

Division 44

Environmental Management, Water, Energy, Transport

**Producing Electricity from
Renewable Energy Sources:**

**Energy Sector Framework in
15 Countries in Asia, Africa and Latin America**

**Part of the supraregional
TERNA Wind Energy Programme**

Eschborn 2002

Excerpt Turkey

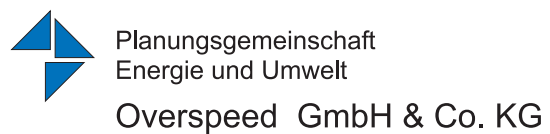
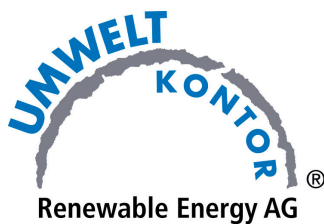
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Contents

	Page
CONTENTS.....	3
BACKGROUND TO THE NEW EDITION OF THE STUDY.....	4
LEGAL INFORMATION.....	5
THE TERNA WIND ENERGY PROGRAMME.....	6
ARGENTINA.....	8
BRAZIL.....	19
CHILE.....	43
CHINA.....	51
COLOMBIA.....	71
CUBA.....	81
DOMINICAN REPUBLIC.....	91
INDIA.....	101
JORDAN.....	116
KAZAKHSTAN.....	128
MEXICO.....	137
MOROCCO.....	149
SOUTH AFRICA.....	160
TUNISIA.....	171
TURKEY.....	178

Background to the New Edition of the Study

Structural changes in the energy sector, accompanied by liberalisation of the relevant markets, have been continuing in many developing and more advanced countries in recent years. Growing demand for electricity and the ongoing climate debate are increasing the level of interest in technologies for generating electricity from renewable energy sources in these countries.

The rapid expansion of the use of wind power and solar energy in Germany is a subject that is being followed with interest, even outside Europe. It is apparent in this case that, by creating the framework conditions and targeting appropriate promotion measures, politics is capable of setting the trend towards exploitation of renewable energy.

The German and European market acts as the motor for a wind energy industry differentiated according to the principles of division of labour, and provides an indispensable background of experience. In the long term, however, the level of growth in this sector seen over the past decade in the German domestic market is not sustainable. Project developers are therefore initially turning their attention to off-shore projects, other parts of Europe, and the Mediterranean states. The same is true of the large market for other renewable energy technologies which are increasingly being used in developing and more advanced countries, particularly in the field of rural electrification. Although there is recognition of the considerable potential of non-European countries, a lack of knowledge of the framework conditions prevailing in the energy industry in those countries together with a lack of transparency with regard to the prior experience and interests of the national actors forms an obstacle to gaining a foothold in this sphere.

This study aims to make it easier to gain such a foothold. It is based on the first edition dating from the spring of 1999, which was in great demand from the group of export-oriented suppliers, project developers, finance houses and operating companies involved in renewable energy technologies. In order to keep the study up to date, GTZ commissioned a revision and expansion of the study in the summer of 2001. The choice of countries was based in particular on the interests of the wind power sector, this being the most important export branch at present.

The information on the following eight countries was revised: **Brazil, Argentina, China, Turkey, India, South Africa, Morocco and Jordan.**

The following countries were included in addition: **Chile, Colombia, Mexico, Dominican Republic, Cuba, Tunisia and Kazakhstan.**

The following four countries were included in the first edition only: **Egypt, Indonesia, the Philippines and Thailand.** Information about these countries (status as of February 1999) can be downloaded from the Internet at the following address: <http://www.gtz.de/wind/deutsch/studie.htm>.

The study provides information about the crucial framework conditions for supplying electricity from renewable energy sources to public supply networks. It also looks at country-specific programmes and projects aimed at decentralised electricity generation without a connection to the public grid.

Once again GTZ commissioned the engineering consultancy Loy Energy Consulting to undertake the revision of the study – the company that was responsible for producing the first edition.

Collecting the relevant data and information entailed consulting the ministries and regulatory authorities responsible for energy, project executing agencies, the chambers of foreign trade and commerce and embassies of the countries concerned, GTZ experts in Germany and other countries, the Federal German Agency for Foreign Trade and Payments and national and international promotion institutions. This research was supplemented by evaluating other sources of information, such as conference papers, specialist publications, official documents and presentations on the internet.

