

Overview of Energy Efficiency in Turkey

Context

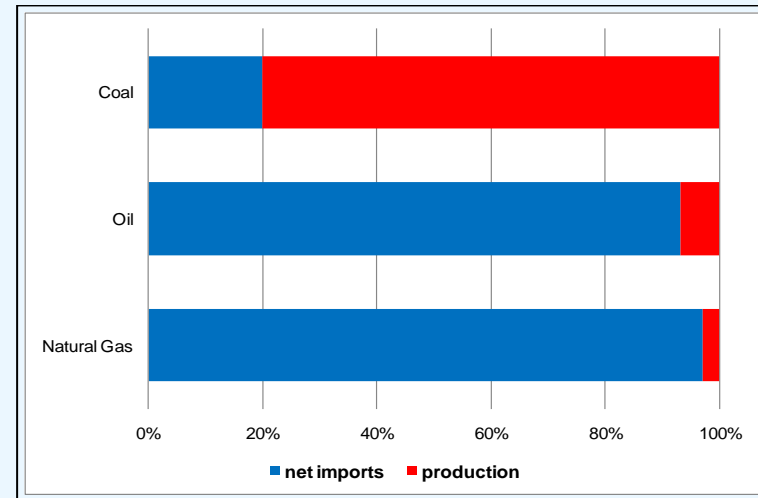
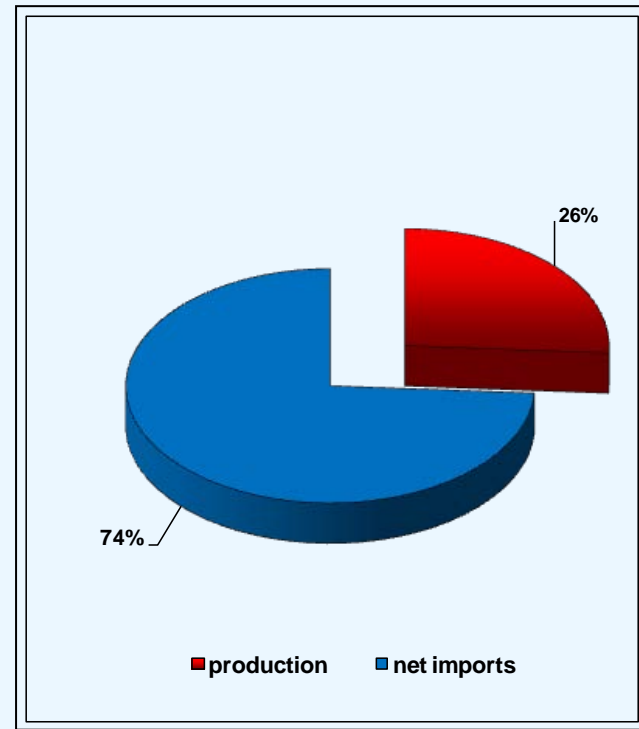
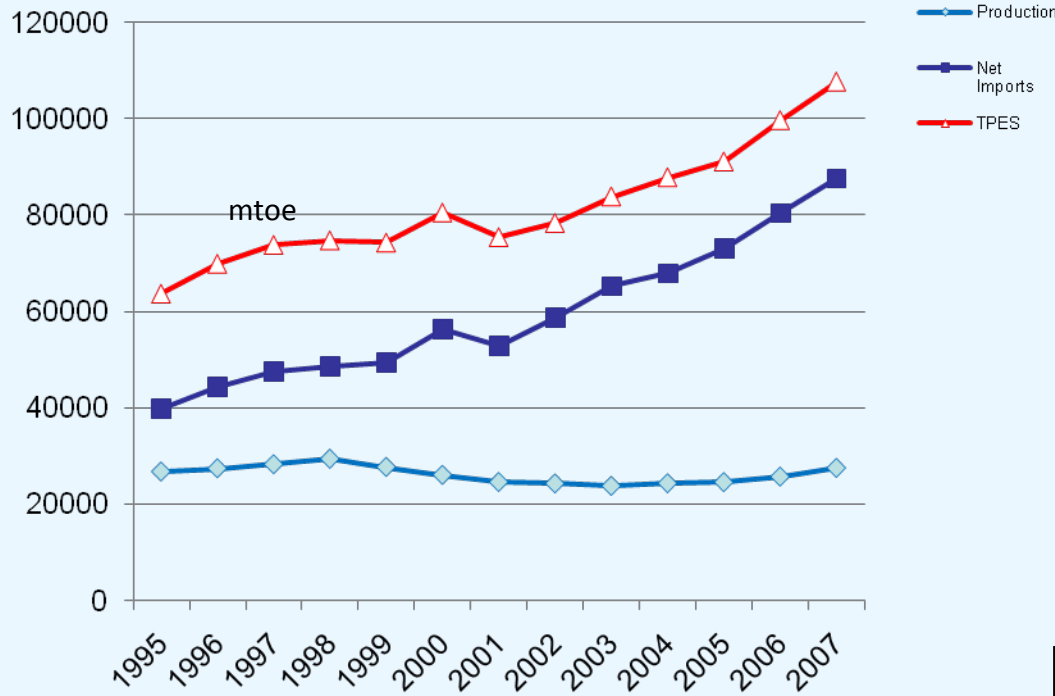
- Energy Outlook of Turkey
- Legislative Framework and it's Implementation
- Future Plans
- Conclusion

