



T.C.  
**MINISTRY of ENERGY and NATURAL RESOURCES**  
**General Directorate of Renewable Energy**  
**(GDRE)**



**RECENT ENERGY**  
**EFFICIENCY POLICIES AND**  
**IMPLEMENTATIONS**  
**IN TURKEY**

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# Context

A. Energy Sector in Turkey

B. Energy Efficiency Law

C. Main Policies and Implementations

D. Future Plan



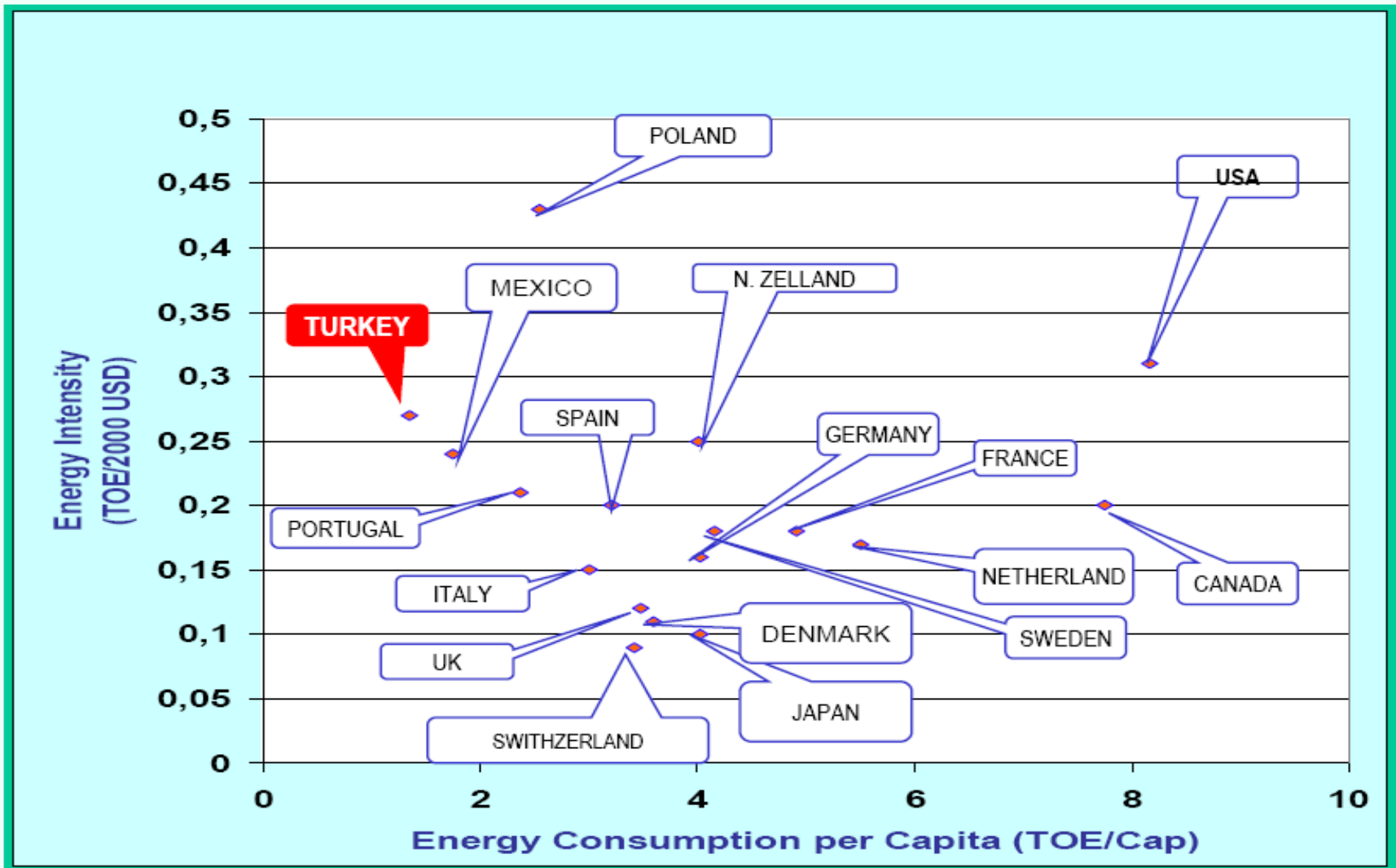
# A. Energy Sector in Turkey



- Economic growth: 8,9% - in 2010
- Dependency on energy import: 74 % - in 2009
- The annual increase in energy demand: 5,0% - after 1990 (in EU: 1,6%)
- Expected annual increase in primary energy demand: 4%
- The annual increase in electricity demand until 2020: 6,7% or 7,5% (scenario 1) (scenario 2)
- Investment needs within the next 15 years: 130 billion \$

# A. Energy Sector in Turkey

## Primary Energy Intensity in Turkey



## B. Energy Efficiency Law

### Fundamental Transformation: 2007



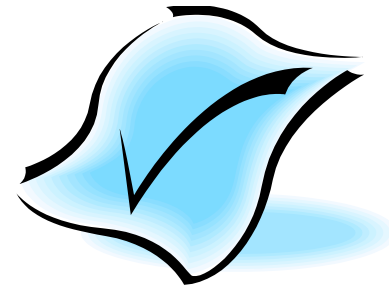
