



ENERGY EFFICIENCY INDICATORS and METRICS IN TURKEY

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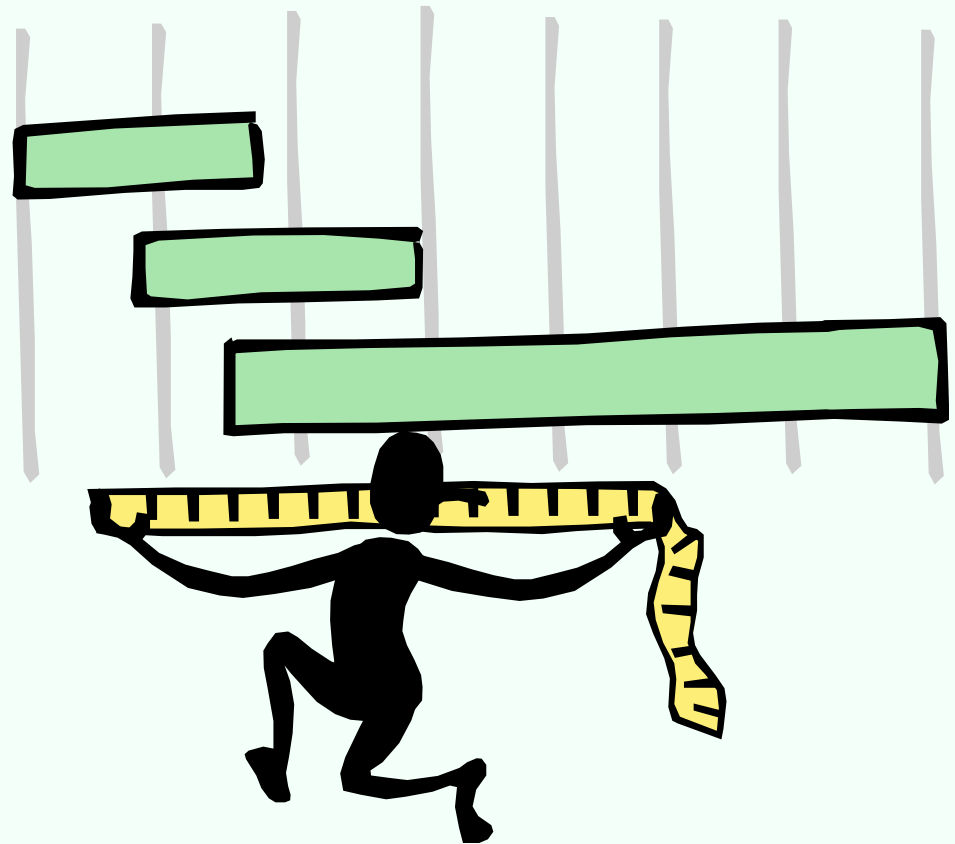
**International Roundtable on Energy Efficiency Metrics and National Energy Efficiency
Assessment in Developing Countries
The World Bank - Washington DC - USA
June 3, 2010**