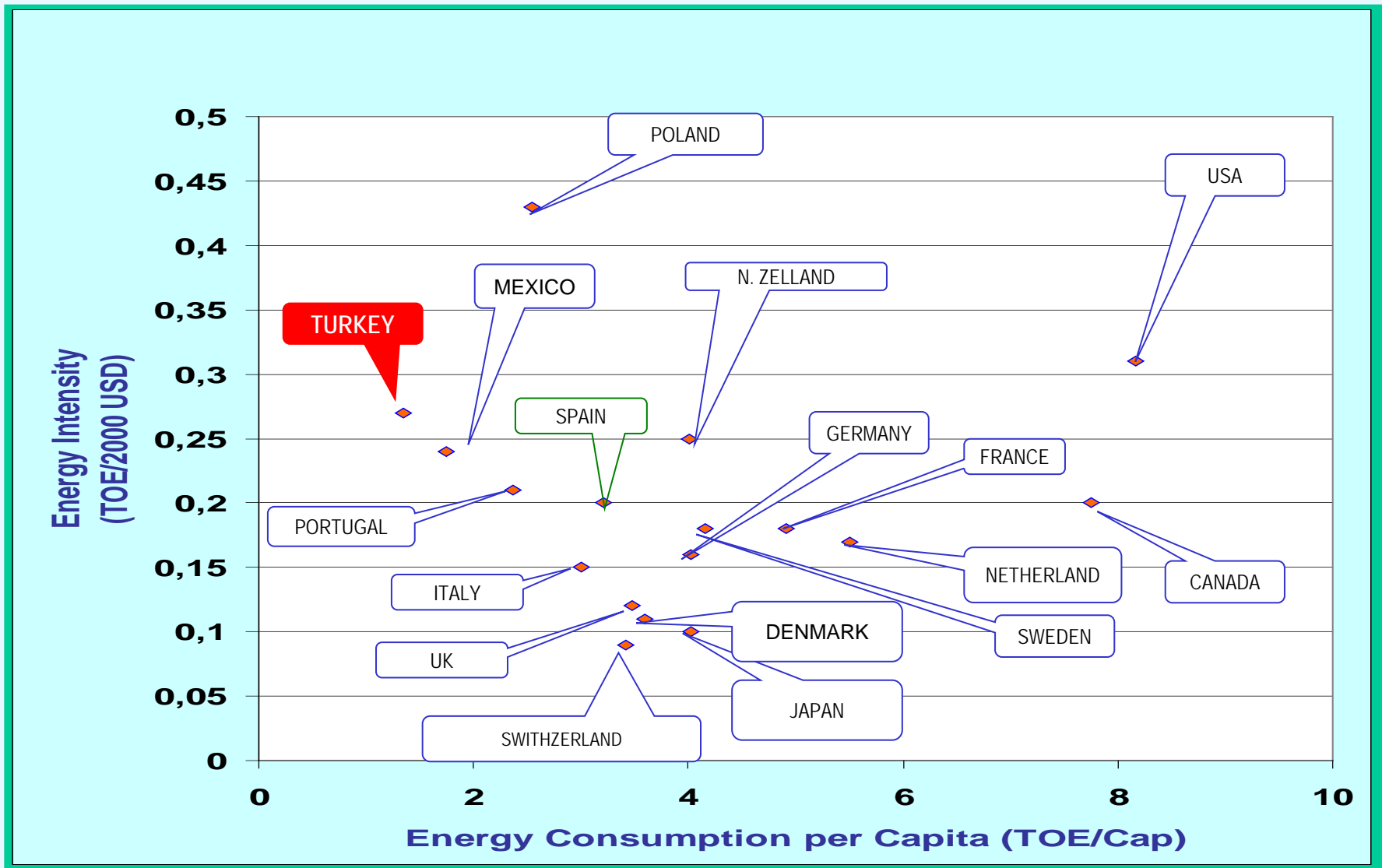
Energy Outlook of Turkey



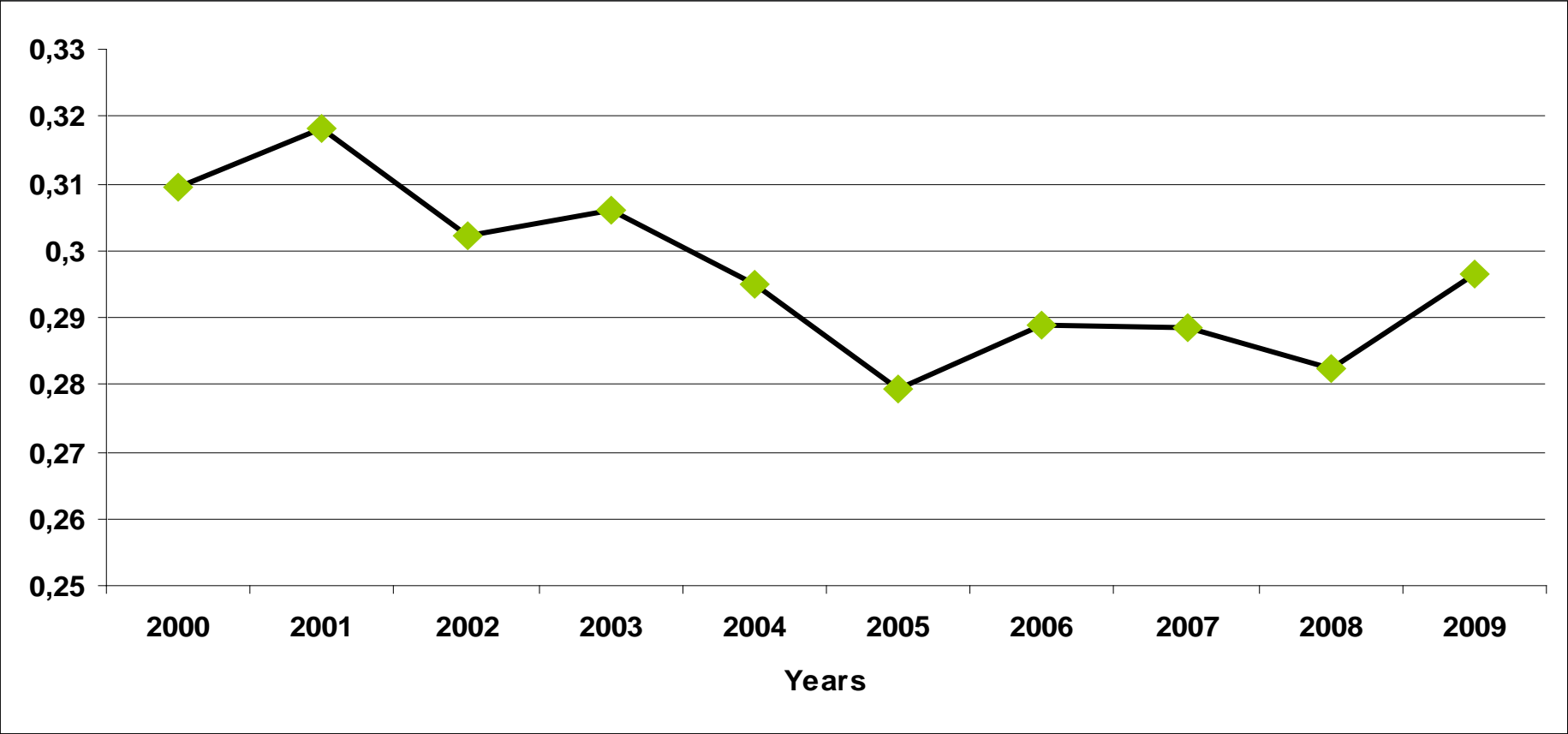
- Fast recovery after the global financial crisis: **8,9% GDP growth in 2010**
- Import dependency : **74 %**
- Annual demand increase of Turkey : **4,6% since 1990**
(Annual demand increase of the EU: **1,6%**)
- Annual primary energy demand of Turkey is expected to increase around **4%**.
- **Electricity demand to increase annually 6,7% (low case scenario) or 7,5% (high case scenario) until 2020**
- Investment required more than **\$ 100 bl.** for the next **15** years