“Energy Efficiency Law” put in to force at 2007 and it’s secondary legislation has been amended in 2011.

### Vision of the Law

- to make Turkey a country having high energy consumption per capita and low energy intensity
- to get maximum benefit from energy

## C. Main Policies and Implementations

- Energy efficiency service sector (*ESCO's*)
- Energy Management
- Training and Awareness
- Supports
- Measuring and monitoring
- Energy performance of buildings (*Energy Identity Certificate*)
- Energy-efficient product market
- On-site generation, on-site consumption (*cogeneration, renewables etc.*)



## C. Main Policies and Implementations

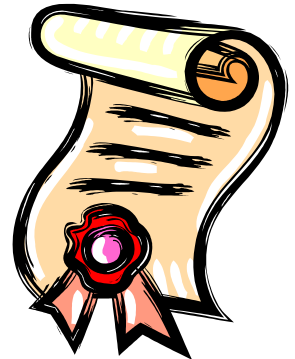
### Authorizations for energy efficiency services

- **Authorizations of Agencies**

- Gazi University
- Chamber of the Mechanical Engineer,
- Chamber of the Electrical Engineer

- **Authorizations of EE Consultant Company (ESCOs)**

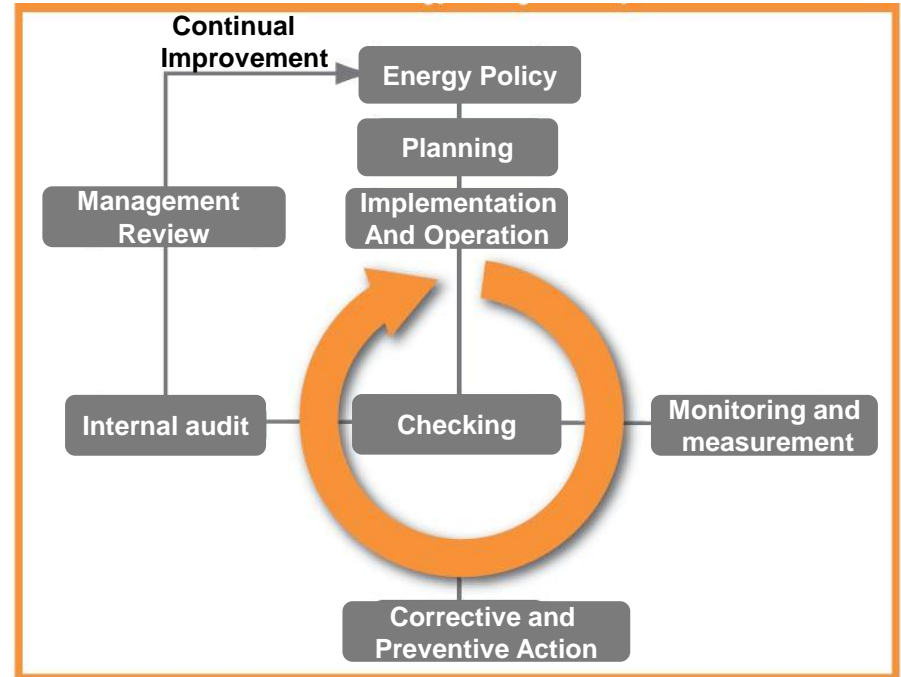
- 38 EE Consultant Company (ESCOs) have been authorized.
  - Industry – 23
  - Building - 30