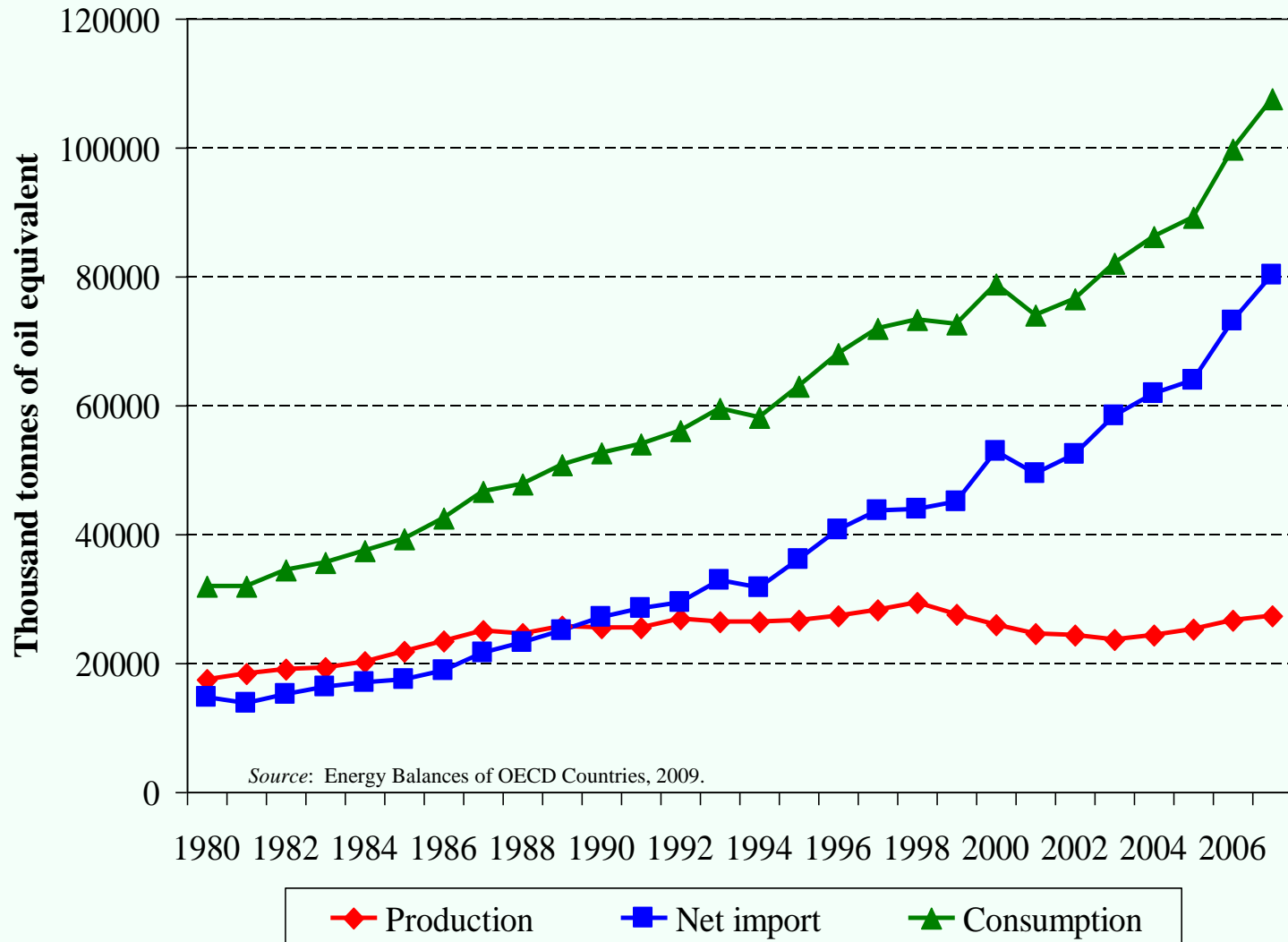
**General Directorate of Electrical Power Resources, Survey
and Development Administration**

Context

- Overview of Energy Utilization in Turkey
- Data Base for Indicators
- Indicators
 - ✓ Specific Energy Consumption
 - ✓ Energy Efficiency Index
 - ✓ Energy Intensity
- Difficulties
 - ✓ Industry
 - ✓ Building & Service
 - ✓ Transporta
- Future Plans



Energy Utilisation



Energy consumption data have been gathering in the scope of Energy Efficiency Law (Official Gazette: 2 May 2007, no: 26510)

- Industrial establishments with annual energy consumption at 1000 TOE
- Commercial buildings and service buildings with at least 20.000m² of construction area or with annual energy consumption at 500 TOE
- Public sector buildings with at least 10.000m² of construction area or with annual energy consumption at 250 TOE
- Electricity generation facilities with installed power capacity of 100 MW

Database

- Annual energy consumption of industry, building and service sectors and also sub-sectors

Indicators

- Specific energy consumption in cement and Iron and steel industry
- Energy Efficiency Index for industry, building and transport
- Energy Intensity for General, energy intensive sectors and plant bases in industry