Sincere thanks are due to the following companies for their kind financial assistance: E.ON Energie AG, GEO Gesellschaft für Energie und Ökologie mbH, InnoVent GmbH, Nordex AG, Overspeed GmbH & Co. KG, REpower Systems AG, P&T Technology AG, Siemens AG, Umweltkontor Renewable Energy AG and WindSolar AG.

Eschborn, January 2002

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Legal Information

1. The data used in this study are based on both publicly accessible sources of information (publications, specialist articles, Internet sites, conference papers etc.) and non-public papers (for example internal expert reports from promoting institutions), as well as personal interviews with experts (for example officials at energy ministries in the investigated countries and project staff at promoting institutions). Although all information has been checked as far as possible, errors cannot be ruled out. Neither GTZ nor the authors can therefore provide any guarantee of the accuracy of the data included in this study; no liability can be accepted for any loss or damage resulting from use of the data included in the study.
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The TERNA Wind Energy Programme

Specialised knowledge and experience are needed to determine what wind energy resources a country possesses and to identify suitable locations. Technical and economic analyses are also impossible without the acquisition of such information. These analyses in turn serve as the basis for negotiations on financing, because capital and lenders are available for wind power.

This was why the Federal German Ministry for Economic Cooperation and Development (BMZ) set up the TERNA (Technical Expertise for Renewable Energy Application) wind energy programme in 1988. In order to compensate for the lack of available knowledge, the programme is targeted at providing technical advice and support. It is intended to enable prospective operators of wind farms in developing and more advanced countries to assess the technical and economic potential of wind power projects and to develop promising schemes to the stage where they are ready for implementation. Thus in the long term it contributes to improving the supply of energy to the population.

The project is being implemented by Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). The BMZ is financing the measures, but in view of their supraregional nature it is not using funds from the country quotas that are agreed separately with the various partner countries. From the standpoint of the partner countries, therefore, TERNA provides additional resources which are dedicated specifically to wind energy.

The programme promotes wind power projects that operate in grid-coupled operation. A capacity of at least 10 MW is used as a guide value. The sites must be in windy regions with access to an electricity grid. There are no restrictions on the choice of countries, although the emphasis is plainly on states where the framework conditions are adequate to provide for economic operation of the installations. Small-scale individual facilities or isolated wind-diesel systems are not promoted, nor are projects of an R&D nature.

TERNA pursues the goal of initiating wind power projects in the megawatt range. In order to achieve this, the programme passes on the necessary knowledge about planning and implementation to potential operators. It is therefore aimed at conventional energy supply companies (public utilities) just as much as at independent investors and private electricity producers (IPPs) as possible operators of wind farms.

The programme offers its partners comprehensive know-how and experience. In order to initiate projects, favourable sites must be identified. Wind measurement and site selection procedures come into play here. This step is followed by practical planning of the installations, in which the design and cost-effectiveness need to be analysed. TERNA also provides advice to project developers on financing matters. The assistance is provided by experts with experience in the relevant fields.

In successful cases, TERNA can thus accompany investment-ready wind farm projects as far as the tendering or contract award stage. The programme does not then become involved in the financing itself. However, TERNA does aim to build bridges to available financing instruments provided by national and international donors.

The services offered by TERNA cover the transfer of know-how relating to siting, planning, implementation and technical and administrative regulatory matters. The partners and GTZ choose the appropriate measures from the set of TERNA instruments to complement the experience already available to them. In particular, the areas of possible cooperation are as follows:

Preparation:

Support for wind measurement campaigns, installation of wind measurement instruments, evaluation of data, advice on siting

Transfer of know-how:

Running training programmes (workshops) for partners' experts;
subject matter: wind measurement, assessment of potential, wind farm configurations and connection to the grid

Planning:

Calculation of investment and project costs, performance of economic feasibility studies and risk assessments

Initiation:

Provision of advice to public bodies on inviting tenders for wind farm projects; preparation of project documents for applications for assistance funds

Further information and advice about the programme is available from the GTZ (on the Internet: <http://www.gtz.de/wind>). Applications for a specific project must be submitted to the German Embassy by the responsible ministry in the country.

TURKEY

Electricity Market

During the past 20 years the electricity market in Turkey was one of the fastest growing in the world. The International Energy Agency estimated growth in consumption between 1973 and 1995 at on average 9 % - 10 % per year. Despite the major economic crisis under which the country has been suffering since the end of 2000, a barely inhibited growth in demand is expected for the coming decade too. Forecasts by the Turkish electricity generating and transmission company TEAŞ, which produces 91 % of the electricity in Turkey in 15 thermal and 30 hydroelectric plants, still assume a rise in consumption of on average 9 % a year up to the year 2015.

