



SCREENING CHAPTER 15 ENERGY

AGENDA ITEM: NEW AND RENEWABLE SOURCES OF ENERGY AND DEMAND MANAGEMENT – PART I

Renewable Sources of Energy

**Country Session: The Republic of TURKEY
14-15 June 2006**



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- Overview
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Overview

- Renewable energy production is 12.3 % of Total Primary Energy Supply i.e. 10.8 Mtoe in 2004.
- Electricity generation from renewables was 31 % in 2004
- Renewables are the second largest contributor to domestic production after coal.
- Renewable energy supply in Turkey is dominated by hydropower and biomass.
- The contribution of wind and solar is limited but is expected to increase.



Overview (CONT'D)

Hydropower

- The economically usable hydropower potential of Turkey is estimated at 130,000 GWh per year, of which 35% has been exploited.
- It is projected that 35,000 MW hydropower capacity will be reached by the year 2020.

Geothermal Energy

- Total geothermal potential is 500 MWe and 31,500 MWt.
- The proven geothermal capacity of the wells is 2,925 MWt. Currently, only 1,229 MWt of this capacity is used.
- Two geothermal electricity generation plants with capacity 15 MW and 8 MW are under operation. 52 MW is under construction.



Overview (CONT'D)

Solar Energy

- Average annual solar radiation is 1,311 kWh/m²-year
- 400,000 Toe solar heating produced by 11 million m² collectors
 - Solar energy thermal potential is 61 million Toe and electricity potential is 15 million Toe
 - Total Photovoltaics application is approximately 500 kW and mainly used where transmission of electricity is not economically feasible



Overview (CONT'D)

Wind Energy

- Technical wind potential is approximately 88,000 MW and economically viable wind potential is approximately 10,000-12,000 MW
- Total installed capacity has reached 50 MW, 115 MW under construction and about 1,400 MW licenced
- The long term projections point out that the installed capacity of wind turbines could reach up to 1,500 MW in 2010 and 3,000 MW in 2020.



Overview (CONT'D)

Commercial Biomass, Biogas and Waste

- Organic animal waste potential is 34 thousand tonnes dry mass/day.
- Biomass potential is 15 million Toe, of which 6 million Toe is being used and 2 million Toe may be used for biofuel production.
- Biogas production potential has been estimated at 1.5-2 Mtoe.



Overview (CONT'D)

Biofuels (by domestic agricultural product)

- Biodiesel production capacity is 1,5 million Tonnes/year
- Bioethanol production capacity is 3 million Tonnes/year



LEGAL FRAMEWORK

Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity ('Law on RES'), No: 5346

(Official Gazette: 18 May 2005, no. 25819)

- By-law on Principles and Procedures for Granting Guarantee of Origin (Official Gazette 4 October 2005, no:25956)

Electricity Market Law No:4628 (Official Gazette 03 March 2001)

- By-law on Electricity Market Licensing (Official Gazette 04 August 2002, no. 24836)
- By-law on Electricity Market Grid (Official Gazette 22 June 2003, no. 25001)
- By-Law on Balancing and Settlement (Official Gazette 21 Dec 2004, no. 25677)
- Communiqué Regarding The Principles and Procedures of Financial Settlement in the Electricity Market (Official Gazette 4 Nov. 2003, no. 25279)

Biofuel Legislation



LAW ON UTILIZATION OF RENEWABLE ENERGY RESOURCES FOR THE PURPOSE OF GENERATING ELECTRICITY ENERGY, No: 5346

Objective (Art. 1)

- To expand the utilization of renewable energy sources (RES) for generating electricity.

Scope (Art. 2)

- To establish the necessary legal and regulatory basis for increasing use of RES without disturbing the free market conditions and system.



LAW ON RES, No: 5346 (CONT'D)

Definitions (Art. 3)

- Renewable energy resources:

Non-fossil energy resources such as hydraulic, wind, solar, geothermal, biomass, biogas, wave, current and tidal are defined as RES.

- RES within the scope of this Law:

Wind, solar, geothermal, biomass, biogas, wave, current and tidal energy resources suitable for the electricity generation together with hydraulic generation plants, either canal or run of river type or with a reservoir area of less than fifteen square kilometers.

RES Certificate (Art. 5)

- EMRA shall grant a “RES Certificate” (Guarantee of Origin) for identification and monitoring of the resource type in purchasing and selling of electricity generated from RES in the domestic and international markets, to the legal entity holding generating license.



LAW ON RES, No: 5346 (CONT'D)

The main support Mechanism

Principles of Implementation (Art. 6)

- The price for the RES certified electricity within each calendar year shall be the average wholesale electricity price in the previous year determined by EMRA.
- This price is valid for the electricity produced from the Renewable Power Plants, starting up before 2011 and for the first seven years of operation.
- The Council of Ministers may raise this price up to 20% at the beginning of each year,
- Renewable Power Plant which starts before 2011 shall benefit from this price in the first seven years.
- After seven years; price is formed through bilateral agreements in the market, and the purchase obligation of the retail sale companies will continue.