Import Dependency





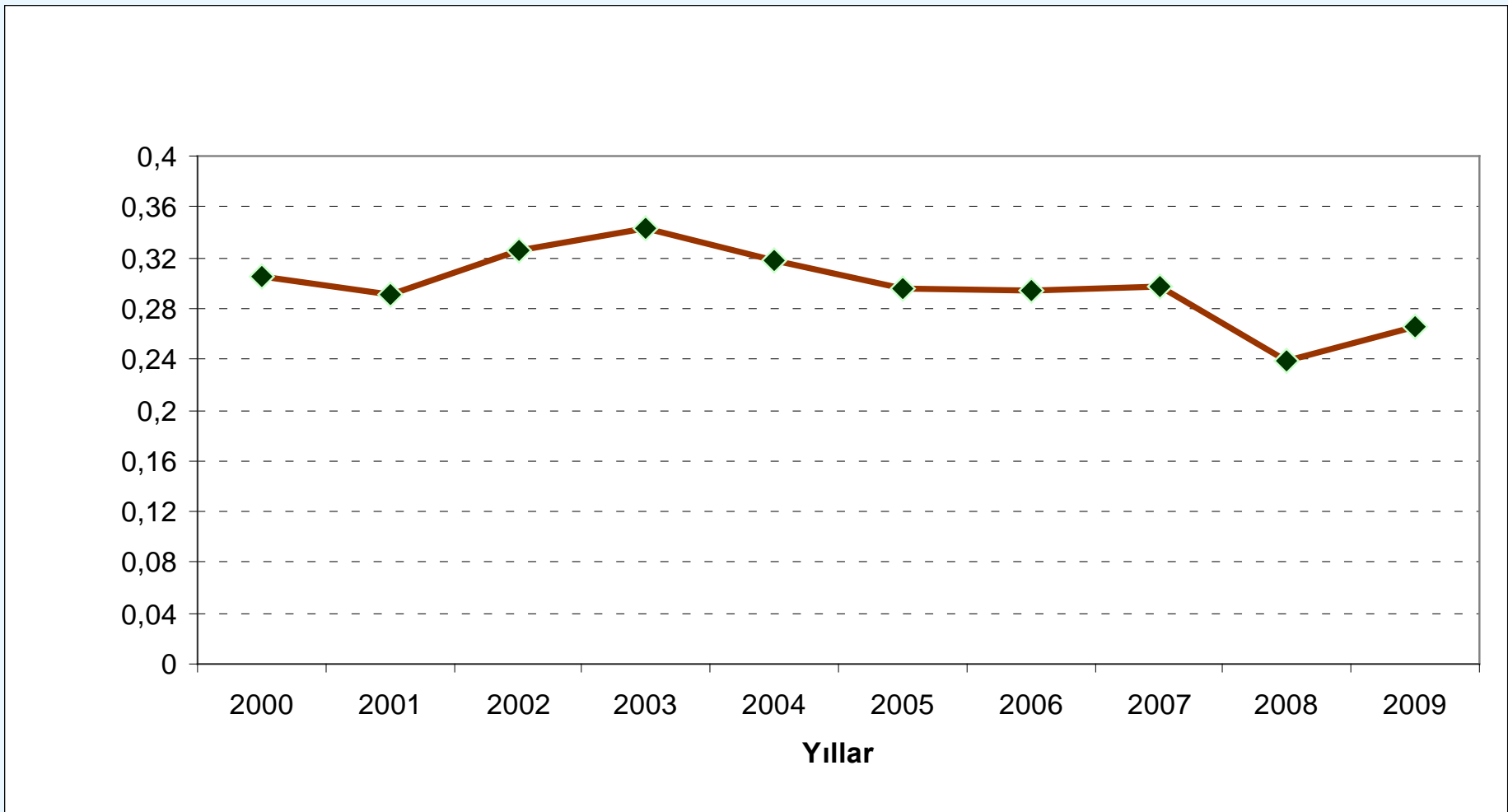
Primary Energy Intensity of Turkey



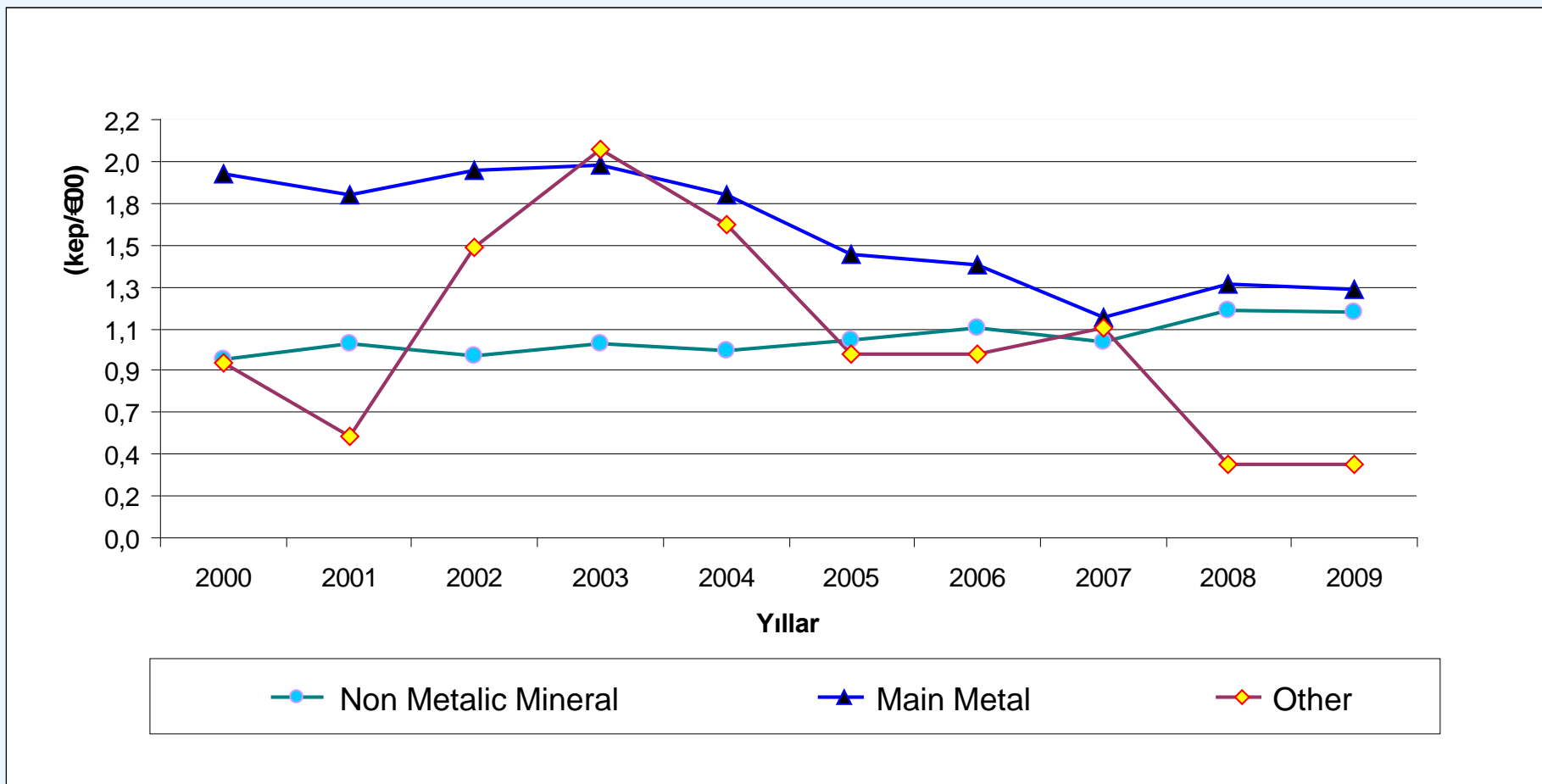