**Fast
growth**

Power supply interruptions are increasing, since power station construction cannot keep pace with the growth in demand and production and distribution losses amount to 20 %. Attempts are being made to alleviate the problem by purchasing electricity from neighbouring countries. For instance Turkey imports electricity from Turkmenistan, Bulgaria, Russia (via Georgia) and Iran.²⁴⁸ Alongside these direct purchases of electricity, Turkey has also boosted its natural gas imports and uses these chiefly to increase electricity generation in newly erected LNG power stations of independent electricity producers.

**Imported
electricity**

Electricity generation is currently based essentially on the use of hydro-power resources, as well as on firing brown coal and hard coal. Natural gas is also being used to a greater extent. At the end of 1999 the installed generating capacity was 26 GW. More than 14 GW of this was accounted for by thermal plants and nearly 11 GW by hydroelectric plants (Fig. 19).

Energy sources

²⁴⁸ According to reports the hitherto electricity trading agreement of 1999 with Bulgaria for 3 TWh is to be extended to 5 TWh by 2005. An increase in the volume of electricity imported was agreed with Russia in October 2000.

Electricity generating capacity in Turkey (1999)

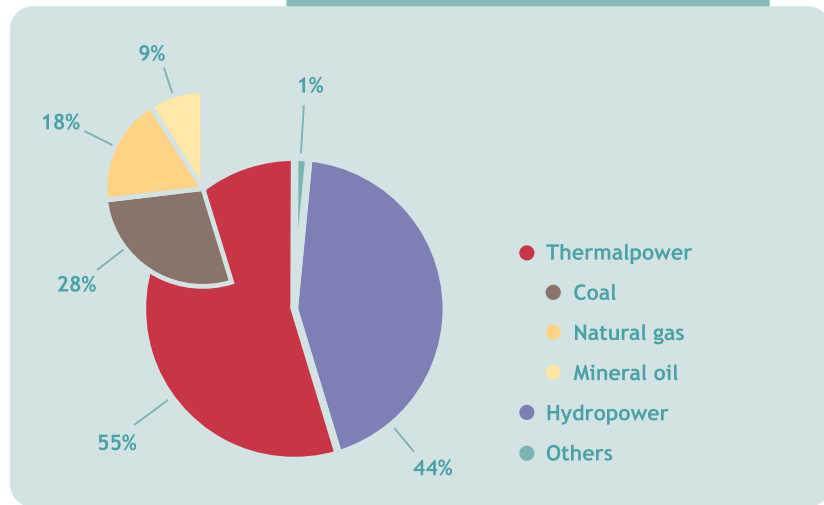


Fig. 19
Electricity generating capacities in Turkey 1999

According to the long-term plan 2000 – 2020 of the Turkish Ministry of Energy (Ministry of Energy and Natural Resources – MENR), energy demand will more than triple during this period. If the forecasts are correct and no action is taken to counter demand, Turkey will need generating capacity of about 64 GW at the end of this decade.²⁴⁹

Electricity demand

One factor alongside the economic slump that could reduce the rapid growth in electricity demand, at least in the short term, is the steep rise in consumer prices for electricity. Basic electricity prices for industry and private customers have risen by 120 % within one year (from October 2000 to October 2001) (see Fig. 20).²⁵⁰