LAW ON RES, No: 5346 (CONT'D)

The main support Mechanism (CONT'D)

- The amount of RES certified electricity will be published by EMRA annually,
- There is a purchase obligation for the retail sale companies in the market from RES based electricity generation
- If RES certified electricity is sufficient in the market, purchase obligation ratio not lower than 8% of the previous year's sales applies.
- Purchase obligation ratio for each retail sale companies to purchase RES certified electricity is the proportion of the previous year's sales of each company to total energy amount of the companies.



LAW ON RES, No: 5346 (CONT'D)

Implementations related to Acquisition of Land (Art. 8)

- 50% reduction for land use permission

Sanctions (Art.10),

- The legal entities holding retail sale license in breach of the provisions of Article 6 of this Law shall be fined by EMRA and shall be warned to eliminate the violation in 60 days.



By-law on Principles and Procedures for Granting Guarantee of Origin

- The scope of this Regulation covers the principles and procedures for granting Guarantee of Origin to the legal entities engaged in generation based on renewable energy resources.
- **Guarantee of Origin:** The certificate granted by the Authority to the legal entity holding generation license for the purpose of identification and monitoring of the resource type in purchasing and sale of the electricity generated from renewable energy resources in domestic and international markets.



By-law on Electricity Market Licensing

- The regulation provides incentives for RES generation facilities:
 - Pay only 1% of the total licensing fee.
 - Exemption from annual license fees for the first eight years following the facility completion date.
 - May purchase electricity from private sector wholesale companies on the condition not to exceed the annual average generation amounts.
 - Priority for system connection.



By-law on Electricity Market Grid

Design and performance criteria of generation facilities

(Arts. 19 and 21)

- Generating units based on renewable energy resources that are not designed for frequency and voltage control, are not subject to these conditions and requirements.

By-Law on Balancing and Settlement (Art. 18)

- Exempt from the liability of being a Balancing Mechanism entity.

Communiqué Regarding The Principles and Procedures of Financial Settlement in the Electricity Market (Official Gazette 4 Nov. 2003, no. 25279) (Provisional Art.4, Art.6)

- Until the Balancing and Settlement Code takes effect, wind generation and canal-type hydro-electric generation facilities which sell electricity to wholesale and retail licensees are exempted from settlement.



BIOFUEL LEGISLATION

- **Petroleum Market Law No:5015** (Official Gazette 04 Dec 2003)
- **By-Law on Petroleum Market Licence** (Official Gazette 17 June 2004)
- **By-Law on Technical Criteria for Petroleum Market** (Official Gazette 10 September 2004)
- **Draft Law Amending Petroleum Market Law**



Petroleum Market Law No:5015

Definitions and Abbreviations (Art. 2(7))

- Products which are or shall be subject to an equivalent tax as liquid fuel, such as methyl tarsier butyl ether (MTBE), ethanol (except for those produced artificially from domestic agricultural products and bio-diesel) can be blended with liquid fuel.

By-Law on Petroleum Market Licence

Definitions (Art. 4 (5))

- Liquid Fuel: Benzine types, naphtha (except for raw material and solvent naphtha) gas oil, jet fuel, diesel fuel and fuel oil types with biodiesel.



By-Law on Technical Criteria for Petroleum Market

- **Definitions and Abbreviations (Art. 4(h))**
 - Liquid fuel: Benzine types, naphtha (except for raw material and solvent naphtha) gas oil, jet fuel, diesel fuel and fuel oil types with biodiesel
 - Products which are or shall be subject to an equivalent tax as liquid fuel, such as methyl tarsier butyl ether, ethanol (except for those produced artificially from domestic agricultural products and bio-diesel can be blended with liquid fuel
- **Products that can be blended with liquid fuel and additive materials (Art. 8)**

Refineries and distribution licence owners shall blend pure biodiesel and bioethanol with diesel and benzine. Except biodiesel, other liquid fuels shall not be blended with each other.
- **Liquid Fuel Production (Art. 9)**

Liquid fuels shall only be produced by refinery licence owners except pure biodiesel and biodiesel produced as by product in industrial facilities.



DRAFT LAW AMENDING PETROLEUM MARKET LAW

- Article 36: Refineries and distributors, acting in petroleum market, could blend biofuel, which are provided from biofuel producers using domestic agricultural products with diesel, proportion of 2%. Blending ratio and 'Special Consumption Tax' of blended product shall be determined by the Ministry of Finance.
- Biofuel producers may get distributor and sale licenses to sell and distribute biodiesel which are produced by using domestic agricultural products, with the commitment of a selling projection for minimum 30 thousand tonnes biodiesel annually.



Thank you for your attention