Turkish in the regional newspaper "Kastamonu Sözcü" on 19 June 2009.

The stakeholder meeting was held on 26/06/2009 at Kuşçu Village, Köy Konağı, Cide / Kastamonu. At the meeting besides project developers and local citizens, there were three representatives of owner of the project, headman of neighbouring villages and three experts from Environment and Forest Management of Kastamonu Province. The number of total participants was about twenty-five. Supporters of Gold Standard Organizations i.e WWF, Greenpeace and REC Turkey have been informed about the project.

Table 27: Participant List for Stakeholder Consultation Meeting.

Participant List Stakeholder Consultation				
Date and time: 26.06.2009				
Location: Kuşçu Village, KöyKonağı Cide/Kastamonu				
Name	**Male/Female**	**Organisation(if relevant)**	**Job/Position in the Community**	**Contact Details**
Zeki Doğan	Male	Musa Village	Village Resident	0537 943 47 81
Raif Bakan	Male	Kumköy Village	Headman	0532 418 37 07
Hasan Altın	Male	Düz Village	Headman	0538 921 84 99
İsmail Kağtaş	Male	Musa Village	Village Resident	0538 745 73 80
CemalPoyraz	Male	Kuşçu Village	Village Resident	0366 396 52 67
Mehmet Yıldırım	Male	Kuşçu Village	Headman	0366 896 52 56
MevlütKısa	Male	Kuşçu Village	Village Resident	0366 896 53 93
Mehmet Kısa	Male	Kuşçu Village	Village Resident	0366 896 51 77
Recep Kısa	Male	Kuşçu Village	Village Resident	0532 497 01 79

RecepYıldırım	Male	Kuşçu Village	Village Resident	0537 588 58 58
Recep May	Male	Kuşçu Village	Village Resident	0532 766 69 40
Niyazi Makal	Male	Sakallı Village	Village Resident	0537 715 41 37
Hüseyin Geçgel	Male	Kum Village	Village Resident	0366 897 50 91
NiyaziMakal	Male	Sakallı Village	Village Resident	0366 896 50 14
Mehmet Yıldırım	Male	Kuşçu Village	Headman	0366 895 50 86
Dursun Baskil	Male	Kuşçu Village	Village Resident	
Sadık Karan	Male	Mencekli Village	Headman	0366 896 51 24
SaimYılmaz	Male	Çayüstü Village	Village Resident	0366 896 52 40
Güner Ay	Male	Kuşçu Village	Village Resident	0366 896 51 69
Mustafa Yıldırım	Male	Kuşçu Village	Village Resident	0366 896 50 94
Mevlüt Eryılmaz	Male	Kuşçu Village	Village Resident	0366 896 51 72
AylinKonca	Female	Kastamonu	Environment and Forest Management of Kastamonu Province	0366 212 52 62
Yalçın Uyanık	Male	Kastamonu	Environment and Forest Management of Kastamonu Province	0366 212 52 62
Ayhan Aydın	Male	Kastamonu	Environment and Forest Management of Kastamonu Province	0366 212 52 62
İlyas Eryılmaz	Male	Kuşçu Village	Village Resident	0366 896 52 46

The place of meeting was chosen to be the closest place to the project area and all local people are informed about meeting in advance of municipality announcements and local newspaper announcements.

Before presentation, agenda of the meeting was explained and non-technical project summary was distributed to the participants for broader view. **Agenda of the meeting** was as follows:

1. Opening of the meeting
2. Explanation of the project
3. Questions for clarification about project explanation
4. Blind sustainable development assessment
5. Discussion on monitoring sustainable development
6. Closure of the meeting

Project presentation and description was made by EN-CEV Energy & Environmental Investments Consultancy Company including information about project developers, the technology and operation of the power plant, estimated emission reduction amount of the plant, the importance of revenue from emission reduction, information about Gold Standard.

Prior to blind sustainable development exercise, questions and comments were taken from participants about further clarification of project. Questions and comments raised by participants were addressed in assessment of comments part.

In brief, the meeting was ended after the project was explained and discussed with the participants. The support of the participant for the project was easily observed.

E.2. Summary of the comments received:

In the Local Stakeholder Consultation Meeting, the stakeholders are pleasant about the project. Since they have informed regarding the project at the first stakeholder consultation process they have no negative comments on the project. They support the project due to the employment opportunities and economical development will be positively affected by the project.

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

No major concerns were raised during the entire initial stakeholder consultation process hence there was no need to make any changes to the project design.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	ESER ENERJİ ÜRETİM A.Ş
Street/P.O.Box:	571.Cadde 607. Sokak No:8
Building:	
City:	ÇANKAYA/ANKARA
State/Region:	
Postfix/ZIP:	
Country:	TURKEY
Telephone:	+90 312 490 22 44
FAX:	+90 312 492 09 17
E-Mail:	
URL:	
Represented by:	KORHAN ALTINDAL
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	kaltindal@espm.com.tr

Annex 2

ODA DECLARATION

ESER ENERJİ ÜRETİM A.Ş.
ESER Energy Generation Co. Inc.

Gold Standard Foundation

Dur/Ref. / Referansımız: 109/09
Date / Tarih: 22.10.2009

Project reference : **Berke Regulator and Hydro Electric Power Plant- GS723**
To : **Gold Standard Foundation**
Declaration of Non-Use of Official Development Assistance by Project Proponent
[*Legal Owner / Project Proponent*: ESER ENERJİ ÜRETİM A.Ş.]
As Legal Owner ("Project Proponent") of the above-referenced project, acting on behalf of all project participants, I now make the following representations:

[*Authorised Representative*: Ilhan ADILOĞLU I hereby declare that I am duly and fully authorised by the legal owner ("Project Proponent") of the above-referenced project, acting on behalf of all project participants, to make the following representations on Project Proponent's behalf.]

I. Gold Standard Documentation
I am familiar with the provisions of Gold Standard Documentation relevant to Official Development Assistance (ODA). I understand that the above-referenced project is not eligible for Gold Standard registration if the project receives or benefits from Official Development Assistance under the condition that some or all credits coming out of the project are transferred to the ODA donor country. I now expressly declare that no financing provided in connection with the above-referenced project has come from or will come from ODA that has been or will be provided under the condition, whether express or implied, that any or all of the credits [CERs, ERUs or VERs] issued as a result of the project's operation will be transferred directly or indirectly to the country of origin of the ODA.

II. Financier Declarations
I hereby declare that I have submitted [ESER ENERJİ ÜRETİM A.Ş.'s] declarations of Non-Use of ODA, representing declarations from all project financiers. If additional financiers are added to the project, I will promptly notify the Gold Standard Foundation and ensure that additional declarations are promptly submitted.

III. Financing Plan
I agree to complete and submit a sufficiently clear and transparent financing plan for the project so that during validation the Validator can assess compliance with the Non-Use of ODA requirement.

IV. Duty to Notify Upon Discovery. If I learn or if I am given any reason to believe at any stage of project design or implementation that ODA has been used to support the development or implementation of the project, or that an entity providing ODA to the host country may at some point in the future benefit directly or indirectly from the credits generated from the project as a condition of investment, I will make this known to the Gold Standard immediately.

V. Sanctions. I am fully aware that under Section 10 of the Gold Standard Terms and Conditions sanctions and damages may be incurred for the provision of false information related to Projects and/or Gold Standard credits.

Signed

Name : Ilhan ADILOĞLU
Title : Chairman
On behalf of : ESER ENERJİ ÜRETİM A.Ş.

Kuruluş Tarih (Establishment Date) : [illegible] Tic. Sic. No (Trade Register No.) : [illegible] Vergi Dairesi (Tax Department) : [illegible]
Sermaye (Capital) : [illegible] Merkez (Main Office) : [illegible]
Tel : [illegible] Fax : [illegible] www.eserenerji.com e-mail: [illegible] eser@eserenerji.com

Annex 3

BASELINE INFORMATION

Table 28: Generation units put into operation in 2009

POWER PLANTS	INSTALLED CAPACITY (MW)	PRODUCTION (GWh)	FUEL TYPE
ITC-KA ENERJİ (SİNCAN)	2,8	22	Waste
ITC-KA ENERJİ MAMAK KATI ATIK TOP.MERK.	2,8	21,062	Waste
ORTADOĞU ENERJİ (KÖMÜRCÜODA)	5,8	45	Waste
ORTADOĞU ENERJİ (ODA YERİ) (İlave)	4,2	77,953	Waste
ORTADOĞU ENERJİ (ODA YERİ) (İlave)	5,7		
ALKİM ALKALİ KİMYA (Cihanbeyli/KONYA)	0,4	3	Lignite
SİLOPİ ELEKTRİK ÜRETİM A.Ş.	135	945	Asphaltite
İÇDAŞ ÇELİK (İlave)	135	1923,33	Imported coal
İÇDAŞ ÇELİK (İlave)	135		
GÜRMAT ELEKT. (GÜRMAT JEOTERMAL)	47,4	313	Geothermal
CARGILL TARIM VE GIDA SAN. TİC. A.Ş.	0,1	0,7	Biogas
KASAR DUAL TEKSTİL SAN. A.Ş. (Çorlu)	5,7	38	N.gas
KEN KİPAŞ ELKT. ÜR.(KAREN) (K.Maraş)	17,5	75,36	N.gas
MARMARA PAMUKLU MENS. SN.TİC.A.Ş.	34,9	271,53	N.gas
MAURİ MAYA SAN. A.Ş.	0,3	19	N.gas
MAURİ MAYA SAN. A.Ş.	2		
TAV İSTANBUL TERMİNAL İŞLETME. A.Ş.	3,3	82	N.gas
TAV İSTANBUL TERMİNAL İŞLETME. A.Ş.	6,5		
TESKO KİPA KİTLE PAZ. TİC. VE GIDA A.Ş.	2,3	18	N.gas
SÖNMEZ ELEKTRİK(Uşak) (İlave)	8,7	67,057	N.gas
RASA ENERJİ (VAN)	78,6	500	N.gas
SELKASAN KAĞIT PAKETLEME MALZ. İM.	9,9	73	N.gas
ZORLU ENERJİ (B.Karıştıran) (İlave)	49,5	394,96	N.gas
NUH ÇİMENTO SAN. TİC. A.Ş.(Nuh Çim.) (İlave)	47	329	N.gas
ENTEK KÖSEKÖY(İztek) (Düzeltme)	0,8	98,68	N.gas
ENTEK KÖSEKÖY(İztek) (Düzeltme)	36,3		
FALEZ ELEKTRİK ÜRETİMİ A.Ş.	11,7	88	N.gas
GLOBAL ENERJİ (PELİTLİK)	8,6	65,66	N.gas
GÜL ENERJİ ELKT. ÜRET. SN. VE TİC. A.Ş.	24,3	170	N.gas
AK GIDA SAN. VE TİC. A.Ş. (Pamukova)	7,5	61	N.gas
AKSA AKRİLİK KİMYA SN. A.Ş. (YALOVA)	70	539	N.gas