Renewable Energies & Energy Efficiency

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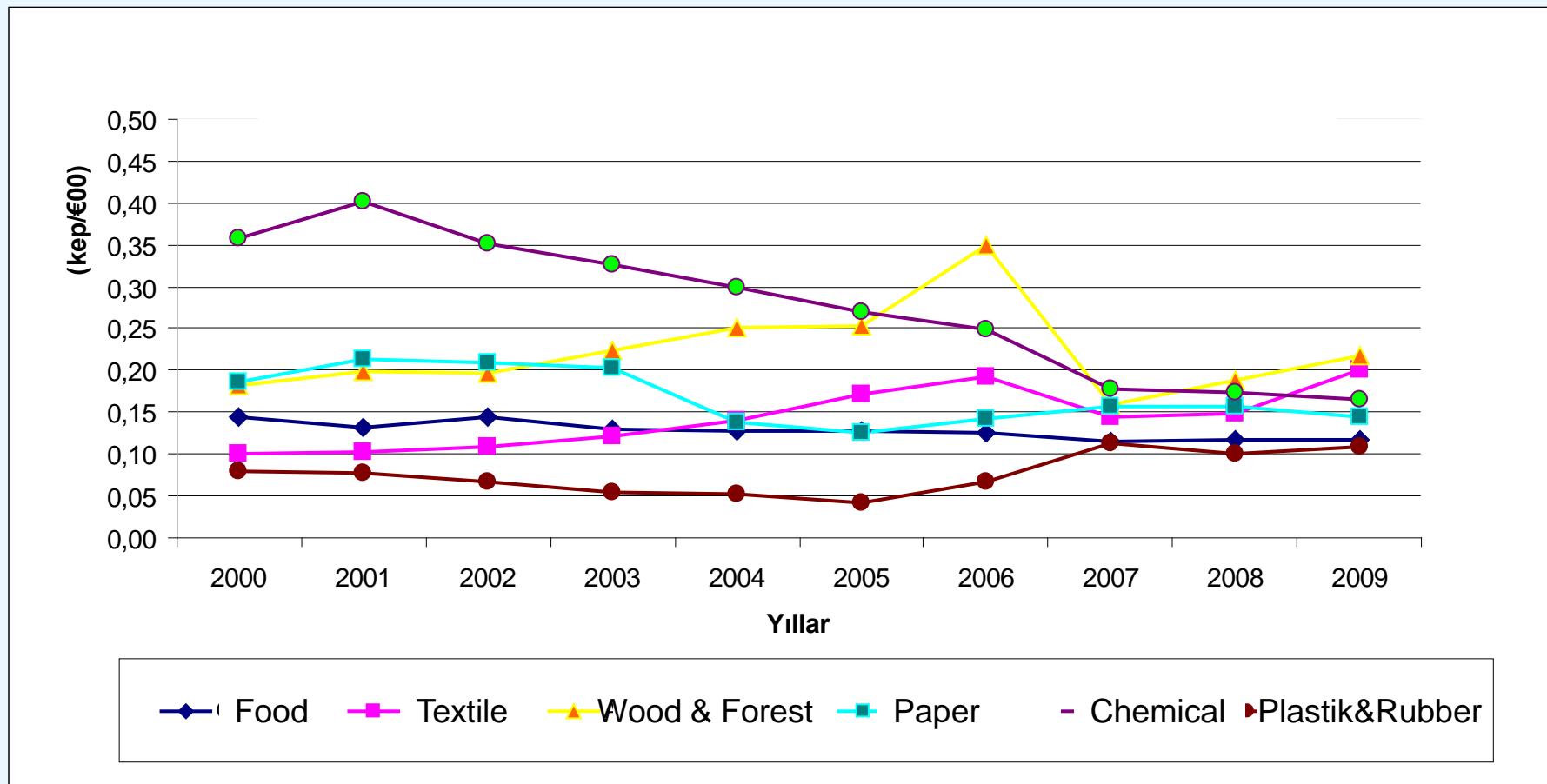
Energy Intensity in Industry (koe/€00)