Energy Efficiency Database

The screenshot shows the Energy Efficiency Portal website in Microsoft Internet Explorer. The page title is "ENVER Tüketim Bildirim Formu". The main content area is titled "KARŞI YÜKÜMLÜLÜK" and contains the following text:

Bu bildirim 18/04/2007 tarih ve 5627 Sayılı Enerji Verimliliği Kanunu'nun Geçici 3 ncu Maddesi ve 7 nci maddesi kapsamındaki uygulamaları gerçekleştirmek üzere gereğince yapılmakta olup bilgilerin verilmesi veya doğru olarak ve gerektiği şekilde verilmesi halinde söz konusu kanun hükümlerini gereğince idari yaptırımlar uygulanır.

E.İ.E. idaresi, sağladığı bilgilerden gerçek ve tüzel kişilerin bozari işlerine zarar verecek bilgi ve belgelerin gizliğine riayet eder.

Ind. Invest. Buildings: Endüstriyel İşletme
Bildirim Yılı: 2007

Endüstriyel İşletme Bilgileri

Province/District	KARABÜK	KARABÜK
Abbr / Name	Saka Demir Çelik San. Tic. A.Ş.	
Registration No.	780075	
Estab. Year	1989	
Sector Code	24.10 Ana demir ve çelik ürünleri ile demir alaşımları imalatı	
Province / Tax Office	KARABÜK	KARABÜK
Tax Number	7390044391	
# of Employee	119	

BİLDİRİM FORMUNA CEVAP VERİRKEN DİKKAT EDİLECEK HUSUSLAR:

***FABRİKA YÖNETİCİSİ** : Tüzel kişilik adına hareket eden üst düzey yetkili kişi,
***MERKEZ** : İşyerinin bağlı bulunduğu şirket veya holdingi ifade eder.

Energy Efficiency Portal was established in 2007

- Data collection, storage, analysis and reporting
- Current and reliable data base with flexible reporting capabilities
- Increasing efficiency of monitoring and supervision studies and improving the public's knowledge and awareness levels
- 2004, 2005 and 2006 energy consumption data of industrial establishments was entered into the Portal and 905 industrial establishments (1000 TOE and above) are monitored.

Energy Efficiency Database

Energy Consumption of Manufacturing Industry (TOE)			
SECTORS	2004	2005	2006
Food, beverages and tobacco	1.139.433	1.175.848	1.220.441
Textiles, clothing and leather	1.407.160	1.433.917	1.568.346
Forest products and furniture	155.990	184.259	266.807
Paper, paper products and printing	411.638	370.445	413.981
Coke and refined products	2.130.174	2.237.364	2.242.987
Chemicals	517.934	540.067	548.094
Rubber and plastic	168.700	210.014	229.938
Non metallic minerals	3.958.018	4.528.754	4.920.694
Basic metals	4.918.483	5.042.862	5.820.018
Machinery and equipment goods	277.071	289.371	341.295
Transport equipment	245.357	271.175	307.554
Manufacturing Total	15,052,889	15,994,705	17,538,859

Energy Efficiency Database

In 2004

- In terms of total energy consumption, the manufacturing sector represents **55%** of the total energy consumption of sector