# C. Main Policies and Implementations

## Energy Management

- Energy Policy
- Energy Planning
- Training & Awareness
- Measuring & Monitoring
- Energy Audit
- Reporting
- Preparation of alternative plans to reduce use of oil and natural gas
- Investigation of possibilities for the use of alternative fuels
- Determination of the amount of CO<sub>2</sub> emission can be reduced through energy efficiency measures



**in accordance with ISO 50001 Energy Management Systems - Application Requirements Standard**



## C. Main Policies and Implementations

### Appointment of energy manager and establishment of energy management unit

Sector	Energy Manager	Energy Management Unit
Industry	$\geq 1.000$ TOE	$\geq 50.000$ TOE
Power Plants	minimum 100 MW installed capacity	-
Organized Industrial Zone	-	at least 50 industrial enterprises
Public Buildings	$\geq 10.000$ m <sup>2</sup> $\geq 250$ TOE	-
Commercial and Service Buildings	$\geq 20.000$ m <sup>2</sup> $\geq 500$ TOE	-



# C. Main Policies and Implementations

## Energy Manager Training



(Energy Efficiency Training Center - established in October, 2001)



- Fan and Pump
- Compressed Air
- Lighting
- Companzation
- Cooling

- Combustion Furnace
- Open Burners
- Steam Boiler
- Steam Traps

# C. Main Policies and Implementations

## Incentives for industrial establishments

### by GDRE - 1



## Efficiency Improvement Projects

- Maximum Payback Period                      5 years
- Maximum project cost                         1.000.000 TL (~400.000 Euro)
- Maximum support                                up to 30 % of project cost
- Sertificate                                         TS EN ISO 50001 (After 2014)
- in 2009:
  - 56 industrial plants have been applied with 72 EE Projects
  - 17 Projects have been supporting of 12 industrial establishments
- in 2010:
  - 24 industrial plants have been applied with 27 EE Projects
  - 15 Projects have been supporting of 13 industrial establishments

# C. Main Policies and Implementations

## Incentives for industrial establishments by GDRE - 2



### Voluntary Agreement

- Agreement                               reducing energy intensity 10 %  
  on average in 3 years
- Maximum support                       20 % of the energy costs  
  not to exceed 200.000 TL  
  (~80.000 Euro)
- Sertificate                               TS EN ISO 50001 (After 2014)
- in 2009:
  - 24 industrial plants have been applied.
  - 11 industrial establishments made voluntary agreement.
- in 2010:
  - 11 industrial plants have been applied.
  - 11 industrial establishments made voluntary agreement.