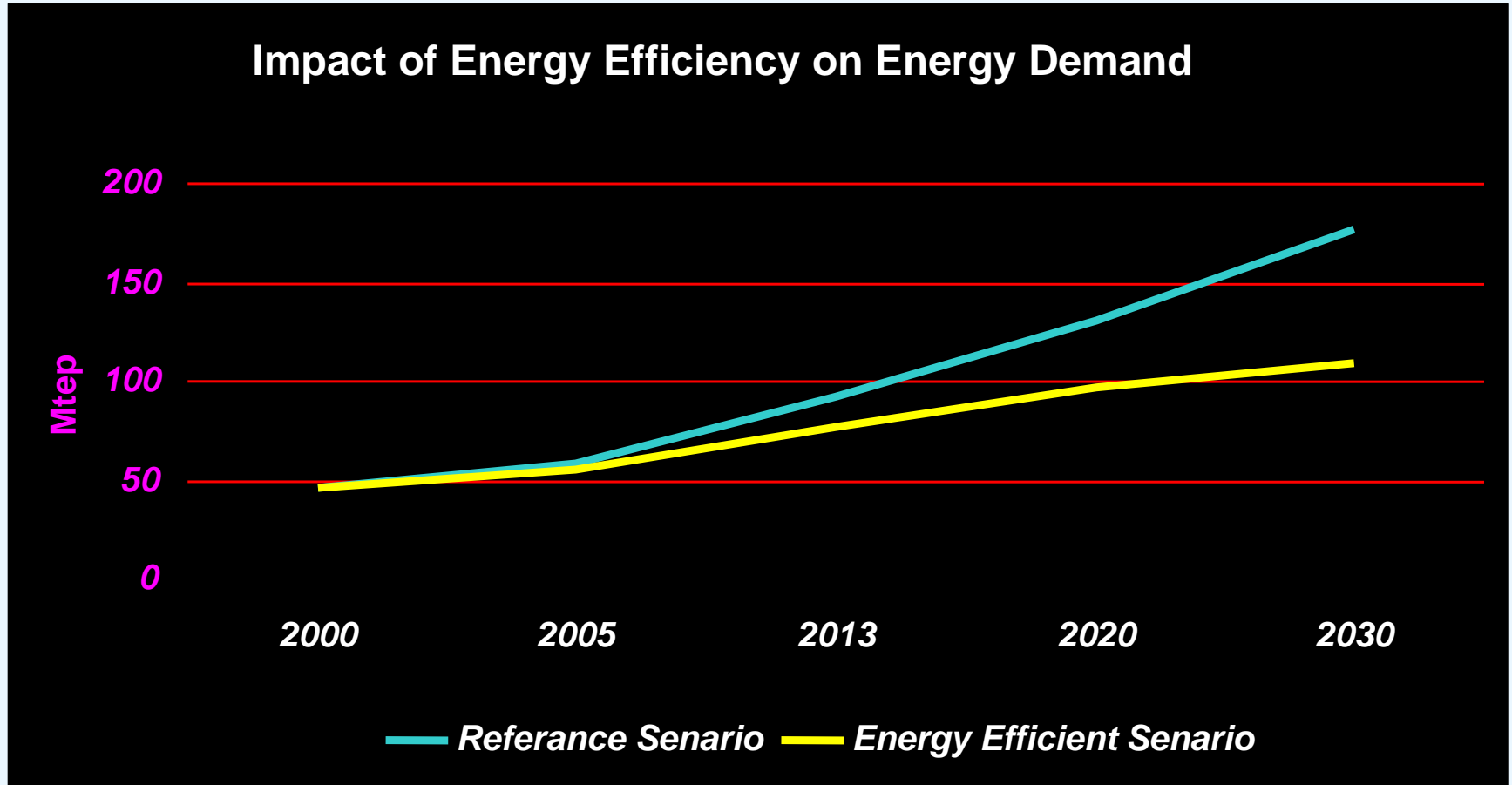
Energy Intensity in Industrial Sub Sectors (koe/€00)



Energy Intensity in Industrial Sub Sectors (koe/€00)