Electricity prices

Increase in tariff categories in Turkey

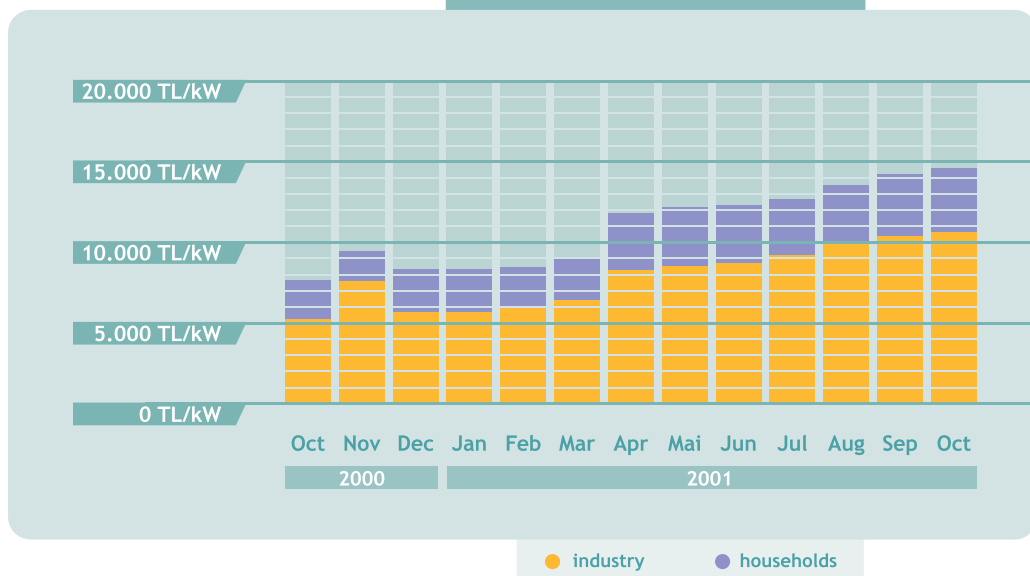


Fig. 20
Increase in tariff categories for households (consumption >150 kWh/a; regions with good connections) and industrial customers (simple tariff; regions with good connections)

²⁴⁹ According to other data a peak load demand of 46.2 GW is forecast for the year 2010.

²⁵⁰ Source: Turkish Electricity Distribution Corporation (TEDAŞ), but in connection with substantial general inflation.

A first step towards allowing private companies in this sector was taken already in 1984 with Law 3096 on the "Award of licences to institutions other than the (then) Turkish utility company TEK for generation, transmission, distribution of and trade with electricity".²⁵¹ The background to this was formed by high financial requirements in the electricity sector and a condition imposed by the IMF limiting the burden of external debt. According to this, activities by private investors had to be certified. The licences issued by the state were always for a limited term (max. 99 years).

Licences

The former central state-owned utility TEK was divided up in 1993 into two separate enterprises, TEAŞ (electricity generation and transmission) and TEDAŞ (electricity distribution) (ordinance of 15.9.1993). TEAŞ is responsible not only for building and operating power stations, but also for the transmission network above 66 kV. TEDAŞ with seven regional enterprises, formed in 1995 above all for the purpose of privatisation, is responsible for distributing electricity at the lower voltage levels. The electricity for this is purchased almost exclusively from TEAŞ. In addition there are further distribution companies at local level without any electricity generation of their own.

Dividing up of TEK

In March 2001 the Turkish government passed the long awaited electricity market law (Law 4628²⁵²), which paves the way for liberalising electricity generation and distribution in the country. Its signature by the Turkish President in July 2001 essentially heralded the following modifications in the electricity sector:

Electricity market law

- TEAŞ is to be divided into three independent enterprises for electricity generation (Turkish Electricity Production Corporation), electricity transmission (Turkish Electricity Transmission Corporation) and electricity trading (Turkish Electricity Trading and Contracting Corporation).
- Türkiye Elektrik Üretim Anonim Şirketi (Turkish Electricity Production Corporation) will take over all generating plant from TEAŞ and can operate, expand or reduce these installations within the framework of capacity planning by the regulatory authority for the electricity market. The requirements of private electricity producers must be taken into account here. The share of total capacity held by a private electricity producer may not exceed 20 % of the installed capacity in Turkey the year before. The regulatory authority prescribes the volume of electricity that autonomous producers can sell externally. Generally this may not exceed 20 % of the total volume produced in a calendar year. Furthermore special rules apply for autonomous generators.
- Türkiye Elektrik İletim Anonim Şirketi (Turkish Electricity Transmission Corporation) is responsible for the operation, maintenance and service-

Dividing up of TEAŞ

Electricity generating corporation

Electricity transmission corporation

²⁵¹ Published in the Official Gazette of 19.12.1984; amended by Law 3613, published in the Official Gazette of 15.3.1990

²⁵² Published in the Official Gazette of 3.3.2001

ing, as well as the expansion of the transmission networks and facilities. It proposes connection and transit tariffs to the regulatory authority for approval, and reviews and checks these. It is obliged to secure high quality and safe transmission.