In 2005-2006

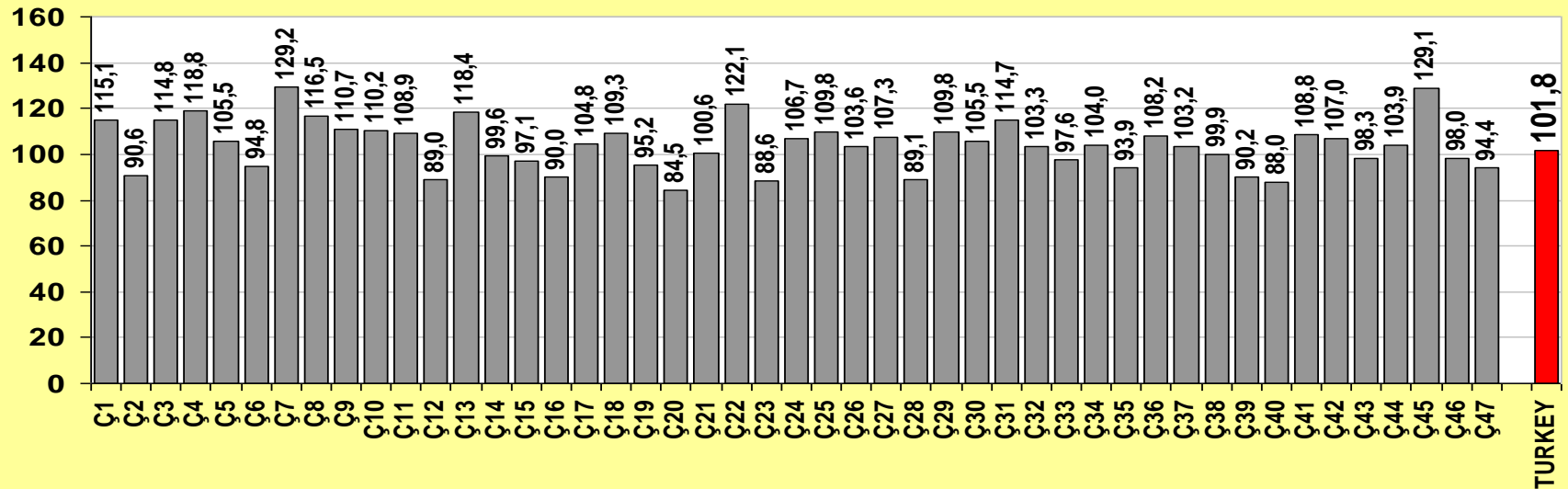
- It represents **58%** of the total energy consumption



Benchmarking Studies