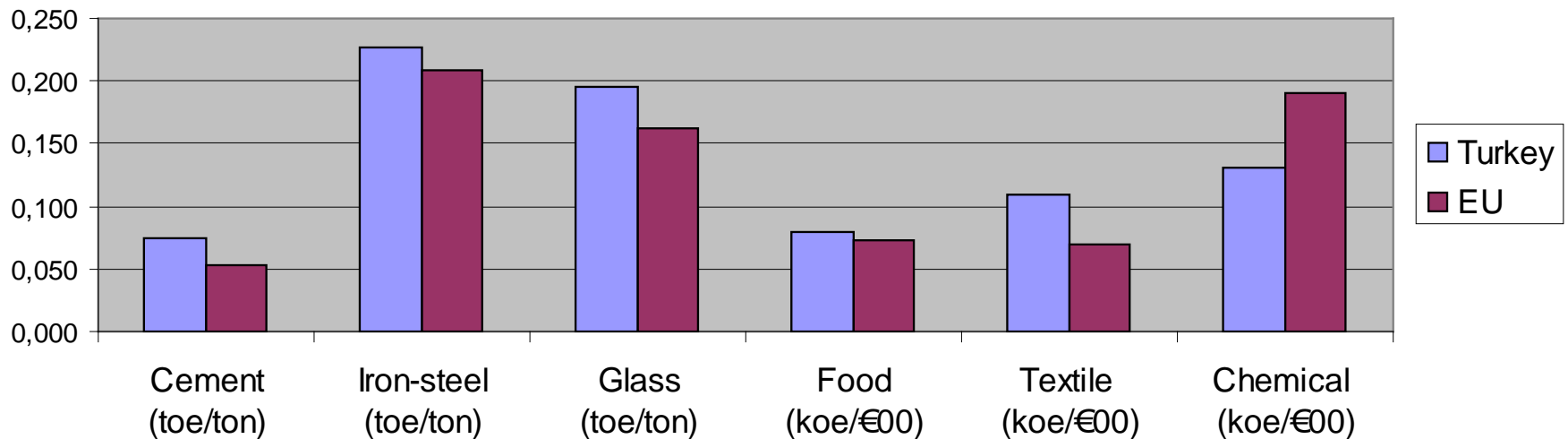


Energy Saving Potential in Turkey

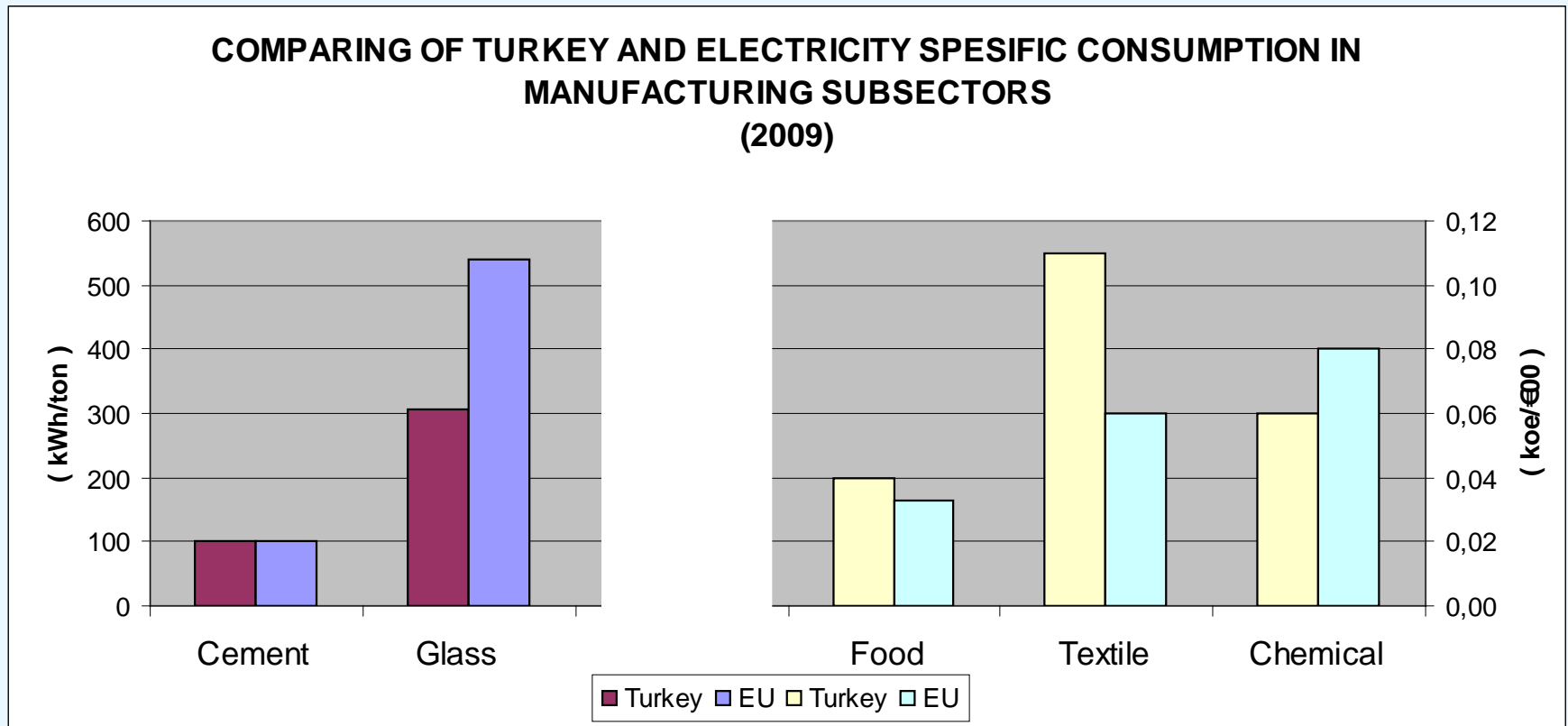


Heat Energy Saving Potential in Industrial Sub-Sectors

COMPARING OF TURKEY AND EU HEAT SPECIFIC CONSUMPTION IN MANUFACTURING SUBSECTORS (2009)



Electrical Energy Saving Potential in Industrial Sub-Sectors



Fundamental Transformation: 2007 –

- Law on EE and its secondary legislation put in to force at 2007 and 2008.
- National EE Movement has been initiated by prime minister in 2008.