AKSA ENERJİ (Antalya) (Güç Değişikliği)	16,2	4744,74	N.gas
AKSA ENERJİ (Antalya) (İlave)	300		
AKSA ENERJİ (Antalya) (İlave)	300		
AKSA ENERJİ (MANİSA) (İlave)	10,5	498,072	N.gas
AKSA ENERJİ (MANİSA) (İlave)	52,4		
ÇELİKLER TAAH. İNŞ. (RİXOX GRAND)	2	16	N.gas
DALSAN ALÇI SAN. VE TİC. A.Ş.	1,2	9	N.gas
CAM İŞ ELEKTRİK (Mersin) (İlave)	126,1	1008	N.gas
ANTALYA ENERJİ (İlave)	41,8	302,096	N.gas
ARENKO ELEKTRİK ÜRETİM A.Ş. (Denizli)	12	84	N.gas
DELTA ENERJİ ÜRETİM VE TİC.A.Ş.	47	467	N.gas
DELTA ENERJİ ÜRETİM VE TİC.A.Ş. (İlave)	13		
DESA ENERJİ ELEKTRİK ÜRETİM A.Ş.	9,8	70	N.gas
ERDEMİR(Ereğli-Zonguldak)	39,2	221,02	Fuel oil
SİLOPİ ELEKTRİK ÜRETİM A.Ş.(ESENBOĞA)	44,8	315	Fuel oil
TÜPRAŞ RAFİNERİ(Aliağa/İzmir)	24,7	171,77	Fuel oil
TÜPRAŞ O.A.RAFİNERİ(Kırıkkale)(Düzeltme)	10	70	Fuel oil
AK ENERJİ (AYYILDIZ RES)	15	51	Wind
ALİZE ENERJİ (ÇAMSEKİ RES)	20,8	82	Wind
ALİZE ENERJİ (KELTEPE RES)	18,9	65	Wind
ALİZE ENERJİ (SARIKAYA RES) (Şarköy)	28,8	96	Wind
AYEN ENERJİ A.Ş. AKBÜK RÜZGAR	16,8	123	Wind
AYEN ENERJİ A.Ş. AKBÜK RÜZGAR (İlave)	14,7		
BAKİ ELEKTRİK ŞAMLI RÜZGAR	36	337,33	Wind
BAKİ ELEKTRİK ŞAMLI RÜZGAR	33		
BELEN ELEKTRİK BELEN RÜZGAR-HATAY	15	95	Wind
BELEN ELEKTRİK BELEN RÜZGAR-HATAY	15		
BORASKO ENERJİ (BANDIRMA RES)	21	179	Wind
BORASKO ENERJİ (BANDIRMA RES)	24		
DATÇA RES (Datça)	0,8	61,0135	Wind
DATÇA RES (Datça)	8,9		
DATÇA RES (Datça) (İlave)	11,8		
KORES KOCADAĞ RES (Urla/İZMİR)	15	56	Wind
MAZI-3 RES ELEKT.ÜR. A.Ş. (MAZI-3 RES)	10	79	Wind
MAZI-3 RES ELEKT.ÜR. A.Ş. (MAZI-3 RES)	12,5		
ROTOR ELEKTRİK (OSMANİYE RES)	17,5	218	Wind
ROTOR ELEKTRİK (OSMANİYE RES)	17,5		

ROTOR ELEKTRİK (OSMANİYE RES)	22,5		
SAYALAR RÜZGAR (Doğal Enerji)	3,6	11,368	Wind
SOMA ENERJİ ÜRETİM (SOMA RES)	18	150	Wind
SOMA ENERJİ ÜRETİM (SOMA RES)(İlave)	10,8		
SOMA ENERJİ ÜRETİM (SOMA RES)(İlave)	16,2		
ÜTOPYA ELEKTRİK (DÜZOVA RES)	15	46	Wind
YAPISAN (KARICA REG. ve DARICA I HES)	48,5	328	Hydro
YAPISAN (KARICA REG. ve DARICA I HES)	48,5		
YEŞİLBAŞ ENERJİ (YEŞİLBAŞ HES)	14	56	Hydro
YPM GÖLOVA HES (Suşehri/SİVAS)	1,1	3	Hydro
YPM SEVİNDİK HES (Suşehri/SİVAS)	5,7	36	Hydro
TOCAK I HES (YURT ENERJİ ÜRETİM SN.)	4,8	13	Hydro
TÜM ENERJİ (PINAR REG. VE HES)	30,1	138	Hydro
UZUNÇAYIR HES (Tunceli)	27,3	105	Hydro
ANADOLU ELEKTRİK (ÇAKIRLAR HES)	16,2	60	Hydro
BAĞIŞLI REG. VE HES (CEYKAR ELEKT.)	9,9	99	Hydro
BAĞIŞLI REG. VE HES (CEYKAR ELEKT.)	19,7		
BEREKET ENERJİ (KOYULHİSAR HES)	42	329	Hydro
BEYOBASI EN. ÜR. A.Ş. (SIRMA HES)	5,9	23	Hydro
AKUA ENERJİ (KAYALIK REG. VE HES)	5,8	39	Hydro
AKÇAY HES ELEKTRİK ÜR. (AKÇAY HES)	28,8	95	Hydro
CİNDERE HES (Denizli)	19,1		Hydro
DENİZLİ ELEKTRİK (EGE I HES)	0,9	4	Hydro
ELESTAŞ ELEKTRİK (YAYLABEL HES)	5,1	20	Hydro
ELESTAŞ ELEKTRİK (YAZI HES)	1,1	6	Hydro
DEĞİRMENÜSTÜ EN. (KAHRAMANMARAŞ)	12,9	35,425	Hydro
FİLYOS ENERJİ (YALNIZCA REG. VE HES)	14,4	67	Hydro
ERVA ENERJİ (KABACA REG. VE HES)	4,2	33	Hydro
ERVA ENERJİ (KABACA REG. VE HES)	4,2		
KAYEN ALFA ENERJİ (KALETEPE HES)	10,2	37	Hydro
LAMAS III - IV HES (TGT ENERJİ ÜRETİM)	35,7	150	Hydro
OBRUK HES	212,4	473	Hydro
ÖZGÜR ELEKTRİK (AZMAK II REG.VE HES)	24,4	91	Hydro
ÖZTAY ENERJİ (GÜNAYŞE REG.VE HES)	8,3	29	Hydro
ÖZYAKUT ELEK. ÜR.A.Ş. (GÜNEŞLİ HES)	0,6	8	Hydro
ÖZYAKUT ELEK. ÜR.A.Ş. (GÜNEŞLİ HES)	1,2		
ŞİRİKÇİOĞLU EL.(KOZAK BENDİ VE HES)	4,4	15	Hydro
TAŞOVA YENİDEREKÖY HES (HAMEKA A.Ş.)	2	10	Hydro

TEKTUĞ (Erkenek)	6	50	Hydro
TEKTUĞ (Erkenek) (İlave)	6,5		
SARITEPE HES (GENEL DİNAMİK SİS.EL.)	2,5	20	Hydro
SARITEPE HES (GENEL DİNAMİK SİS.EL.)	2,5		

Table 29: Generation units put into operation in 2008

POWER PLANTS	INSTALLED CAPACITY (MW)	PRODUCTION (GWh)	FUEL TYPE
AKSA ENERJİ (Antalya)	183,8	133,7	N.gas
AKSA ENERJİ (Manisa)	52,4	79,2	N.gas
ANTALYA ENERJİ (İlave)	17,5	256,1	N.gas
ATAÇ İNŞAAT SAN. A.S.B.(ANTALYA)	5,4	10,0	N.gas
CAN ENERJİ (Çorlu-TEKİRDAĞ) (İlave)	52,4	274,3	N.gas
ITC-KA Enerji Üretim A.Ş.(Mamak)(İlave)	14,1	95,8	N.gas
KARKEY(SİLOPİ-5) (154 kV) (İlave)	14,8	16,4	Fuel oil
MİSİS APRE TEKSTİL BOYA EN. SAN.	2,0	5,3	N.gas
MODERN ENERJİ (LÜLEBURGAZ)	13,4	508,9	N.gas
POLAT TURZ. (POLAT RENAISSANCE İST.OT.)	1,6	490,0	N.gas
SARAYKÖY JEOTERMAL (Denizli)	6,9	14,1	Geothermal
YILDIZ SUNTA (Uzunçiftlik-Köseköy)(Düzeltme)	22,6	136,0	N.gas
SÖNMEZ Elektrik (İlave)	8,7	61,0	N.gas
AKKÖY ENERJİ (AKKÖY I HES)	101,9	21,6	Hydro
ALP ELEKTRİK (TINAZTEPE) ANTALYA	7,7	9,2	Hydro
CANSU ELEKTRİK (Murgul/ARTVİN)	9,2	12,5	Hydro
ÇALDERE ELK.(ÇALDERE HES)Dalaman-MUĞLA	8,7	11,2	Hydro
DAREN HES ELKT. (SEYRANTEPE BARAJI VE HES)	49,7	14,4	Hydro
GÖZEDE HES (TEMSA ELEKTRİK) BURSA	2,4	6,1	Hydro
H.G.M. ENERJİ (KEKLİCEK HES) (Yeşilyurt)	8,7	120,0	Hydro
HAMZALI HES (TURKON MNG ELEKTRİK)	16,7	2,9	Hydro
HİDRO KNT.(YUKARI MANAHOZ REG.VE HES)	22,4	13,8	Hydro
İÇ-EN ELK.(ÇALKIŞLA REGÜLATÖRÜ VE HES)	7,7	3,4	Hydro
KALEN ENERJİ (KALEN II REGÜLAT. VE HES)	15,7	10,3	Hydro
SARMAŞIK I HES (FETAŞ FETHİYE ENERJİ)	21,0	1,5	Hydro
SARMAŞIK II HES (FETAŞ FETHİYE ENERJİ)	21,6	1,2	Hydro
TORUL	105,6	18,6	Hydro
ZORLU ENERJİ (MERCAN) (Düzeltme)	1,275	22,828	Hydro
BAKİ ELEKTRİK ŞAMLI RÜZGAR	21,000	60,943	Wind