- Electricity trading rests in the hands of Turkish Electricity Trading and Contracting Corp., which assumes all rights and obligations from the contracts of TEAŞ and TEDAŞ, as well as in the hands of private electricity trading enterprises. The share of a private enterprise in electricity trading in any year may not exceed 10 % of the total energy consumed the preceding year.
- The corporations for electricity generation and electricity trading will be privatised, while transmission remains in the hands of the Turkish state.
- A regulatory authority will be set up to supervise the Turkish electricity market. It will also be responsible for examining and approving tariffs for carriage, distribution and electricity sales to large-scale consumers, retailers and end consumers, the award of licences and for monitoring competition. A further important task of the regulatory authority is to adapt existing contracts to the provisions of the new electricity market act. The authority works together with the MENR.
- Each activity in the electricity market, such as generation, transmission and distribution of electricity, trade and autonomous production, must be licensed by the regulatory authority. The award of licences is regulated and supplemented by rules and regulations. Licenses are awarded for a maximum of 49 years. The statutory minimum duration for production, carriage and distribution licences is 10 years. Within the framework of a production licence generating companies are allowed to hold shares in distribution companies too.
- The regulatory authority issues electricity distribution licences for a specific territory in each case. In addition to their distribution and sales activities, holders of distribution licences are permitted to set up and operate electricity generating plants in licensed territory. However they must procure a generating licence for this and the annual electricity generation in these installations may not exceed 20 % of the previous year's electricity supplies in the relevant territory. Distribution companies may only purchase additional electricity up to a volume of 20 % of the volume of electricity distributed in the preceding year.
- After discussion and agreement with the electricity transmission corporation, the regulatory authority can allow an electricity trading company to import and export electricity additionally within the framework of an electricity wholesale licence. This extension of the licence will only be granted for a certain volume of electricity and for a certain period, which may differ from the period of validity of the actual electricity trading li-

Electricity trading corporation

Electricity regulatory authority

Award of licences

Distribution licence

Electricity wholesale licence

cence.

- Unlike the licence for selling electricity to large-scale consumers and retailers (electricity wholesale licence), the licence for selling electricity to end consumers is not subject to territorial restrictions. It applies without limitation for the entire Turkish electricity market. Electricity distribution companies holding an electricity trading licence can also sell electricity to end customers in the territory of another distribution company if this is noted in the licence.
- Import of electricity at the medium voltage level (<36 kV) is also allowed under the same framework conditions as for the electricity wholesale licence.
- Grid-independent electricity generation for autonomous consumption need not be licensed. However autonomous generators and autonomous generator groups in grid-coupled operation need a licence authorising them to produce electricity for their own consumption and consumption by their partners and to sell surplus electricity to third parties. The volume of electricity which may be sold to third parties is fixed by the regulatory authority and adjusted regularly.

Electricity trading licence

Autonomous production

A transitional period of 18 months after the date of proclamation is planned for implementing the electricity market act. The cabinet can extend this period by up to six months.

In the opinion of experts²⁵³ the position of BOT and TOR projects (Transfer of Operation Rights) in the electricity sector that have already been realised or are in the process of implementation has become very uncertain as a result of the adoption of the electricity market act.²⁵⁴ There has not yet been any clarification by the Turkish government. This situation must be rectified as soon as possible.

Renewable Energy

At present exploitation of renewable is based above all on the use of medium capacity hydroelectric plants. In 1999 the installed capacity for electricity produced from renewable energy sources (without large-scale hydroelectric plants) totalled 25 MW. For the year 2010 about 600 MW are forecast.

The coastal regions and Southeast Anatolia especially offer favourable con-

Potentials

²⁵³ Energy Information Administration –eia-; Country Report Turkey, July 2001

²⁵⁴ A series of BOT plants is currently being set up, such as e.g. the gas-fired power stations Marmara Ereglisi and Istanbul, and the hydroelectric plant Birecik on the Euphrates. According to the information supplied by the Turkish Ministry of Energy, 29 BOT power station projects chiefly wind power and partly already realised.

ditions for wind turbines. The southeast and Mediterranean region provide good solar conditions. The Marmara and Aegean region show potential for exploiting geothermal energy, while the Black Sea region has potential for the use of small and micro hydropower plants. Agglomeration areas offer good conditions for using the biomass produced for electricity generation.

Hydropower

The share of hydropower in the total electricity generating capacity increased from 32 % in the year 1979 to 47 % in 1995 and is now 44 %. In 1999 hydropower accounted for 31 % of the total volume of electricity generated.