Our Vision

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



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and Development Administration**

Main Purposes of The EE Law

- increasing efficiency in the use of energy resources and energy
- ensuring efficient use of energy,
- avoiding the extravagance of energy (waste),
- alleviating the burden of energy costs on the economy
- protecting the environment.

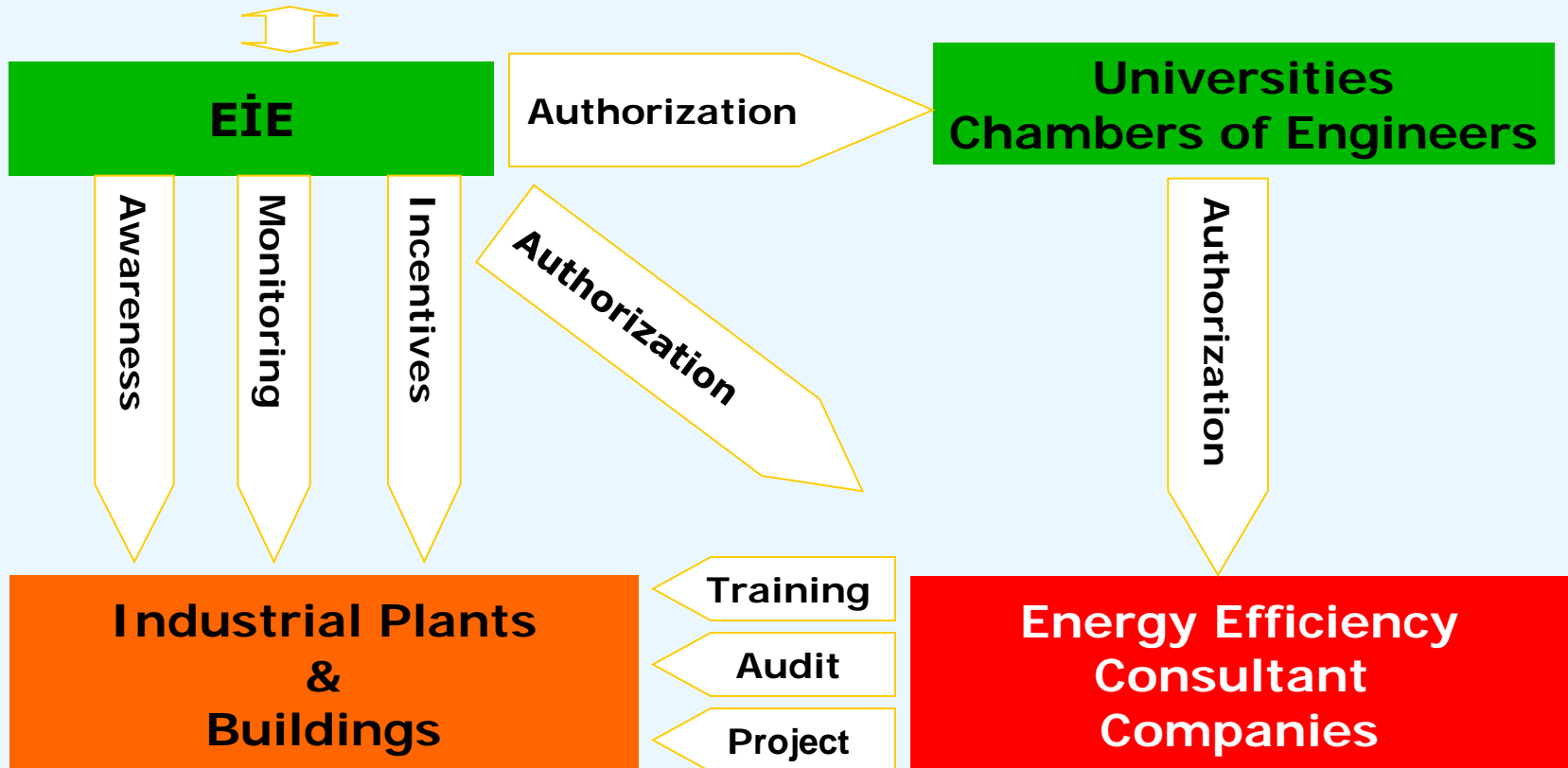
Main Measures on EE

- Energy Efficiency Services
- Energy Management
- Training & Certification
- Incentives & Supports
- Monitoring
- Awareness
- Energy Performance of Buildings
- Minimum Energy Efficiency Requirements for Energy Consuming Equipments
- On Site Power Generation (Renewable Energy, Cogeneration, Micro Cogeneration, etc)



Energy Efficiency Services

ENERGY EFFICIENCY COORDINATION BOARD (EECB)



Authorised univercities, chamber of professions and EVD companies by October 2011

- Universities
 - ✓ Gazi Univercity
- Chamber of Professions
 - ✓ Chamber of Mechanical Engineers
 - ✓ Chamber of Electrical Engineers
- 38 licensed Energy Efficiency Consultancy (EVD) Companies
 - ✓ 30 licensed EVD for building and service sectors
 - ✓ 23 licensed EVD for industry sector

Authorization Requirements for EVD companies (1)

Sector	Expertized of EVD	Key Personal		
		Expert	Certify	Total
Industry			1	1
	Iron & Steel	1	2	3
	Chemical-Petrochemical	1	2	3
	Non Mineral	1	2	3
	Paper, Pulp and Textile	1	2	3
	Food	1	2	3
	Otomotive	1	2	3
	Minimum Personal	1 – 6	3 - 13	4 – 19
Building	Residential	1	2	3
	Commercial & Service	1	2	3
	Minimum Personal	1 – 2	2 - 4	3 – 6

Authorisation Requirements for EVD companies (2)

- To have measurement equipments to measure;
 - ✓ Electricity parameters
 - ✓ Lighting
 - ✓ Flue gas
 - ✓ Heat losses
 - ✓ Steam lossess
 - ✓ Heat conductivity
 - ✓ liquid conductivity
 - ✓ Pressure
 - ✓ Temperature
 - ✓ Humidity
 - ✓ Fluid
 - ✓ Velocity
 - ✓ rpm
 - ✓ Voice & Noisy