DATÇA RES (Datça)	8,100	3,778	Wind
ERTÜRK ELEKTRİK Çatalca RES	60,000	65,961	Wind
İNNORES ELK YUNTDAĞ RÜZG. (Aliağa)	42,500	98,058	Wind
LODOS RES (Taşoluk)(GOP/İSTANBUL)	24,000	25,714	Wind
SAYALAR RÜZGAR (Doğal Enerji)	30,600	53,925	Wind
SEBENOBA (DENİZ ELK.) (Samandağ-HATAY)	31,200	46,919	Wind
TOTAL	**1062,512**	**2025,279**	

Table 30: Generation units put into operation in 2007

POWER PLANTS	INSTALLED CAPACITY (MW)	PRODUCTION (GWh)	FUEL TYPE
MOBİL TOPLAM	-462,3		
HABAŞ (Aliağa-ilave)	9,1	72,8	N.gas
BOSEN	-123,5		N.gas
MODERN ENERJİ	5,2	38,7	N.gas
ARENKO	0,7	5,6	N.gas
ALTINMARKA GIDA	0,1	0,8	N.gas
TEKBOY ENERJİ	0,1	0,7	N.gas
VELSAN AKRİLİK	0,1	0,7	N.gas
AKBAŞLAR	-0,1		N.gas
ORS RULMAN	-0,3		N.gas
Acıbadem Sağlık Hiz.ve Tic.A.Ş (Kadıköy Hast.)(İstanbul/Kadıköy)	0,5	4,0	N.gas
Acıbadem Sağlık Hiz.ve Tic.A.Ş (Kozyatağı Hast.)(İstanbul/Kadıköy)	0,6	5,0	N.gas
AcıbademSağlık Hiz.ve Tic.A.Ş(Nilüfer/BURSA)	1,3	11,0	N.gas
AKATEKS TekstilSanayiveTicaret A.Ş.	1,8	14,0	N.gas
FLOKSER TEKSTİL SAN.AŞ.(Çatalça /istanbul)(PoliserTesisi)	2,1	17,0	N.gas
FLOKSER TEKSTİL SAN.AŞ.(Çatalça/istanbul) (SüetserTesisi)	2,1	17,0	N.gas
FRİTOLAY GIDA SAN.VE TİC. AŞ.	0,5	4,0	N.gas
KIVANÇ TEKSTİL SAN.ve TİC.A.Ş.	3,9	33,0	N.gas
KİL-SAN KİL SAN.VE TİC. A.Ş	3,2	25,0	N.gas
SÜPERBOY BOYA SAN.ve Tic.Ltd.Şti. (Büyükçekmece/İstanbul) 05.12.2003	1	8,0	N.gas
SWİSS OTEL(Anadolu Japan Turizm A.Ş (İstanbul)	1,6	11,0	N.gas
TAV Esenboğa Yatırım Yapım veİşletme AŞ./ANKARA	3,9	33,0	N.gas
STARWOOD	-17,3		N.gas
NUH ENERJİ-2(NuhÇim.)	73	514,0	N.gas

KAREN	-24,3		Fuel-oil
AKTEKS	0,8	5,4	Fuel-oil
TÜPRAŞ İZMİT RAFİNERİ	-0,9		Fuel-oil
AKBAŞLAR	-3,8		Fuel-oil
UŞAK ŞEKER (NURİ ŞEKER)	1,7	3,1	Lignite
BOR ŞEKER	-0,6		Lignite
SUSURLUK ŞEKER	-0,6		Lignite
AFYON ŞEKER	-0,8	2,0	Diesel
AĞRI ŞEKER	-1		Diesel
ALPULLU ŞEKER	-0,9	2,3	Diesel
BURDUR ŞEKER	-0,8	2,0	Diesel
ÇARŞAMBA ŞEKER	-0,8	2,0	Diesel
ÇORUM ŞEKER	-0,8	2,0	Diesel
ELAZIĞ ŞEKER	-0,5	1,3	Diesel
ELBİSTAN ŞEKER	-0,8	2,0	Diesel
ERCİŞ ŞEKER	-0,8	2,0	Diesel
EREĞLİ ŞEKER	-0,8	2,0	Diesel
KASTAMONU ŞEKER	-0,2	0,5	Diesel
KÜTAHYA ŞEKER (BAHA ESAD TEKAND)	-0,7	1,8	Diesel
MALATYA ŞEKER	-0,5	1,3	Diesel
BOĞAZLIYAN ŞEKER	16,4	43,1	N.gas
KARTONSAN	5	40,0	N.gas
ESKİŞEHİR END.ENERJİ	3,5	26,8	N.gas
ESKİŞEHİR ŞEKER (KAZIM TAŞKENT)	2,9	7,6	N.gas
İGSAŞ	2,2	15,2	N.gas
DESA	0,7	1,8	N.gas
DENTAŞ	0,3	0,8	N.gas
SÜPER FİLMCİLİK	0,1	0,3	N.gas
ATAER ENERJİ	0,1	0,3	N.gas
BİL ENERJİ	0,1	0,7	N.gas
EDİP İPLİK	-0,1	0,8	N.gas
EGE BİRLEŞİK ENERJİ	-0,3	0,8	N.gas
İSKO	-1,8		N.gas
ITC-KA Enerji Üretim Aş.(Mamak)(İlave)	1,4	11,1	Landfill gas
BİS Enerji Üretim AŞ.(Bursa)(İlave)	43	354,8	N.gas
Aliağa Çakmaktepe Enerji A.Ş.(Aliağa/İZMİR)	34,8	278,0	N.gas
BİS Enerji Üretim AŞ.(Bursa)(Düzeltilme))	28,3	233,5	N.gas
BİS Enerji Üretim AŞ.(Bursa)(İlave)	48	396,1	N.gas
BOSEN ENERJİ ELEKTRİK AŞ.	142,8	1071,0	N.gas
Mamara ElektrikÜretim A.Ş.	-8,7		N.gas

NUH ENERJİ-2(NuhÇim.)	-73		N.gas
SAYENERJİ ELEKTRİK ÜRETİM AŞ. (Kayseri/OSB)	5,9	47,0	N.gas
T ENERJİ ÜRETİM AŞ.(İSTANBUL)	1,6	13,0	N.gas
ZORLU EN.Kayseri (İlave 1 GT)	7,2	55,0	N.gas
SİİRT	25,6	190,0	Fuel-oil
Mardin Kızıltepe	34,1	250,0	Fuel-oil
KAREN	24,3	180,0	Fuel-oil
İDİL 2 (PS3 A- 2)	24,4	180,0	Fuel-oil
İSKUR TEKSTİL (SÜLEYMANLI HES)	-4,6		Hydro
BORÇKA HES	300,6	1039,0	Hydro
TEKTUĞ (Keban Deresi)	5	32,0	Hydro
YPM Ener.Yat.AŞ .(AltıntepeHidro.)(Sivas/Suşehir)	4	18,0	Hydro
YPM Ener.Yat.AŞ.(BeypınarHidro.)(Sivas/Suşehir)	3,6	18,0	Hydro
YPM Ener.Yat.AŞ.(Konak Hidro.)(Sivas/Suşehir)	4	19,0	Hydro
KURTEKS Tekstil A.Ş./Kahramanmaraş(KARASU HES-Andırın)	2,4	19,0	Hydro
İSKUR TEKSTİL (SÜLEYMANLI HES)	4,6	18,0	Hydro
ÖZGÜR ELK.AŞ.(K.MARAŞ)(Tahta)	6,3	27,0	Hydro
ÖZGÜR ELK.AŞ.(K.MARAŞ)(Tahta)(İlave)	6,3	27,0	Hydro
ANEMON EN.ELEK.ÜRETİM.AŞ.	8		Wind
ANEMON EN.ELEK.ÜRETİM.AŞ.(İlave)	15,2		Wind
ANEMON EN.ELEK.ÜRETİM.AŞ.(İlave)	7,2		Wind
BURGAZ RES (Doğal Enerji Üretim A.Ş.)	4		Wind
BURGAZ RES (DoğalEnerjiÜretim A.Ş.)	10,9		Wind
DENİZ ELEK. ÜRETİM Ltd.Şti.(karakurt)	10,8		Wind
MARE MANASTIR RÜZGAR ENERJİ(ilave)	11,2		Wind
MARE MANASTIR RÜZGAR ENERJİ(ilave)	20		Wind
TOTAL	**258,5**	**5459,7**	

Table 31: Generation units put into operation in 2006

POWER PLANTS	INSTALLED CAPACITY (MW)	PRODUCTION (GWh)	FUEL TYPE
EKOTEN TEKSTİL GR-I	1,93	14,2	N.gas
ERAK GİYİM GR-I	1,37	9,8	N.gas
ALARKO ALTEK GR-III	21,89	158,3	N.gas
AYDIN ÖRME GR-I	7,52	60,2	N.gas
NUH ENERJİ-2 GR II	26,08	180,1	N.gas
MARMARA ELEKTRİK (Çorlu) GR I	8,73	63,0	N.gas
MARMARA PAMUK (Çorlu) GR I	8,73	63,2	N.gas
ENTEK (Köseköy) GR IV	47,62	378,2	N.gas