Cement - 2009

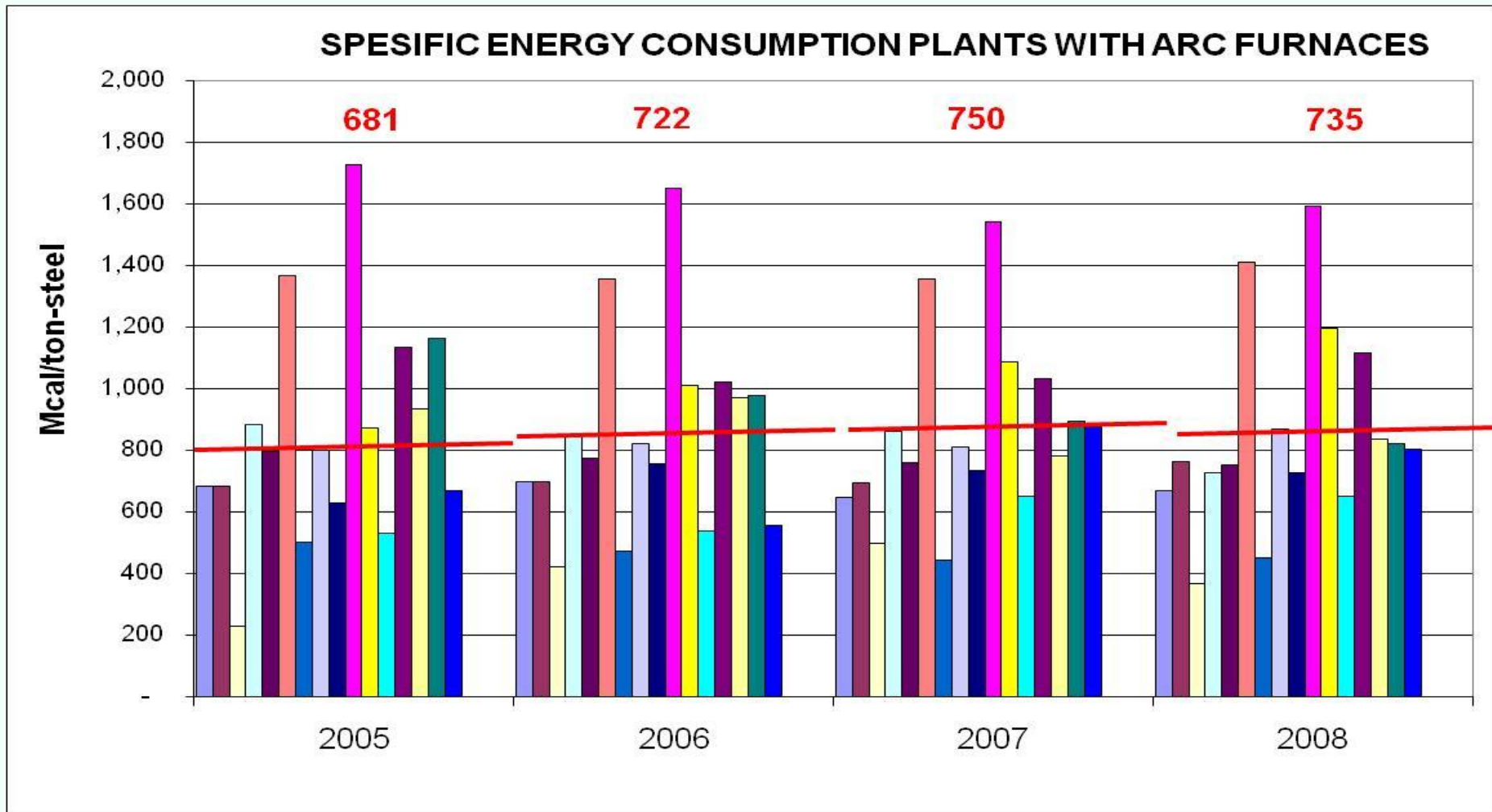
Cement Specific Energy Consumption (kWh/Ton.Clinker+Cement)