## C. Main Policies and Implementations

### Incentives for the SME's by KOSGEB

(Small and Medium Enterprises Development Organization)



- Energy Manager Training up to 3,000 TL (~ 1,200 Euro)
- Pre-Audit up to 2,000 TL (~ 800 Euro)
- Energy Audit up to 20,000 TL (~ 8,000 Euro)
- Consulting services for  
efficiency improvement project up to 5,000 TL (~ 2,000 Euro)

## C. Main Policies and Implementations

### Incentives for industry by TTGV - 1

(Technology Development Foundation of Turkey)



### Technology Development (R&D) Projects

- Project Period Maximum 2 years
- Maximum support 1 Million US\$, %50 of project budget
- Repayment Period 1 year grace period of 4 years (Interest-free)
- Source Undersecretariat of Foreign Trade
- ~ 104 R&D Projects (EE + RE)
- ~ 35 Million \$

# C. Main Policies and Implementations

## Incentives for industry by TTGV - 2

(Technology Development Foundation of Turkey)



### Environment Supports

a) Energy Efficiency Supports

b) Environmental Technology (Clean Production ) Supports

c) Renewable Energy Supports

- Project Period                      Maximum 2 years
- Maximum support                1 Million US\$, %50 of project budget
- Repayment Period                1 year grace period of 4 years (Interest-free)
- ~ 76,5 million kWh/year energy saving
- ~ 25,5 million kWh/year electricity production
- ~ 41.385 ton/year CO<sub>2</sub> saving

# C. Main Policies and Implementations

## Supports of Undersecretariat of Treasury



### Energy Efficiency Projects

- customs tax exemption
- VAT exemptions

### Cogeneration

- Minimum annual average efficiency % 80



# C. Main Policies and Implementations



## Supports of Development Bank of Turkey

### Financing of Energy Efficiency

- Type of investment      Minimum 20% energy saving or at least 50% of economic gain created by energy efficiency in energy consumption
  
- Type of support      Long-term (2-5 years including a grace period of 10-15 years) and low-interest loans
  
- Source  
World Bank  
IBRD - International Bank for Reconstruction and Development  
EIB - The European Investment Bank  
AFD - French Development Agency  
CEB - Council of Europe Development Bank  
IDB - Islamic Development Bank



# C. Main Policies and Implementations

## “Energy Identity Certificate” for Buildings



**Binanın**  
 Tipi :  
 İnşaat Yılı :  
 Kapalı Kullanma Alanı :  
 Ada, Parseli :  
 Adresi :  
 Binanın Sahibi :  
 Adresi :  
 Müsterek Tesisatların Sahibi (gerekliyse) :  
 Adı Soyadı :  
 Adresi :

**Binanın Resmi**

**Enerji Performansı**  
 Yüksek  
 A  
 B  
 C  
 D  
 E  
 F  
 G  
 Düşük  
 kWh/m<sup>2</sup>.yıl

**SEG Emisyonu**  
 Düşük  
 A  
 B  
 C  
 D  
 E  
 F  
 G  
 Yüksek  
 kg eqd. CO<sub>2</sub>/m<sup>2</sup>.yıl

**Yenilenebilir Enerji Kullanım Oranı**  
 %  
 0

Enerji Kullanım Alanı	Kullanılan Sistem	Yıllık Enerji Tüketimleri			Sınıfı
		Nihai (kWh/yıl)	Birincil (kWh/yıl)	Kullanım Alanı Başına (kWh/m <sup>2</sup> .yıl)	
TOPLAM					ABCDEF G
ISITMA					ABCDEF G
SİHİH SICAĞI SU					ABCDEF G
SOĞUTMA					ABCDEF G
MALANDİZASYON					ABCDEF G
AYDINLATMA					ABCDEF G

**Açıklamalar**

**Belgenin**  
 Numarası :  
 Veriliş Tarihi :  
 Son Geçerlilik Tarihi :

Firma :  
 Oda Sicil Nosu :

İmza

Information about the Building

Energy Performance of the Building kWh/m<sup>2</sup>year

Consumption for Heating

Consumption for Hot Water

Consumption for Cooling

Consumption for Lighting

Building Photo

GHG emission classification kgCO<sub>2</sub>/m<sup>3</sup>year

Ratio of Renewables usage %

Consumption for Ventilation

# C. Main Policies and Implementations

## Awareness



- Energy Efficiency Week  
(9-15 January, 2012)