ELSE TEKSTİL (Çorlu) GR I - II	3,16	24,7	N.gas
BARES IX GRUP	13,50		Wind
SÖNMEZ ELEKTRİK (Çorlu) GR I - II	17,46	125,7	N.gas
DENİZLİ ÇİMENTO(DÜZELTME)	0,45		N.gas
MENDERES ELEKTRİK GR I	7,95	55,7	Geothermal
KASTAMONU ENTEGRE (Balıkesir) GR I	7,52	54,1	N.gas
ÇIRAĞAN SARAYI	-1,36		N.gas
BARES X. ve XX. GRUPLAR	16,50		Wind
BOZ ENERJİ GR I 8,730	8,73	70,2	N.gas
ADANA ATIK SU ARITMA TESİSİ	0,80	6,0	Biogas
AMYLUM NİŞASTA (ADANA)	-6,20		Fuel-oil
AMYLUM NİŞASTA (ADANA)	14,25	33,9	N.gas
ŞIK MAKAS (Çorlu) GR I	1,58	12,8	N.gas
ELBİSTAN B GR III	360,00	2340,0	Lignite
ANTALYA ENERJİ GR I - II - III - IV	34,92	245,1	N.gas
HAYAT TEM. VE SAĞLIK GR I - II	15,04	108,3	N.gas
EKOLOJİK EN. (Kemerburgaz) GR I	0,98	5,9	Landfill gas
EROĞLU GİYİM (Çorlu) GR I	1,17	8,7	N.gas
CAM İŞ ELEKTRİK (Mersin) GR I	126,10	1008,0	N.gas
ELBİSTAN B GR II	360,00	2340,0	Lignite
YILDIZ ENT. AĞAÇ (Kocaeli) GR I	6,18	39,9	N.gas
ÇERKEZKÖY ENERJİ GR I	49,16	389,7	N.gas
ENTEK (Köseköy) GR V	37,00	293,9	N.gas
ITC-KA EN. MAMAK TOP.M. GR I-II-III	4,24	30,3	Landfill gas
ELBİSTAN B GR IV	360,00	2340,0	Lignite
MARE MANASTIR RÜZGAR (X GRUP)	8,00		Wind
ÇIRAĞAN SARAYI GR I	1,32	11,0	N.gas
ERTÜRK ELEKTRİK Tepe RES GR I	0,85	1,9	Wind
AKMAYA (Lüleburgaz) GR I	6,91	50,1	N.gas
BURGAZ (Lüleburgaz) GR I	6,91	54,1	N.gas
VAN-2 -24,700	-24,70		Fuel-oil
KARACAÖREN-II	-0,80		Hydro
SEYHAN I-II	0,30	1,7	Hydro
ŞANLIURFA GR I-II	51,80	124,0	Hydro
BEREKET ENERJİ GÖKYAR HES 3 Grup	11,62	43,4	Hydro
MOLU EN. ZamantıBahçelik GR I - II	4,22	16,4	Hydro
SU ENERJİ (Balıkesir) GR I - II	4,60	20,7	Hydro
BEREKET EN.(MentaşReg) GR I - II	26,60	108,7	Hydro
EKİN (Başaran Hes) (Nazilli)	0,60	4,5	Hydro
ERE(Sugözürg. Kızıldüzhes) GR I - II	15,43	31,7	Hydro

ERE(AKSU REG.ve ŞAHMALLAR HES) GR I-II	14,00	26,7	Hydro
TEKTUĞ(Kale altı) GR I - II	15,00	52,0	Hydro
BEREKET EN.(Mentaş Reg) GR III	13,30	54,4	Hydro
TOTAL	**1720**	**11061,2**	

Table 32: Generation units put into operation in 2005

POWER PLANTS	INSTALLED CAPACITY (MW)	PRODUCTION (GWh)	FUEL TYPE	Start Date to operation
ÇAN GR I	160,00	1040,0	Lignite	
ÇAN GR II	160,00	1040,0	Lignite	
ELBİSTAN-B GR I	360,00	2340,0	Lignite	
AKBAŞLAR GR-II(İZOLE)	8,83		N.gas	
AKÇA ENERJİ GR-III	8,73	65,4	N.gas+naphtha	14.12.2005
AYKA TEKSTİL GR-I	5,50	40,0	N.gas	
BAYDEMİRLER GR IV-V-VI	6,21	51,4	N.gas	
BOSEN GR-III	50,00	350,0	N.gas	3.12.2005
BOSEN (DÜZELTME)	-6,50		N.gas	
ÇUMRA ŞEKER	16,00	40,0	N.gas+lignite	
ETİ MAD.(BAN.ASİT)(SÖKÜLDÜ)	-3,80		Renew.+wastes	
ETİ MAD.(BAN.ASİT)GR-I	11,50	85,0	Renew.+wastes	
EVYAP GR I-II	5,12	30,0	N.gas	
GRANİSER GRANİT GR-I	5,50	42,0	N.gas	
HABAŞ ALİAĞA GR III	47,69	381,6	N.gas	
HABAŞ ALİAĞA GR IV	47,69	381,6	N.gas	
HABAŞ ALİAĞA GR-V	24,60	196,8	N.gas	
HABAŞ ALİAĞA (DÜZELTME)	6,16		N.gas	
HAYAT KAĞIT GR-I	7,53	56,0	N.gas	
İÇDAŞ ÇELİK GR-I	135,00	1080,0	Imported coal	30.11.2005
KAHRAMANMARAŞ KAĞIT GR-I	6,00	45,0	Imported coal	8.12.2005
KORUMA KLOR GR I-II-III	9,60	77,0	N.gas	3.12.2005
KÜÇÜKÇALIK TEKSTİL GR I-II-III-IV	8,00	64,0	N.gas	
MERCEDES BENZ TURK GR I-II-III-IV	8,28	68,0	N.gas	
MODERN ENERJİ GR-III	8,38	62,9	N.gas	
MODERN ENERJİ (DÜZELTME)	-10,00		N.gas	
MODERN ENERJİ GR-II	6,72	50,4	N.gas+lpg	
MOSB GR I-II-III(SÖKÜLDÜ)	-54,30		F.oil	
MOSB GR I-II-III-IV-V-VI-VII	84,83	434,0	N.gas	
ORS RULMAN	12,42	99,4	N.gas	
PAK GIDA(Kemalpaşa) GR-I	5,67	45,0	N.gas	7.12.2005
TEZCAN GALVANİZ GR I-II	3,66	29,0	N.gas	
YONGAPAN(KAST.ENTG) GR-II	5,20	32,7	N.gas	
ZEYNEP GİYİM SAN. GR-I	1,17	9,0	N.gas	
OTOP DÜZELTME	0,02		Renew.+wastes	
OTOP DÜZELTME	-0,19		N.gas	
OTOP DÜZELTME	-7,20		N.gas+liquid	

OTOP DÜZELTME	-1,02		F.oil	
OTOP DÜZELTME	2,11		Solid+liquid	
OTOP DÜZELTME	0,06		Lignite	
OTOP DÜZELTME	-0,30		Naphtha	
OTOP DÜZELTME	0,61		D.oil	
AK ENERJİ(K.paşa) GR- III	40,00	256,9	N.gas	
AK ENERJİ(K.paşa) GR I-II	87,20	560,1	N.gas	
ALTEK ALARKO GR I-II	60,10	420,0	N.gas	
BİS ENERJİ GR VII	43,70	360,8	N.gas	
CAN ENERJİ GR-I	3,90	28,0	N.gas	
ÇEBİ ENERJİ BT	21,00	164,9	N.gas	
ÇEBİ ENERJİ GT	43,37	340,1	N.gas	
ENTEK ELK.A.Ş.KOÇ ÜNİ.GR I-II	2,33	19,0	N.gas	
KAREGE GR IV-V	18,06	141,9	N.gas	
KARKEY(SİLOPİ-4) GR-IV	6,15	47,2	Fuel-oil	
KARKEY(SİLOPİ-4) GR-V	6,75	51,9	Fuel-oil	23.12.2005
METEM ENERJİ(Hacışıramat) GR I-II	7,83	58,0	N.gas	
METEM ENERJİ(Peliklik) GR I-II-III	11,75	89,0	N.gas	
NOREN ENERJİ GR-I	8,73	70,0	N.gas	
NUH ENERJİ-2 GR I	46,95	319,7	N.gas	
ZORLU ENERJİ KAYSERİ GR-I-II-III	149,87	1144,1	N.gas	
ZORLU ENERJİ KAYSERİ GR-IV	38,63	294,9	N.gas	
ZORLU ENERJİ YALOVA GR I-II	15,93	122,0	N.gas	
TEKTUĞ(Kargılık) GR I-II	23,90	83,0	Run of river	
İÇTAŞ ENERJİ(Yukarı Mercan) GR I-II	14,19	44,0	Run of river	
MURATLI GR I-II	115,00	444,0	Dam	
BEREKET EN.(DALAMAN) GR XIII-XIV-XV	7,50	35,8	Run of river	
YAMULA GRUP I-II	100,00	422,0	Dam	
SUNJÜT(RES) GR I-II	1,20	2,4	Wind	
TOTAL	**2026,02**	**13755,9**		

Table 33: CDM Projects benefitting from VER revenues

Year-Start to Operation	Name of the Power Plant	Installed Capacity (MW)	Electricity Generation (GWh)	Type
	BAKİ ELEKTRİK ŞAMLI RÜZGAR	36		
2009	BAKİ ELEKTRİK ŞAMLI RÜZGAR	33	337,33	Wind
2008	BAKİ ELEKTRİK ŞAMLI RÜZGAR	21	60,943	Wind
2008	DATÇA RES (Datça)	8,1	3,778	Wind
	DATÇA RES (Datça)	0,8		
	DATÇA RES (Datça)	8,9		
2009	DATÇA RES (Datça) (İlave)	11,8	61,0135	Wind
2008	ERTÜRK ELEKTRİK Çatalca RES	60	65,961	Wind
2008	İNNORES ELK YUNTDAĞ RÜZG. (Aliağa)	42,5	98,058	Wind
2008	LODOS RES (Taşoluk)(G.O.P./İSTANBUL)	24	25,714	Wind
2008	SAYALAR RÜZGAR (Doğal Enerji)	30,6	53,925	Wind

2008	SEBENOBA (DENİZ ELK.) (Samandağ-HATAY)	31,2	46,919	Wind
2009	DEĞİRMENÜSTÜ EN. (KAHRAMANMARAŞ)	12,9	35,425	Hydro
2008	HAMZALI HES (TURKON MNG ELEKTRİK)	16,7	2,9	Hydro
2008	ÇALDERE ELK.(ÇALDERE HES)Dalaman-MUĞLA	8,7	11,2	Hydro
2006	TEKTUĞ(Kalealtı) GR I - II	15	52	Hydro
2009	ÜTOPYA ELEKTRİK (DÜZOVA RES)	15	46	Wind
	ROTOR ELEKTRİK (OSMANİYE RES)	17,5		
	ROTOR ELEKTRİK (OSMANİYE RES)	17,5		
2009	ROTOR ELEKTRİK (OSMANİYE RES)	22,5	218	Wind
2009	BORASKO ENERJİ (BANDIRMA RES)	24	95,46	Wind
2009	ALİZE ENERJİ (SARIKAYA RES) (Şarköy)	28,8	96	Wind
2009	ÖZTAY ENERJİ (GÜNAYŞE REG.VE HES)	8,3	29	Hydro
2009	AK ENERJİ (AYYILDIZ RES)	15	51	Wind
2009	FİLYOS ENERJİ (YALNIZCA REG. VE HES)	14,4	67	Hydro
2009	KORES KOCADAĞ RES (Urla/İZMİR)	15	56	Wind
2009	ITC-KA ENERJİ MAMAK KATI ATIK TOP.MERK.	2,8	21,062	Waste
2009	ALİZE ENERJİ (KELTEPE RES)	18,9	65	Wind
	AYEN ENERJİ A.Ş. AKBÜK RÜZGAR	16,8		
2009	AYEN ENERJİ A.Ş. AKBÜK RÜZGAR (İlave)	14,7	123	Wind
	BELEN ELEKTRİK BELEN RÜZGAR-HATAY	15		
2009	BELEN ELEKTRİK BELEN RÜZGAR-HATAY	15	95	Wind
	MAZI-3 RES ELEKT.ÜR. A.Ş. (MAZI-3 RES)	10		
2009	MAZI-3 RES ELEKT.ÜR. A.Ş. (MAZI-3 RES)	12,5	79	Wind
	SOMA ENERJİ ÜRETİM (SOMA RES)	18		
2009	SOMA ENERJİ ÜRETİM (SOMA RES) (İlave)	10,8		
	SOMA ENERJİ ÜRETİM (SOMA RES) (İlave)	16,2	150	Wind
2009	ANADOLU ELEKTRİK (ÇAKIRLAR HES)	16,2	60	Hydro
		Total	**2.106,6885**	