- 48 integrated and 16 grind plants operate in the sector in 2009.
 - Total clinker capacity is 62,523,326 tons
 - Cement capacity is 103,533,903 tons

Benchmarking Studies

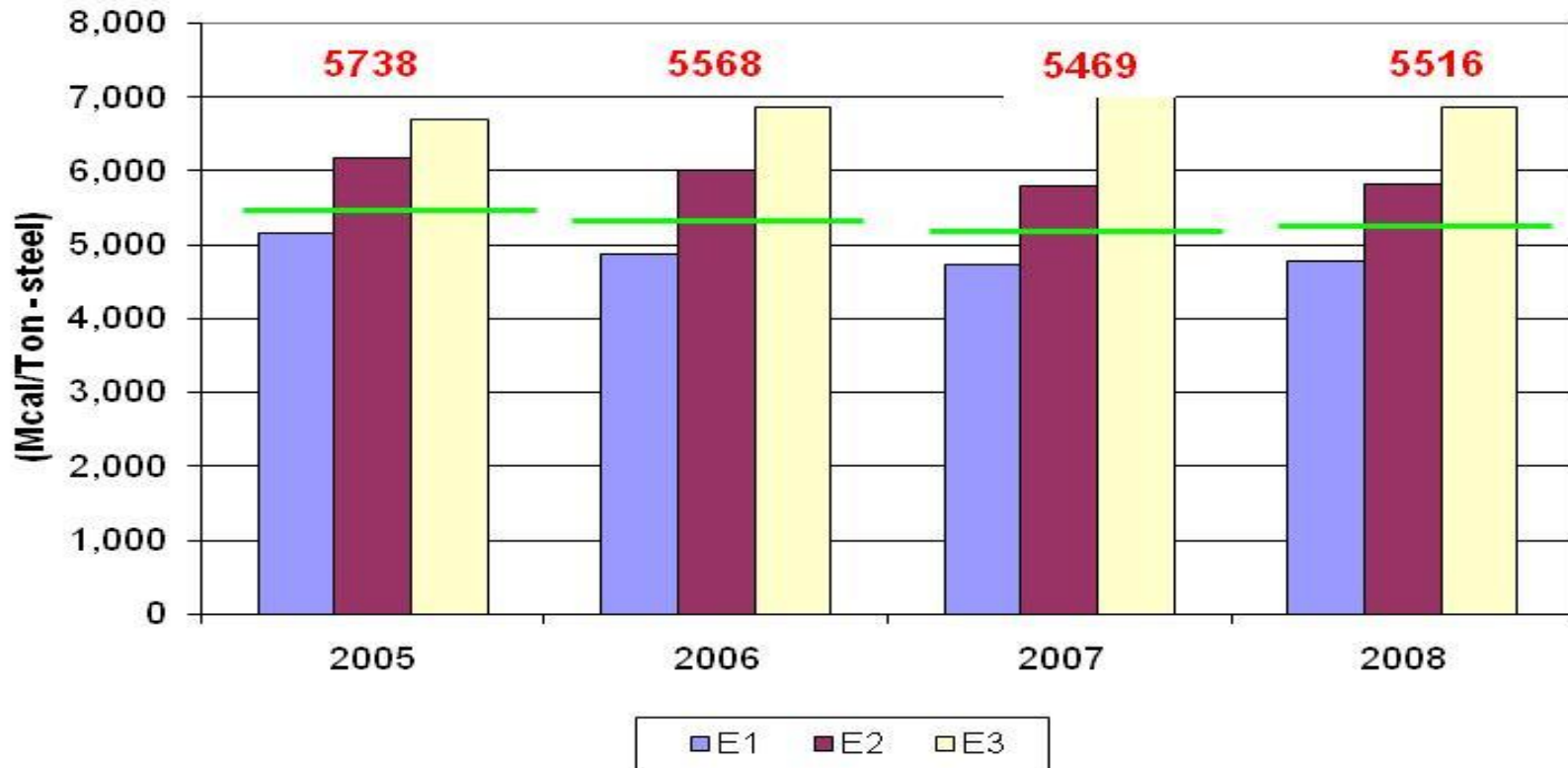
Iron and Steel



Benchmarking Studies

Iron and Steel

**SPECIFIC ENERGY CONSUMPTION
PLANTS WITH INTEGRATED**



Energy Audits

INDUSTRY

- ✓ Iron & Steel
- ✓ Non Ferrous
- ✓ Food
- ✓ Textile
- ✓ Pulp & Paper
- ✓ Chemistry
- ✓ Other (Machinery, household etc)

BUILDING

- ✓ Public building
- ✓ Residential
- ✓ Commercial building

Energy Efficiency Index

1990-2004

SECTORS	1990	2004	Improvement (%)	Energy Saving (1000 TOE)
Industry	100	94.8	5.2	932.8
Transport	100	65.8	34.2	7,114.7
Building	100	77.2	22.8	4,497.8
TOTAL / AVAREGE	100	79.6	20.4	12,545.3

Difficulties

Gathering of energy consumption data from sectors and sub-sectors

INDUSTRY

- No official data on value added at constant prices for sub-sector
- Some production indexes not available according to NACE standard in sub-sectors have been combined
- Energy consumption data collected by various institutions (MENR, TURKSTAT and EIE) is inconsistency
- Energy consumption data does not cover whole industry; only industrial establishment with annual energy consumption at 1000 TOE and more

Difficulties (2)

HOUSEHOLDS

- There is no energy consumption data according to households and services separately.
- Data not available for;
 - Number of large appliances (refrigerators, washing machines,...) per year
 - Number of households per year
 - Number of dwellings with electric water heaters
 - Fuel consumption used for cooking
 - Average specific consumption per dwelling per year for apartments and houses
- Sales of refrigerator by label class A only available for one year

Difficulties (3)

TRANSPORT

- Stock of cars by motor fuels (petrol, diesel, LPG) only available for some years
- Specific energy consumption of vehicles not available
- Average annual distance travelled by modes not available

Future Plan

- **Survey Studies**

- ✓ Benchmarking
- ✓ Audit

- **Developing of Measurement and Evaluation System**

By creating current and reliable data base in the field of energy efficiency;

- ✓ to make comparison in energy efficiency developments with the previous year and other countries
- ✓ to develop performance indicators and projections based on possible scenarios
- ✓ to make impact analysis in the preparation of legislation
- ✓ to inform all stakeholders

THANK YOU FOR YOUR ATTENTION

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