Düzenleyen

T.C.  
ENERJİ VE  
TABİİ KAYNAKLAR  
BAKANLIĞI



YENİLENEBİLİR ENERJİ  
GENEL MÜDÜRLÜĞÜ

Organizasyon

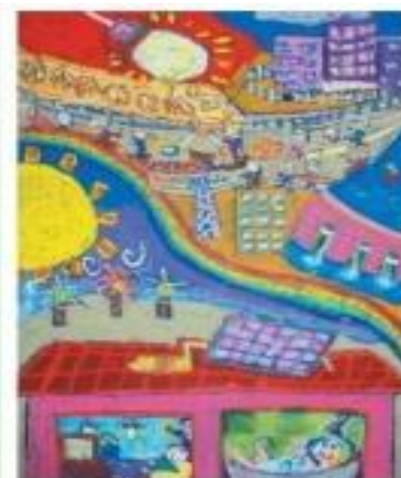
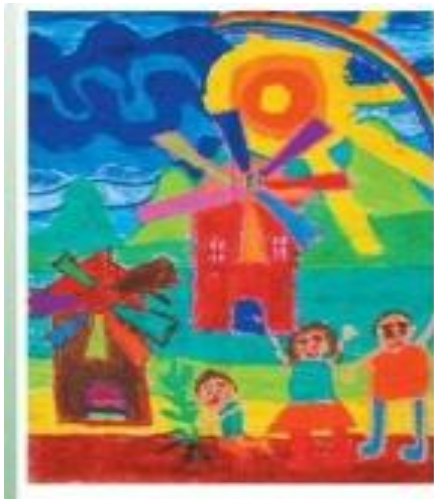
sektörel  
kuruluşlar

KOSGİ

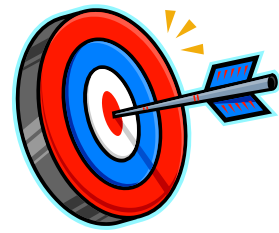
# C. Main Policies and Implementations

## Awareness

- Energy Efficiency Contests
  - ✓ Project competition on Increasing Energy Efficiency In Industry
  - ✓ Picture and Story Competition Between Primary School Students
  - ✓ Project Competition Among High School Students



## D. Future Plan



### Main Target

### Reduction of energy intensity of Turkey 20% by 2023

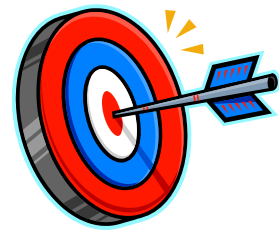
- Energy Efficiency Strategy Paper 2012 – 2023

(Official Gazette: 25<sup>th</sup> February, 2012; no 28215) ;

- ✓ to ensure unity of vision and action between institutions and organizations
- ✓ to improve co-operation by strengthening the understanding of social responsibility
- ✓ to ensure compliance between energy efficiency studies and environmental issues
- ✓ to develop measurable, traceable and applicable measures and implement them in a participatory approach
- ✓ Provide more resources to energy efficiency



# D. Future Plan



## Targets of Strategy Paper

- To reduce energy intensity and energy losses in industry and services sector,
- to promote sustainable and eco-friendly buildings in order to reduce energy demand and carbon emissions of buildings
- to ensure market transformation of energy-efficient products
- to improve efficiency on electricity generation, transmission and distribution and to reduce energy losses and emissions
- Transport:
  - ✓ to reduce unit fossil fuel consumption of motor vehicles
  - ✓ to increase share of railways on freight and passenger transport
  - ✓ to increase share of public transport in cities,
  - ✓ to prevent unnecessary fuel consumption on urban transport
  - ✓ to reduce emissions
- Effective and efficient use of energy in public organizations
- To strengthen institutional structures, capacities and cooperation's
- to increase the use of advanced technology and awareness-raising activities



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**THANK YOU**  
**FOR**  
**YOUR ATTENTION**