Table 34: Electricity generation from capacity additions by fuel type

Year	2005	2006	2007	2008	2009	
Fuel Type	**Electricity generation (GWh)**					**Total**
Coal	1.125,00				2868,33	3.993,33
Lignite		7.020,00	3,1		3	7.023,00
Fuel-oil	51,90		805,40	16,40	777,79	1.651,49
Diesel Oil			21,20			21,20
LPG						
Naphtha				578,60		578,60
Natural Gas	537,40	3.457,20	3.401,90	2.050,30	10.089,16	19.535,96
Wind		1,90		355,30	1649,7115	2.006,91
Geothermal		55,70		14,10	313	382,80
Hydro		484,20	1.217,00	269,53	2372,425	4.343,15
Renewable +Waste		42,20	11,10		166,715	220,02

Total	1.714,30	11.061,20	5.456,60	3.284,23	18.240,13
	39.756,45				

Capacity addition between 2005 and 2009 = **39.756,45** GWh which is above 20% of total electricity generation in year 2009: 194.812,9 GWh. The capacity addition is composed of the set of power units in the electricity system commissioned between 2009 and 2006 and for the year 2005, the generation of the latest starting operation dated 7 plants is added to account in order to comprise 20% of total 2009 electricity generation. Hence, the sample group is decided as the set of tables (please see annex 3). The power plants registered as CDM projects should be excluded from the set. Total electricity generation of power plants registered as CDM projects is **2.106,6885** GWh.

OPERATING MARGIN CALCULATION

Table 35: Heat values of fuel types for 2007-2009

	Heat Value(Tcal)			**Heat Value (MJ)**		
Fuel Type	**2007**	**2008**	**2009**	**2007**	**2008**	**2009**
Coal	32115	33310	35130	134.369.180.317	139369061073	146982896224
Lignite	100320	108227	97652	419738943465	452821836467	408574172080
Fuel Oil	21434	20607	15160	89679869560	86219701036	63429039558
Diesel Oil	517	1328	1830	2163128327	5556352840	7657666742
LPG	0	0	1	0	0	5154689
Naphta	118	113	84	493712075	472792071	352288669
Natural Gas	179634	189057	186266	751588769640	791014607601	779336254324

Table 36: The consumption of fuel types between 2007-2009

	FC (tonnes (gas: $10^3 m^3$))		
Fuel Type	**2007**	**2008**	**2009**
Coal	6029143	6270008	6621177
Lignite	61223821	66374120	63620518
Fuel Oil	2250686	2173371	1594321
Diesel Oil	50233	131206	180857
LPG	0	0	111
Naphta	11441	10606	8077
Natural Gas	20457793	21607635	20978040

Table 37: Electricity production from plants, low-cost/must-run production, its exclusion and share of it.

Electricity Gene. (GWh) / Year	**2005**	**2006**	**2007**	**2008**	**2009**
Thermal Total	122242,30	131835,10	155196,17	164139,30	156923,44
Hydro+Geothermal+Wind Total	39713,90	44464,70	36361,92	34278,70	37889,47
Turkey's Total	161956,20	176299,80	191558,09	198418,00	194812,92
Share of low-cost/must-run production	24,52	25,22	18,98	17,28	19,45
Average share (%)	**21,09**				

Table 38: Heat Values, FC, NCV and EF_{CO2}, EG $_{net+ import}$, simple operation margin CO_2 emission factor values of each fuel source in 2007

2007						
Fuel type	**FC (tonnes (gas: 10^3m^3))**	**Heat value (MJ)**	**NCV (MJ/kg)**	**$EFCO_2$ (kg/TJ)**	**EG $_{net+import}$ (GWh)**	**$EF_{grid,Omsimple,y}$ (tCO2/MWh)**
Coal	6029143	134.369.180.317	21,43046	87.300,000	149387,035	0,07551
Lignite	61223821	419738943465	6,85581	90.900,000	149387,035	0,25541
Fuel Oil	2250686	89679869560	39,84557	75.500,000	149387,035	0,04532
Diesel Oil	50233	2163128327	43,06190	72.600,000	149387,035	0,00105
LPG	0	0	0,00000	61.600,000	149387,035	0,00000
Naphtha	11441	493712075	43,15288	69.300,000	149387,035	0,00023
Natural Gas	20457793	751588769640	36,73851	54.300,000	149387,035	0,27319
					TOTAL	**0,65071**

Table 39: Heat Values, FC, NCV and EF_{CO2}, EG $_{net+ import}$, simple operation margin CO_2 emission factor values of each fuel source in 2008

2008						
Fuel type	**FC (tonnes(gas: 10^3m^3))**	**Heat value (MJ)**	**NCV (MJ/kg)**	**$EFCO_2$ (kg/TJ)**	**EG $_{net+import}$ (GWh)**	**$EF_{grid,Omsimple,y}$ (tCO2/MWh)**
Coal	6270008	139369061073	22,22789	87.300,000	157706,571	0,07715
Lignite	66374120	452821836467	6,82227	90.900,000	157706,571	0,26100
Fuel Oil	2173371	86219701036	39,67095	75.500,000	157706,571	0,04128
Diesel Oil	131206	5556352840	42,34831	72.600,000	157706,571	0,00256
LPG	0	0	0,00000	61.600,000	157706,571	0,00000
Naphtha	10606	472792071	44,57779	69.300,000	157706,571	0,00021
Natural Gas	21607635	791014607601	36,60811	54.300,000	157706,571	0,27235

TOTAL	0,65455

Table 40: Heat Values, FC, NCV and EF_{CO2}, EG $_{net+ import}$, simple operation margin CO_2 emission factor values of each fuel source in 2009

2009						
Fuel type	**FC (tonnes(gas: 10^3m^3))**	**Heat value (MJ)**	**NCV (MJ/kg)**	**$EFCO_2$ (kg/TJ)**	**EG $_{net+import}$ (GWh)**	**$EF_{grid,Omsimple,y}$ (tCO2/MWh)**
Coal	6621177	146982896224	22,19891	87.300,000	151144,656	0,08490
Lignite	63620518	408574172080	6,42205	90.900,000	151144,656	0,24572
Fuel Oil	1594321	63429039558	39,78436	75.500,000	151144,656	0,03168
Diesel Oil	180857	7657666742	42,34100	72.600,000	151144,656	0,00368
LPG	111	5154689	46,43864	61.600,000	151144,656	0,00000
Naphtha	8077	352288669	43,61628	69.300,000	151144,656	0,00016
Natural Gas	20978040	779336254324	37,15010	54.300,000	151144,656	0,27998
					TOTAL	**0,64613**

Table 41: 2007-2009 generation weighted average of simple operation margin CO_2 emission factor

	EF,grid,Omsimple,y(tCO_2/MWh)		
Year	2007	2008	2009
Total	0,65071	0,65455	0,64613
3-year Generation Weighted Average (tCO_2/MWh)	**0,650460395**		

BUILD MARGIN CALCULATION

Table 42: Average CO2 emission factor, generation efficiency, CO2 emission factor by fuel type in 2009

Fuel Type	**EFCO2 (kg/Tj)***	**EFCO2 (t/Gj)**	**η Generation Efficiency***	**EF $_{EL,m,y}$(tCO2/MWh)**

			(%)	
Coal	87300	0,087	0,336	**0,9354**
Lignite	90900	0,091	0,328	**0,9977**
Fuel Oil	75500	0,076	0,351	**0,7744**
Diesel Oil	72600	0,073	0,275	**0,9504**
LPG	61600	0,062	0,450	**0,4928**
Naphta	69300	0,069	0,450	**0,5544**
Natural Gas	54300	0,054	0,460	**0,4250**

Table 43: Electricity generation, CO_2 emission factor and build margin CO_2 emission factor by fuel type in 2009

	Generation (GWh)	**EF,EL,m,y(tCO2/MWh)**	**Emission by source**
Coal	3.993,33	0,9354	3.735,1897
Lignite	7.023,00	0,9977	7.006,7272
Fuel Oil	1.651,49	0,7744	1.278,8461
Diesel Oil	21,20	0,9504	20,14848
LPG		0,4928	0
Naphtha	578,60	0,5544	320,7758
Natural Gas	19.535,96	0,4250	8.301,9315
Wind	2.006,91	0	0
Geothermal	69,80	0	0
Hydro	4.343,15	0	0
Renewable + Waste	220,02	0	0
TOTAL	39.756,45		20.663,62

39.756,45- 2.106,6885= 37.649,76GWh gives the total capacity addition without projects benefitting from VER revenues or registered to CDM.

EF,grid,BM,y(tCO2/MWh)	0,54884

Table 44: Combined margin emission factor (EF,grid,CM,y) for projects other than solar and wind power generation activities

EF,grid ,OMsimple,y(tCO2/MWh)	0,65046

EF,grid,BM,y(tCO2/MWh)	0,54884
EF,grid,CM,y(tCO2/MWh)	**0,59965**

In order to convert the data source units to the required units; 1J = 0,238846 cal. and the density of natural gas is considered to be 0,695kg/m^3.

Annex 4

MONITORING INFORMATION

Please see Section B.7 for detailed information.