Authorisation Requirements for EVD companies (3)

- To have training infrastructure;
 - ✓ Training plant for teorotical and practic parts of trainings,
 - ✓ Program
 - ✓ Materials
 - ✓ Traineers

Training & Certification



**Combustion Furnace
Training Unit**



**Boiler
Training Unit**



**Steam Trap
Training Unit**



**Pumping
Training Unit**



**Lighting
Training Unit**



**Fan
Training Unit**



- **Combustion Furnace**
- **Open Burners**
- **Steam Boiler**
- **Steam Traps**
- **Fan and Pump**
- **Compressed Air**
- **Lighting**
- **Companzation**
- **Cooling**

Opportunities for EVD companies

- High energy saving and investment potential
- Incentive schemes for industry
 - ✓ Project should be prepared by EVD
 - ✓ EVD services are eligible for incentive as a component of projects
 - ✓ EE services are supported for SME's
- Compulsory measures
 - ✓ Energy management
 - ✓ Energy audits
 - Regular energy saving potential assessment studies by EIE on public facilities, industrial plants and buildings
 - Large scale industrial plants and buildings

Energy Management

In line with ISO 50001 Energy Management Systems – Requirement With Guidance For Use

- Energy policy
- Energy planning
- Training & Awareness
- Monitoring & Measurement,
- Audit
- Reporting
- Management review
- Alternative senario for natural gas and petroleum
- Reducton potential for CO₂ emissions

Key Person for Energy Management

Certified Energy Managers

	Energy Manager	Energy Management Unit
Industry	✓ (≥ 1.000 TOE)	✓ (≥ 50.000 TOE)
Organized Industrial Zones		✓
Public Buildings	✓ (≥ 10.000 m ² or ≥ 250 TOE)	
Commercial and Service Buildings	✓ (≥ 20.000 m ² or ≥ 500 TOE)	

Incentive Schemes for Industry

Energy efficiency projects for industry

- Applications January
- Maximum pay-back period 5 years,
- Maximum investment 1.00.000 TL
- Maximum incentive %30 of investment
300.000 TL

- Project components
 - ✓ Rehabilitation of existing system
 - ✓ On site power generation (Co-generetion, micro co-generation and, renewable)
 - ✓ Energy efficiency services by EVD which expertized in sub-sector

By 1/1/2014, to get incentive it is necessary to have ISO 50001.

Incentive Schemes for Industry Energy Efficiency Services for SME's

- Certification of energy managers (Training fees)
- Pre-audits & Audits
- Consultancy

Progress on Incentive Schemes for Industry

- Energy efficiency projects for industry
 - ✓ 32 of energy efficiency projects to improve EE at existing plant for 25 industrial plants
 - ✓ 20 projects have been implemented

- Voluntary agreements for industry
 - ✓ 22 voluntary agreements with 22 industrial establishments so as to reduce their energy intensity.

International Projects for Industry

- Near Zero Zone Project
- Project on Improving EE in industry in cooperation with GEF, UNDP, UNIDO and national institutions
 - ✓ To strengthen infrastructure for implementation of legislation
 - ✓ To set up energy management systems
 - ✓ To determine of energy saving potential
- Project on establishment of monitoring tools in cooperation with NL Agency
- Pilot projects to improve EE of dying process in textile sector in cooperation with The Netherlands

Monitoring

Industrial plants and buildings which should build up energy management system in their facilities are monitored by EIE.

Awareness

- Energy Efficiency Week (Second Week of January)
 - ✓ National EE Forum Every Year
- National EE Movement
- Action plans by provinces
- Joint actions and cooperation
- Contests, seminars, symposium, conferences etc. Energy



Future Plan

- Energy Efficiency Strategy Paper: 2011 – 2023 has been prepared to;
 - ✓ To give impulse to energy efficiency activities via close cooperation between public, private and civil sectors;
 - ✓ To get future planning as a road map and relevant targets with the consensus of all stakeholders.
 - ✓ To ensure public and private sector mobilisation with a participatory approach and cooperative framework,
 - ✓ To determine a set of result-oriented policies which are reinforced by concrete targets,
 - ✓ To identify the necessary measures to reach these targets and to determine duties and responsibilities of the institutions through the process.

- The Paper is about to approval by Higher Planning Council.

- The paper will be revised and updated in every two years by EECB.

Overall Target is to reduce energy intensity of Turkey %20 by 2023.

- by reducing energy intensity and energy losses in the industry and services sectors,
- by decreasing energy demand and carbon emissions of the buildings having low energy efficiency and to promote sustainable and environment friendly buildings using renewable energy sources,
- by providing market transformation of energy efficient products,
- by increasing efficiency in power generation, transmission and distribution of electricity; to decrease energy losses and harmful environment emissions,
- by reducing fossil fuel consumption of motorized vehicles, to increase share of public transportation in highway, sea road and railroad and to prevent unnecessary fuel consumption in urban transportation,
- by increasing energy efficiency in public sector,
- by strengthening of institutional capacities and collaborations; to increase use of state of the art technology and awareness activities and to develop sustainable financing mechanisms.

Conclusion

- High energy saving potentials.
- Attractive opportunities for the foreign investors for local cooperations.
- Government side open for any kind of cooperations
 - ✓ Our Priorities
 - To develop on the job training for engineers of authorized Energy Efficiency Consultancy (EVD) Companies and EIE
 - To develop corporation between Turkish EVD Companies and foreign ESCO's
 - To develop Energy Performance Contracting (EPC)
 - To develop and implement pilot project
 - To rehabilitate public buildings
 - To develop sustainable mechanisms on finance (carbon trade etc)

THANK YOU

Erdal ALIKOĐLU
Deputy of General Director

ecalikoglu@eie.gov.tr

Tel: + 90 312 295 50 20

Faks: +90 312 295 50 34

www.eie.gov.tr



**General Directorate of Electrical Power Resources, Survey
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