About 30 % of the assumed economically useful potential of 125 TWh/a is currently being used already, while a further 4 % is at the development stage. In 1999 a capacity of 10.2 GW was installed at 104 locations. A further 38 hydroelectric plants are being constructed. The erection of 339 hydroelectric plants presently being planned will double electricity generation from hydropower by the year 2010. However, this planned headlong expansion of hydropower has led to strong protests from neighbouring countries in the Middle East that suffer from water shortage. The countries of Syria and Iraq especially have declared themselves against damming the Euphrates and the Tigris.

Several hydroelectric plants are only used to cover peak loads. Further expansion of hydropower use in future is to take place above all on the basis of international invitations to tender involving private investors.

Wind Energy

Wind power potential in Turkey amounts to approx. 83 GW, and according to other estimates it is as high as 116 GW (EGETEK - Aegean Technology Foundation). Approx. 10 % of this potential can be feasibly used, especially in the country's extended coastal regions.

Wind energy is not very highly developed in Turkey so far when measured against the potential, and it has a relatively brief history. At the end of 2000 a total of 19.2 MW was installed in Turkey, distributed between three locations: Germiyan/Izmir with 1.6 MW, Bozcaada/Canakkale with 10.2 MW and Alaçati/Izmir with 7.4 MW.

The main reason for the low level of wind power dissemination is considered to be the pronounced attitude of reserve of the Turkish government, and thus also of TEAŞ, regarding New Energies. The most recent planning provides for an increase in installed wind power to just 1.6 GW by the year 2025. In fact wind energy is not even expressly taken into account in the current projections of the Ministry of Energy (MENR). However Turkey's top

**Hydropower-
potenzial**

**Wind power-
potential**

**Installed
capacity**

So far there are only three small plants for autonomous production of electricity: a landfill gas plant in Bursa with 1.4 MW, a biogas plant in Ankara with 3.2 MW, and a biogas plant in Izmit with 5.4 MW installed capacity.²⁵⁸

Landfill gas
and biogas

Four further plants for electricity generation from landfill gas in Adana (45 MW), in Ankara (10 MW), in Mersin and in Tarsus (together 30 MW), as well as a plant for energy production from wood wastes in Kastamonu (8 MW_{el} / 23 MW_{th}) and an autonomous production plant of the firm Selcuk Gida for using residues from food production (16 MW) are in the planning phase.

Solar Energy

Thanks to its geographical location Turkey possesses considerable potential for solar energy. Only a fraction of this potential is used to date, almost exclusively for hot water heating.

Solar potential

In the PV sector, apart from a series of private small and micro plants, there is only a small number of pilot projects of the state research centre for electricity (Elektrik İşleri Etüd Idaresi – EIEI) for powering remote loads, such as watch-towers of the Ministry of Forestry (175 kW_p), meteorological data survey stations (50 kW_p) and emergency telephones along the motorway/freeway Ankara-Bolu (25 kW_p). A grid-coupled experimental plant with 4.7 kW_p was started up in Didim in 1998.

Geothermal Energy

With a geothermal potential of 31.5 GW_{th} and 4.5 GW_{el} Turkey ranks seventh in the world. According to a study by the top Turkish industrial association TÜSİAD, of this potential 2.4 GW_{th} and 350 MW_{el} can be used economically.

Geothermal
potential

Alongside a series of projects for thermal use, partly dating back to the early sixties, the only plant for electricity generation is operated in Denizli-Kizildere. Originally designed for 20.4 MW_{el}, the now outdated power station only runs with a capacity of 12 MW_{el}.

Plant for
electricity
generation

According to the information supplied by the German-Turkish Chamber of Industry and Commerce, one power station²⁵⁹ and five heat stations (altogether 73.6 MW_{th}) are currently being constructed. Feasibility studies have been completed for nine further heat stations (altogether 655 MW_{th}).

Future projects

Incentive Systems for Electricity from Renewable Energy

On the basis of the general statutory regulations for the Turkish electricity

²⁵⁸ Source: ibid

²⁵⁹ BOT project near Afyon-Germencik with an installed capacity of 25 MW_{el}

industry, the use of renewable energies has been facilitated by a series of ordinances and cabinet decisions during the last three years.

The licence-related requirements made of autonomous electricity production from renewable energies have been reduced substantially. For example, the minimum conditions otherwise applying for autonomous electricity production (e.g. settlements of 1,000 households and more, hotels of the four-star category and above) do not apply for wind and solar energy. The transmission costs for electricity produced from solar and wind power are reduced to 50 % of the normal tariff for the first five years of operation.