Annex 5

SOCIAL RESPONSIBILITY PROJECTS

BERKE HEPP PROJECT: 2010-01

CONTRIBUTION TO ENVIRONMENTAL EDUCATION SOCIAL RESPONSIBILITY PROJECT

As is known, goal 7 is committed to ensure environmental sustainability in the scope of the Millennium Development Goals (MDGs). Pursuing sound environmental policies, Turkey seeks to reinforce the environmental infrastructure, to effectively integrate environmental problems with economic decisions and to fulfil its international commitments on environmental issues. Turkey attaches great importance to developing cooperation with international institutions and countries in the region regarding the protection of environment. Almost 50% of the efforts to harmonize the EU laws and rules which comprise 300 EU directives with the Turkish legislation have been completed. This issue will be an important leg of the accession talks with the EU to be taken up under the chapter heading of environment.

Target groups can be classified as students in village schools and local people in the region.

The Environmental Education Social Responsibility Project (EESRP) will be formed four stages and we will be taking into consideration target A and target B of goal 7 in each stage.

In the first stage, the main question "What is the situation about environmental education level and environmental awareness in local context?" The process of this question answering will be defined in collaborating with stakeholders. It will held extensive discussions with stakeholders. There is no doubt that the decided list of needs is neither exhaustive nor definitive. It can be seen as a starting place. We especially consider to equal participation of women and men in making decisions. Stakeholders are local people (students included), government officials (teachers, mayor, muhtar, manager, staff etc.) and organizations whose lives and livelihoods are impacted by environmental conditions.

In the second stage, Project participants and stakeholders will together decide the goals: "Where do we want to reach in the EESRP context?" Goals of EESRP should be defined as expressible in terms of quantity and quality.

In the third stage, the implementation framework will be determined: "How can we reach to the level we aim?" For the realization of the goals, the activities are selected according to the suitable time and place. Responsibilities of the competent persons liable for the achievement of each activity within the implementation framework are determined taking into consideration shareholder consensus. Initiatory education (films, print materials, websites, local media campaigns, etc.) about environmental protection and cleaning in the village schools.

In the fourth stage, we focus on the "How do we monitor and evaluate our performance?" question. It will be formed the assessment system is the tracing and reporting of the realizations related to the goals decided. We consider especially the opinions and criticisms of the target group.

BERKE HEPP PROJECT: 2010-02

CONTRIBUTION TO RURAL HEALTH SERVICES SOCIAL RESPONSIBILITY PROJECT

Improvements achieved particularly in the health services since the proclamation of the Republic have reached substantial proportions. Struggle against contagious diseases during planned development period in the 1960s, an endeavour initiated for the more efficient use of resources, was a remarkable success story. Meanwhile, substantial ground has been covered in increasing the number of health institution and meeting the demand for health personnel. Important progress has been made in Turkey in all health indicators.

However, interregional differences still remain. Within the framework of strengthening the preventive and the protective health services, Project participant want to contribute this public service process. Especially deficiency in health infrastructure especially the needs of village clinic will be met after we consult government officials. Local priorities can be determined according to reduce child mortality rate and improve maternal health (goal 4 and goal 5 in the scope of the MDGs.)

BERKE HEPP PROJECT: 2010-03

CONTRIBUTION TO VILLAGE AND FOREST ROADS REHABILITATION SOCIAL RESPONSIBILITY PROJECT

As it is known village and forest roads are an important component of the welfare of rural populations. When the roads are secure, sufficient, etc. positive multipliers effects are revealed. Current situation is insufficient to meet transportation requirements of rural population. Therefore, Project participant will contribute to village and forest roads rehabilitation. However, it has been accepted that this contributions can only remain meet the limited basic needs of complex infrastructure reality.

Annex 6

Eser Contracting and Industry Co Inc.
Communication Report
UN Global Compact Communication on Progress

Please see http://www.unglobalcompact.org/system/attachments/4277/original/COP.pdf?1262614961

Annex 7

DIESEL GENERATOR TECHNICAL SPECIFICATIONS

SUBJECT

Diesel Generator group with full automatic control, sound isolation cabinet with minimum **Continuous Power (primary power) of 100kVA, intermittent power (stand-by power) of 110 kVA** will be purchased at BERKE Weir and HEPP Facilities within the frame of the provisions of these specifications.

1- Generator Group Features

Diesel motor and alternator are directly connected to each other with a flexible disc coupling. This group is assembled on a chassis that is produced in the form of a fuel tank with minimum eight hours capacity made of sheet steel with vibration – absorbing rubber wedges.

1. A- Standard Equipment

1. Lead Acid accumulator battery and connections selected in compliance with 12 volt electrical system of diesel motor and in accordance with the capacity of the starter motor,
2. Exhaust silencer, flexible exhaust pipe and connections
3. Oil, air and fuel filters assembled on the diesel motor,
4. Starter motor
5. Charge alternator
6. Original radiator and other standard equipment

1. B- Control and Command Table

Hinged, covered and locked control and command table made of sheet steel is assembled on the group chassis with a special foot system for protection against vibration. Control and command devices are assembled on the cover. All materials used on the panel are designed so as to be easily and safely accessed and are equipped with qualified materials. Cable sections are selected and numbered in accordance with the drawn currents.

1. C- Standard Equipment

1. Three ammeters
2. Voltmeter
3. Voltmeter commutator
4. Frequency meter
5. Temperature indicator
6. Charge warning lamp
7. Safety stop button
8. Oil pressure indicator
9. Operation clock
10. Necessary relays connectors, cables and cable hoods (for the devices, where the currents and voltages belonging to the currents over the generator control unit are passed one by one with buttons so as to be visible, 3 ammeters and voltmeters and voltmeter commutator is not necessary.)

1. D- Automatic Control Panel Equipment

In addition to the standard devices, the following shall be provided in compliance with the group power

1. Over current relay protecting the alternator against over current
2. Accumulator charge redresser
3. Automatic generator control unit with micro – processor
3. Automatic generator control unit with micro processor
4. 2 load transfer panels with 2 contactors in compliance with the generator power

1. E- Automatic Control System

In cases where one, two or all of the city supply power phases fail or go out of the indicated limits, it ensures that the generator group is switched on within 7-10 seconds and the system is fed from the generator. It can control the electronic control unit and the generator in automatic, manual, idle and test and test under load positions. The control device also performs the function of protecting the diesel motor and the alternator.

Manual Position; In this position, the generator group shall not switch on upon

failure of the city supply and in case the city supply is full and normal, the system will be fed from the network.

Automatic position; In this position, in case the network electricity is full and normal, the system shall be fed from the network and in case of phase failure or in case the city voltage goes out of normal limits, the group will switch on automatically and the system will be fed from the generator. In cases such as decrease in the group oil pressure, excessive increase of temperature, over speed, overload, it will automatically stop and will give a warning with the light warning system.

Test in idle position: in this position, the group can be tested when the city supply is on. The city supply does not fail, but during this time, if the network goes out of normal limits, the load is automatically transferred to the network as in automatic position.

Test with load: The group works in this position, the city supply is cut off and the load is taken on, the system is fed from the generator.

2- Motor Characteristics

1- The motor cylinder jackets must be replaceable.
2- The first movement of the motor is with the starter motor and is electrical and the electrical start up, accumulator and electrical appliance must be 12 volts.

3- The cooling system of the motor is radiator – water cooling and must provide sufficient cooling at environmental temperatures between + 40 degrees and -25 Degrees.
4- It is chosen of a size to provide the group nominal power (100 kVA) continuously; the ratio for overloading the diesel motor for a period of one hour shall be 10%.
5- Heavy type air filter must be provided at the air entrance of the fuel system.
6- The fuel system shall have direct injection.
7- The motor shall be chosen in accordance with ISO 2534, DIN 6270 standards for intermittent power and in accordance with ISO 3046, DIN 6270 standards for continuous power.
8- The motors must be 4-stroke; mechanical or electronic type revolution regulation, 1500d/d.
9- There is a thermostat in the motor cooling system and furthermore, a temperature indicator shall be provided on the generator control panel.
10- There shall be an oil pressure indicator on the generator control panel.
11- The diesel motors have lubrication oil and cooling water pumps and the oil filter member, diesel filter member and air filter members must be replaceable type.
12-The fuel tank shall be suitable for 8 – hour's operation and there shall be an indicator, filling – discharge valve on the fuel tank.
13- The generator control panel shall have mimic alarm and automatic stopping system at excessive water temperature and low oil pressure.
14- Exhaust silencer and flexible exhaust pipe shall be given together with the group as 2mt.
15- An appliance that will help provide the first movement to the motor at low environmental temperatures must be provided.
16- Diesel motor and alternator are coupled on a chassis as mono block with an elastic clutch and the chassis must also be used as daily fuel tank.

17- The equipment necessary for the operation of the motor must be given together with it.
18- The motor must comply with the following minimum conditions:

Motor Power (with fan) : 98 kW
Number of cylinders: 4 L
Strokes : 4 stroke
Fuel consumption (at full load):23,5lt / h
Cooling: with water
Suction system: turbo charger and intercooler

19- The motors must be of Perkins, Lovol, Daewoo, Vamo or Cummins trademark having low fuel consumption and high efficiency, which can be accepted as green motors, and which are found in big numbers in Turkey.

3-Alternator Characteristics

1- The revolution rate shall be 1500 d/d, voltage 400/231 V. 3 phase 50 Hz frequency synchronous alternator.
2- Power factor (Cos) is 0,8.
3- The voltage of the alternator must be manually adjustable with a potentiometer assembled on the device within + 5% limits.
4- The alternator shall be star connected and the star point (neutral end) shall be taken out.
5- The alternator shall be resistant against 10% overload for a period of one hour and 50% overload for a period of 2 minutes.
6- The alternator shall be brushless, single – bed and shall have electronic automatic voltage regulator.
7- Due to the magnets within the alternator warning area, the alternator has self – warning with the positive and continuous warning current and the warning dynamo is directly connected to the alternator shaft.
8- The alternator shall be produced in accordance with IEC 34-1, CEI 2-3, BS 4999-5000, VDE 0530, NF 51-100, 11 and ÖVE M-10 standards and shall be 4-pole, 1500 d/d, brushless type electronic voltage regulator type, capable of operating at 40 C environmental temperature.
9- The thermal limit power of the alternator must be compliant with VDE 530.
10- The alternator has IP 23 protection. It must be protected against water spills, large – particle foreign materials and strong shocks.

4- Diesel Electrogen Group Cabinet with Sound Isolation:

4. A- Cabinet and Isolation:

Glass wool (not burning up to 800 C) shall be laid in single piece on the internal surface of the cabinet, which will be made of 1,5 mm decapped sheet steel. There shall be air ducts in the cabinet for air intake and exit. There shall be double – wing covers in three directions of the cabinet. There shall not be any windows on the doors. The door frames shall be laid with specially vacuumed rubber stripes. The doors shall be ergonomically designed. The external and internal surfaces of the cabinet shall be painted with two coats of undercoat, three coats of industrial paint and (finish) furnace paint.
The noise level of the group, to which a cabinet is assembled, shall be 75-80 dbA in average in a circle with 7 meters diameter.

4. B- Exhaust System and Silencer:

There shall be a heat and fire protector metal part on the exit part of the exhaust pipe from the cabinet. The silencer shall be on the internal side of the cabinet. The exhaust shall have a special sound obstruction. The exhaust silencer shall be in front of the radiator and shall be taken within a cabinet and there shall be a moving part at its exit in order to prevent ingress of water into the exhaust. The noise level of the group, for which a cabinet is installed, shall be 75-80 dBa in average in a circle with 7 meters diameter.

Annex 8
Water Usage Agreement with The State Hydraulic Works

Bekle

07156

BİRİKİ HİDROELEKTRİK ENERJİ ÜRETİM TESİSİNİN SU KULLANIMI HAKKI VE İŞLETİLME ESASLARINA İLİŞKİN ANLAŞMA

15 SUB 2006

Anlaşmanın konusu ve taraflar

Madde 1- "Elektriğin yeterli, kaliteli, sürekli, düşük maliyetli ve çevreye uyumlu bir şekilde tüketicilere kullanımına sunulması için rekabet ortamında özel hukuk hükümlülüğüne göre faaliyet gösterebilecek, rekabetçi güçlü, istikrarlı ve şeffaf bir elektrik enerjisi piyasasının oluşturulması ve bu piyasanın bağımsız bir düzenleme ve denetimin sağlanması" amacını taşıyan 4628 sayılı Elektrik Piyasası Kanunu hükümleri çerçevesinde halen piyasadan faaliyet gösteren veya gösterecek özel kişiler tarafından hidroelektrik enerji üretim tesisleri kurulması ve işletilmesine ilişkin üretim, otoprodüktör, otoproduktör grubu Boğazlıyan HES ve HES üretim tesisi için üretim lisansı verilmesi 29.11.2007 tarih ve 1391/17 sayılı EPDK Kurul Kararı ile uygun bulunması nedeniyle, Devlet Su İşleri Genel Müdürlüğü ile Ekim Elektromekanik Enerji Sanayi Ve Ticaret Limited Şirketi arasında akdedilen şirketi.

Tanımlar

Madde 2- Anlaşmada geçen:

1. Bakanlık: Enerji ve Tabii Kaynaklar Bakanlığı,
2. DSİ: Devlet Su İşleri Genel Müdürlüğünü,
3. EİE: Elektrik İşleri Etüt İdaresi Genel Müdürlüğünü,
4. EPDK: Enerji Piyasası Düzenleme Kurumunu,
5. TEİAŞ: DİE tarafından yayımlanan Toptan Satış Fiyat Endeksini,
6. Piyasa: Elektrik enerjisi piyasasını,
7. Lisans: Bir özel kişinin piyasada faaliyet gösterebilmesi için EPDK'dan almak zorunda olduğu yetki belgesini,
8. Ortak Tesis: Enerji üretimi yanında sulama suyu, içme ve kullanma suyu temini ve taşkın korunma gibi birden fazla maksada hizmet eden tesisi,
9. Su Kullanım Hakkı Anlaşması: Hidroelektrik enerji üretim tesislerinin su kullanımına ilişkin işletme esaslarını ve DSİ'ye ödenecek bedellerin ödeme şeklini belirleyen yazılı hükümlere ve şartlara göre DSİ ile şirket arasında akdedilen sözleşme.
10. Şirket: Lisans almak üzere Su Kullanım Hakkı Anlaşması yapmak için anonim şirket veya limited şirketi,

ifade eder.

Esaslar

Madde 3- Aşağıdaki maddelerde belirtilen hususlar, Kastamonu İlinde elektrik enerjisi üretimi amacıyla şirket tarafından inşa edilecek 5,158 MWm / 5,818 MWe Kurulu Gücündeki Birike Boğazlıyan ve hidroelektrik enerji üretim tesislerinin, tesisin geçeceği olduğu sınırdaki su kullanımına ilişkin işletme esaslarını belirler.

Şirketin Yükümlülükleri

Madde 4- Hidroelektrik enerji üretim tesislerinin bulunduğu bölgenin hayat çizgilerine paralel olmak DSİ tarafından yürütülmekte olan çalışmalar çerçevesinde, havzanın mevcut, inşa halindeki ve mütalaa ve projeler (kesin proje, planlama, master plan, fizibilite ve ilk etüt) kapsamında içme ve kullanma, sulama ve endüstri suyu temini, sulama, taşkın korunma ve enerji maksatlı, ile bunların dışında olabilecek çeşitli maksatlara yönelik olarak diğer kuruluşlara ve özel kişilere tahsis edilecek sulama miktar ve zamanlamasını belirleyecek olan işletme planları DSİ tarafından yapılır ve şirkete bildirilir. Şirket bu planlara uymakla yükümlüdür.

Şirket, deniz seviyesinden [illegible] yeşil mansabında doğal hayat [illegible] ve bu kesimde su hakkının kullanılmaya [illegible] yatağına

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bırakılacak suyun miktar ve zamanlaması, kurulacak hidroelektrik enerji üretim tesisleri ile ilgili şirket tarafından hazırlanarak Çevre ve Orman Bakanlığı'ndan onay alınacak olan ÇED/ Proje Tanıtım Dosyası'nda belirlenecektir.

15 SUB 2008

İlgili mevzuat çerçevesinde ÇED/Proje Tanıtım Dosyası gerektirmeyen projelerde ise fizibilite raporunda belirlenen ve DSİ tarafından uygun görülen miktardaki su, doğal hayatın idamesini sağlamak üzere şirket tarafından dere yatağına bırakılacaktır.

Şirket tarafından inşa edilecek enerji üretim tesislerinin menba ve mansabında değişen ve gelişen şartlar çerçevesinde, havzada ihtiyaçların önceliği, havzanın gelişim durumu ve menba-mansap ilişkisi göz önünde bulundurularak, bu hidroelektrik santral projesi ile ilgili İlk Su Kullanım Hakkı Anlaşmasının imzalandığı tarihten itibaren 20 yıllık periyotlar sonunda, havzadaki hidrolojik veriler, mevcut ve mutasavver projelerdeki değişiklikler ile ihtiyaçların güncelleştirilmesi, yeni projelerin geliştirilmesi ve buna bağlı olarak önceden tespit edilmiş işletme planında DSİ tarafından geçici veya sürekli olarak değişiklik yapma hakkı saklıdır. Değişiklik yapılması halinde DSİ söz konusu değişiklikleri şirkete bildirir. Şirket bu planlara uymak zorundadır. Bu durumda şirket, DSİ'den herhangi bir hak talebinde bulunamaz.

Madde 5- Hidroelektrik enerji üretim tesisleri, DSİ tarafından belirlenecek menba ve mansap projelerindeki su kullanımı paternine göre işletilecektir. Mücbir sebeplerden dolayı su verilememesi durumunda enerji üretiminde meydana gelebilecek azalma veya aksamalar sebebiyle şirket DSİ'den herhangi bir tazminat talebinde bulunamaz.

Madde 6- Mücbir sebepler, tabii afetler ve jeolojik sebeplerle meydana gelebilecek hasarlar sonucu bir üretim tesisinin üretim dışı kalması halinde üretimde ve enerji üretimi maksadı taşınmazlar ile bunların mütemmim cüzlerinde oluşacak her türlü zarar şirkete aittir.

Madde 7- Şirket tarafından işletilecek olan hidroelektrik üretim tesisinin işletme dışı kalması halinde hidroelektrik üretim tesisinin mansabında bulunan projelerin ve çevresel değerlerin su ihtiyaçlarının karşılanmasını sağlayacak tedbirler şirketçe alınır.

Madde 8- Şirket kuracağı hidroelektrik enerji üretim tesislerini mansap şartlarına uygun olarak işletecektir. Üretim tesisinden bırakılan suyun DSİ ve üçüncü şahıslara ait tesislere zarar vermesine yol açacak işletme şekilleri tatbik edilemez. Şirkete ait üretim tesisinin işletiminden kaynaklanacak her türlü hasar ve zararlardan üçüncü şahıslara karşı da şirket sorumlu olacaktır.

Madde 9- Depolamalı hidroelektrik santrallerde su tutma safhasında, mansaptaki su hakları ve ihtiyaçlar göz önünde bulundurularak DSİ tarafından belirlenecek miktardaki su, şirket tarafından dere yatağına bırakılacaktır. Aksi uygulandığı halde bütün zararlardan şirket sorumludur.

Madde 10- Şirket, yalnızca enerji üretiminde kullanılmak üzere kendisine tahsis edilmiş olan suyu, başka maksatlarla kullanamaz, herhangi bir maksatla kullanılmak üzere üçüncü şahıslara devredemez ve satamaz.

Depolamalı hidroelektrik santralarda baraj gölünden su ürünleri, rekreasyon ve bunun gibi gayelere yönelik olarak yararlanılması, DSİ'ye aittir.

Madde 11- Çeşitli sebeblerle santrale az su gelmesi halinde suyun az olduğu süre içerisinde üretim tesisinin çalıştırılamaması veya öngörülenden az enerji üretilmesi durumuna ait bütün risk ve sorumluluklar şirkete aittir. Şirketin yatırım öncesi bu konuları inceleyip projesini buna göre geliştirdiği kabul edilecektir.

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Madde 12- Hidroelektrik enerji üretim tesisleri ile ilgili inşaat çalışmaları sırasında, DSİ'ce inşa edilmiş ve edilmekte olan tesislere ve ayrıca çevreye zarar verilmemesi için gerekli tedbirler şirketçe alınacak ve mevcut proje gayesine bağlı olarak suyun verilmesinde bir aksamaya sebep olunmayacaktır.

15 EYL 2008

Aynı şekilde DSİ tarafından inşa edilecek tesis çalışmalarında şirkete ait üretim tesisinin zarar görmemesi için gerekli tedbirler DSİ tarafından alınacaktır.