Requirements made of autonomous supply

Up to the introduction of the new electricity market law, projects could largely only be set up under the BOT model, or in some cases under the BOO model. Now that this law has entered into force the BOT model will no longer play a role. There is a lack of any adapted regulation on remuneration for private electricity generating plants on the basis of renewable energy.

There is a state investment promotion programme for Turkey that can also be used by companies with foreign capital participation. The programme measures are graded by sectors of the economy and regions of the country (underdeveloped, normal and developed regions). The criteria are reviewed annually and adjusted to the economic development. In addition to sectoral and regional priorities, project-related criteria such as e.g. volumes of investment and self-financing levels are also taken into account in decisions regarding applications for promotion assistance.

Investment promotion programmes

The following promotion measures enter into consideration:

- exemption from customs duties and incidental import charges (since the customs union with the EU this is largely only significant for German companies in the case of imports from third countries),
- special depreciation allowances for certain investment expenditures,
- exemption from turnover tax,
- exemption from certain incidental charges, especially export charges,
- low-interest loans.

Promotion measures

The energy sector is classed as a priority sector with regard to investment promotion, i.e.

- projects are eligible for promotion irrespective of their regional allocation (normally projects in developed regions cannot be promoted);
- one hundred percent depreciation is admissible (generally only depreciation up to 60 % of the investment is admissible in normal regions and only depreciation up to 40 % in developed regions).²⁶⁰

Exchange rate (11.12.2001):

1 million Turkish Lira = 0.76 €

Information Sources

German-Turkish Chamber of Industry and Commerce in cooperation with Ing. Lale Çapalov (Rödl Partner Consulting Türkei GmbH), Potenzial für renewable Energien in der Türkei, March 2001 (on behalf of Landesinitiative Zukunftsenergien NRW)

Information from the Turkish Embassy in the USA
(<http://www.turkey.org/business/eseector.htm>)

Information from the top Turkish industrial association
(<http://www.tusiad.org.tr/eng/homepage.nsf/>)

Information from the EGETEK Foundation
(<http://www.unimedya.net.tr/egetek/index.html>)

Information from the Turkish Ministry of Finance
(<http://www.maliye.gov.tr>)

Information from the Turkish Ministry for Energy (MENR)
(<http://www.enerji.gov.tr>)

Information from the Turkish privatisation authority
(<http://www.oib.gov.tr>)

Information from TEDAŞ (<http://www.tedas.gov.tr/>)

Information from the State Planning Organisation
(<http://www.dpt.gov.tr/dptweb/ingin.html>)

Information from the State Institute for Statistics (SIS)
<http://www.die.gov.tr/ENGLISH/index.html>

Information from the Department of Foreign Trade
(<http://www.foreigntrade.gov.tr/menueng.htm>)

US-Department of Energy (Energy Information Administration), Country Analysis

²⁶⁰ The last sections from: Potenzial für erneuerbare Energien in der Türkei, German-Turkish Chamber of Industry and Commerce / Ing. Lale Çapalov, RödlPartner Consulting Türkei GmbH, March 2001, on behalf of Landesinitiative Zukunftsenergien NRW

Turkey, July 2001

US-Department of Energy (Energy Information Administration), Turkey: Environmental Issues, March 2000

US-Department of Energy (Energy Information Administration), Country Energy Data Report, Turkey, 1999

Tanay Sidki Uyar/Jens Peter Molly, Wind Energy in Turkey, in: DEWI-Magazin No. 13, August 1998

Helmut Klug, Müslüm Varlik, Wind Energy in Turkey, in: DEWI-Magazin No. 17, August 2000

Windpower Monthly: February 1999, March 2000, p.46, September 2000, p.54f, November 2000, February 2001, p.18, March 2001, p.40

Tanay Sidki Uyar, Wind Energy Situation in Turkey, Lecture at the Deutsche Windenergiekonferenz DEWEK, October 1998

N. Seçkin Ulgen (TEAŞ, Head of the Privatisation Department), Generating Turkey's electricity to meet demands, 1998

Law No. 4628; Electricity Market Law; 3.3.2001

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TEAŞ will be divided up into three independent enterprises in accordance with the recently passed electricity market law. The locations of the future company head offices are not yet known.

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