Madde 13- Hidroelektrik enerji üretim tesislerinin fizibilite raporu kapsamında olabilecek yetersiz etüt ve değerlendirmelerden dolayı ilerideki safhalarda hidrolojik, jeolojik, teknik, çevresel, sosyal ve ekonomik yönden oluşabilecek her türlü olumsuz sonuçtan yalnız şirket sorumludur.

Şirket tarafından kurulacak hidroelektrik enerji üretim tesislerinin yatırımında doğabilecek her türlü hidrolojik, jeolojik, teknik, çevresel, ekonomik ve mali riskler ile tabii afet riski şirket tarafından yüklenilecektir.

Madde 14- Şirket tarafından kurulacak hidroelektrik enerji tesisleri ile ilgili olarak fizibilite raporunda öngörülen proje formülasyonunda (teklif edilen tesislerin konumları, kapasiteleri, boyutları gibi); ÇED/Proje Tanıtım Dosyası, katı proje, uygulama projesi, inşaat ve işletme safhalarında muhtemel bir değişiklik söz konusu olması halinde, bu değişikliklere yönelik DSİ'nin uygun görüşü alınacaktır. DSİ tarafından gerekli görülmesi halinde bu anlaşmaya ek bir protokol yapılacaktır. Aksi halde doğabilecek her türlü olumsuz durum, zarar ve riskten şirket sorumlu olacaktır.

Madde 15- Hidroelektrik enerji üretim tesislerinin işletilmesi esnasında kullanılabilecek olan suların sağlıklı olarak belirlenebilmesi için DSİ ve şirketçe uygun görülecek yerlerde, tesis, teçhizat ve yapım bedeli şirket tarafından karşılanmak üzere DSİ'ce uygun görülen elektronik sistemli akım gözlem/gel seviye ölçüm istasyonları DSİ kontrolünde şirket tarafından kurulacaktır.

Akım gözlem istasyonlarının korunması, bakım ve onarımı gerektiğinde yenilenmesi şirket tarafından yapılacak ve DSİ yetkili elemanlarınca kontrol edilecektir.

Hidrometrik ölçüm ve değerlendirmeler şirket ve DSİ tarafından müştereken yapılacaktır. Şirketin ölçümlere katılmaması halinde DSİ'ce tespit edilen değerlere itibar edilecektir.

Elektronik ölçüm sistemlerinin arızalanması durumunda, üretim tesisine alınabilecek su miktarını belirleme yöntemine DSİ ve şirket müştereken karar verecektir. Müşterek karar oluşturulamadığı takdirde DSİ görüşüne itibar edilecektir.

Madde 16- Şirket enerji üretiminde kullandığı suyun kalitesini bozmayacak, insan, hayvan ve bitki hayatı ile normal gelişimi etkileyecek kimyasal maddelerle kirletmeden tabii yatağına bırakacaktır.

Suyun kalitesi konusunda şirket bir hak iddia edemez. Ancak istenilen kalitede su elde etmek için hazırlayacağı bütün projeleri DSİ'nin onayından sonra uygulamaya koyacaktır. Şirket tarafından hazırlanacak projenin eksiksiz olarak DSİ'ye tesliminden itibaren 2 ay içerisinde görüş bildirilir.

Madde 17- Şirket tarafından inşa edilecek bütün tesislere ilişkin olarak ilgili mevzuat çerçevesinde ÇED/Proje Tanıtım Dosyası hazırlanması ve Çevre ve Orman Bakanlığından ÇED olumlu kararı veya ÇED gerekli değildir kararı alınması şirketin sorumluluğundadır. Şirket tarafından inşa edilecek tesislerle ve tesis yerleri ile ilgili olarak ve ayrıca ÇED/Proje Tanıtım Dosyası'nda verilecek taahhütler ile ilgili muhtemel bir olumsuz durumun ortaya çıkması halinde bütün sorumluluk şirkete ait olacaktır.

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15 SUB 2008

Şirket tarafından inşa edilecek tesisler ile ilgili Çevre ve Orman Bakanlığından "ÇED Olumsuz Kararı" verilmesi halinde Su Kullanım Hakkı Anlaşması hükümsüz kalır.

Madde 18- Şirket, tesislerin inşaatına ve işletmesine başlama tarihini üç ay, depolamalı tesislerde ise su tutma tarihini ise 6 ay önce DSİ'ye bildirecektir. Bu tarihler şirketin lisansında yer alan tarihler ile aynı olacaktır.

Madde 19- Şirket tarafından inşa edilecek enerji üretimi maksatlı bütün tesisler (baraj, regülatör, su alma yapısı, iletim tüneli, iletim kanalı, cebri borular, santral binası, kuyruksuyu kanalı, elektro mekanik teçhizat, yardımcı bina ve tesisat vs.) ile Şirket tarafından alınacak akım gözlem ve göl seviye ölçüm aletlerinin işletme, bakım-onarım ve yenilenme işleri ve giderleri Lisans süresi sonuna kadar Şirket tarafından karşılanacaktır.

Koruma ve özel güvenlik

Madde 20- Enerji üretim gayesiyle inşa edilen anlaşma konusu tesislerin (baraj, rezervuar, su alma yapısı, iletim kanalı yükleme havuzu, cebri boru, santral, teçhizat, v.b.) sivil savunma korama ve özel güvenlik hizmetleri, ilgili mevzuata uygun olarak şirket tarafından sağlanacaktır.

Çeşitli hükümler

Madde 21- Bu anlaşma metninde yer almayan veya yer almış olsa bile uygulamada ortaya çıkabilecek sorunlarda ilgili olarak taraflar arasında gerekirse ek protokol düzenlenir.

Madde 22- Şirketin, bu anlaşmanın herhangi bir maddesindeki sorumluluk ve yükümlülüklerini yerine getirmemesi halinde oluşacak her türlü zarar, ziyan ve hukuki sorumluluk şirkete aittir. DSİ bu durumda anlaşmayı fesh edebilir. Anlaşmanın feshi veya lisans süresinin sona ermesi halinde, şirketin önceden oluşan hukuki sorumluluğu ortadan kalkmaz.

Vergi, resim ve harçlar

Madde 23- Bu anlaşmanın düzenlenmesi ile ilgili her türlü vergi, resim, harç ve diğer masraflar şirket tarafından ödenir.

Mevzuat değişiklikleri

Madde 24- Taraflar mevzuatta olabilecek değişikliklere uymakla yükümlüdür.

Anlaşmazlıkların çözümü

Madde 25- Bu anlaşma hükümlerinin uygulanmasından dolayı doğacak veya çıkacak anlaşmazlıkların çözümüne Ankara Mahkemeleri ve İcra Daireleri yetkilidir.

Anlaşmanın yürürlüğe girmesi ve süresi

Madde 26- Bu anlaşma, şirketin EPDK'dan alacağı lisansında belirtilen tarihte yürürlüğe girecek olup, herhangi bir sebeple lisans almadığı durumda hükümsüz kalır.

Madde 27- Bu anlaşma, şirkete EPDK tarafından verilen lisans yürürlükte olduğu sürece geçerli olup, lisansın yenilenmesi, devredilmesi, sona ermesi, iptali ve şirket tarafından inşa edilecek tesisler ile ilgili Çevre ve Orman Bakanlığından "ÇED Olumsuz Kararı" verilmesi halinde hükümsüz kalır.

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Özel Hükümler

Madde 28 – Havzada elde edilecek içme ve kullanma suyu maksatlı taleplerin karşılanması amacıyla 20 yıllık süre beklemeden idareye uygun görülen talepler derhal karşılanacaktır.

15 ŞUB 2008

Devlet Su İşleri Genel Müdürlüğü

İsmail GÜNEŞ
Etüd ve Plan Daire Başkanı

Erdem
ELEKTROMEKANİK ENERJİ SANAYİ VE TİCARET LTD. ŞTİ.
Ordu Caddesi 49/4 Kat: 2 Ayrancı Çankaya
Tel: 0 312 441 77 / 5 Çankaya / ANKARA

Erdem Elektromekanik Enerji Sanayi Ve Ticaret Limited Şirketi

Şirket Müdürü
A. Vartal Ulusel

5. DÜNYA SU FORUMU İSTANBUL 2009
FARKLILIKLARIN SUDA YAKINLAŞMASI

T.C.
ÇEVRE VE ORMAN BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü Etüd Ve Plan Dairesi Başkanlığı

27 Mart 2009

Sayı : B.18.1.DSİ.0.10.05.00/ 18.HES- 9229
Konu : Berke HES
Su Kullanımı Hakkı Anlaşması.

ESER ENERJİ ÜRETİM ANONİM ŞİRKETİ' NE
(571. Cd. 607. Sk. No:8 Yıldız, Çankaya / ANKARA)

4628 sayılı Elektrik Piyasası Kanunu hükümleri çerçevesinde; Kastamonu İli sınırları içerisinde enerji üretimi gayesi ile inşa edilecek olan 6,355 MWm / 5,818 MWe Kurulu Gücündeki Berke Hidroelektrik Santralı ile ilgili olarak, DSİ Genel Müdürlüğü ile Eser Enerji Üretim Anonim Şirketi arasında imzalanan ve Ankara 13. Noterliğince 20.05.2009 tarih ve 018828 sayı ile tescil edilen "Berke Hidroelektrik Enerji Üretim Tesisinin Su Kullanımı Hakkı ve İşletme Esaslarına İlişkin Anlaşma'nın Nevi ve Unvan Değişikliği Ek Mukavelesi" nin bir sureti/örneği ekte gönderilmektedir.

Bilgilerinize arz/rica ederim.

BERKE UNVAN DEĞİŞİKLİĞİ 27/05/09

Akif ÖZKALDI
Genel Müdür a.
Genel Müdür Yardımcısı

Eki :
- Su Kullanım Hakkı Anlaşması (1 sh.)

Dağıtım :
- Enerji ve Tabii Kaynaklar Bakanlığı
  (Enerji İşleri Genel Müdürlüğü)
- Enerji Piyasası Düzenleme Kurumu
  (Elektrik Piyasası Düzenleme, İzleme ve Değerlendirme Dairesi Başkanlığı)
- Eser Enerji Üretim Anonim Şirketi (571. Cd. 607. Sk. No:8 Yıldız, Çankaya / ANKARA)
- İşletme ve Bakım Dairesi Başkanlığı
- DSİ XXIII. Bölge Müdürlüğü / KASTAMONU

Kemal Bey - İbrahim Bey - M. Kemal Bey

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