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Demand Side Management in Energy Policies

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Overview

- About the Division
- Turkey's situation – Brief overview
- Ways to achieve DSM
- An example framework for Policy Design


Electricity Demand-Side Management for an Energy Efficient Future in China:
Technology Options and Policy Priorities by C.C.Cheng (PhD. Thesis MIT ,
September 2005)



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Current Studies

- **Energy Scenarios Study**
(with World Energy Council – Turkey)
- **Integration of Sustainable Development Principles to Energy Sector Policies**
(UNDP & SPO)
- **Adaptation of World Energy Model to Turkey**
(IEA & 3rd Party Supporters)



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Spatial Studies

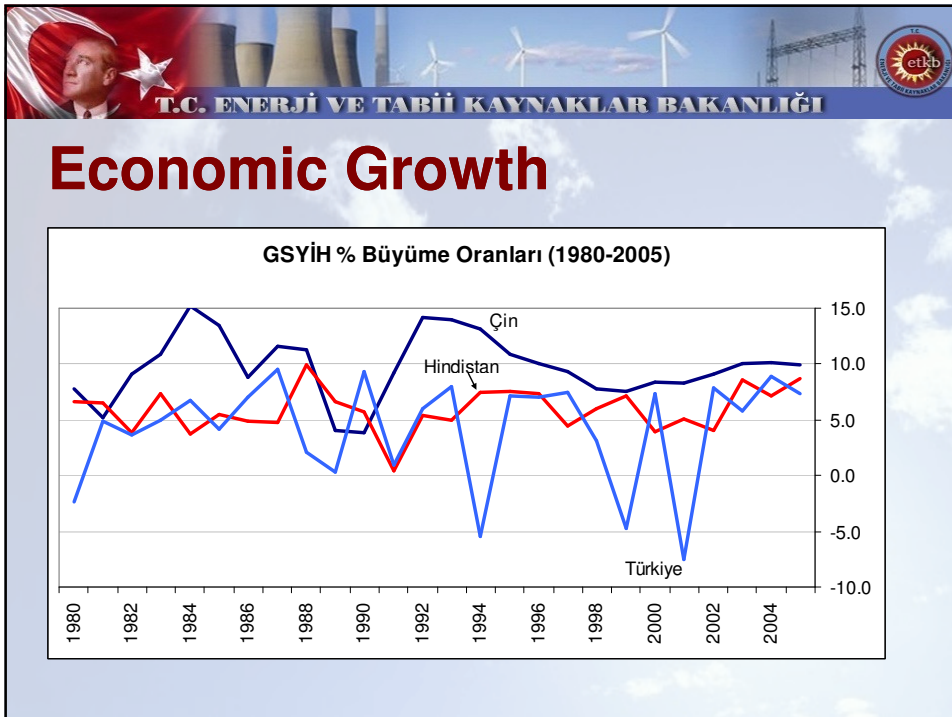
- Hydroelectricity irregularities
- Reserve margins
- Utilization monitoring (Macro level)
- Energy Security
- International Affairs Related Issues

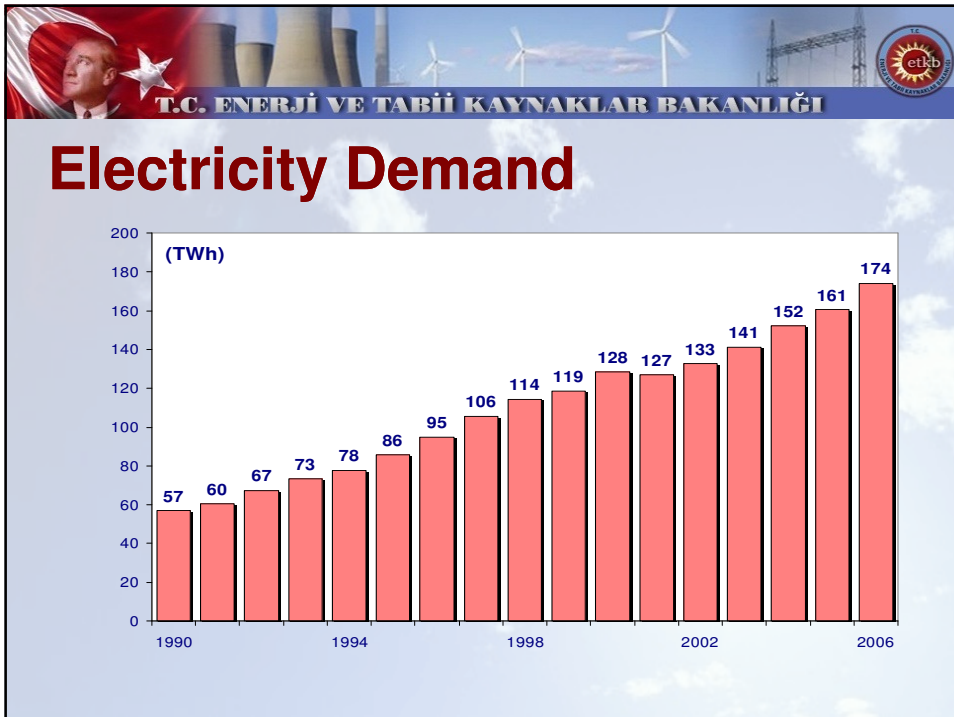
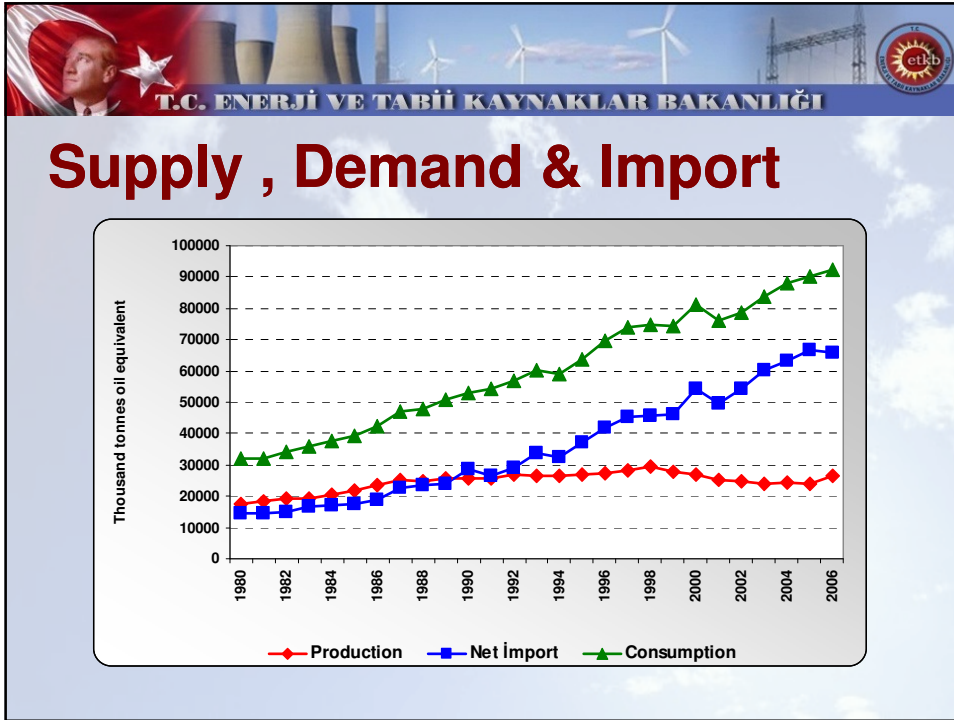
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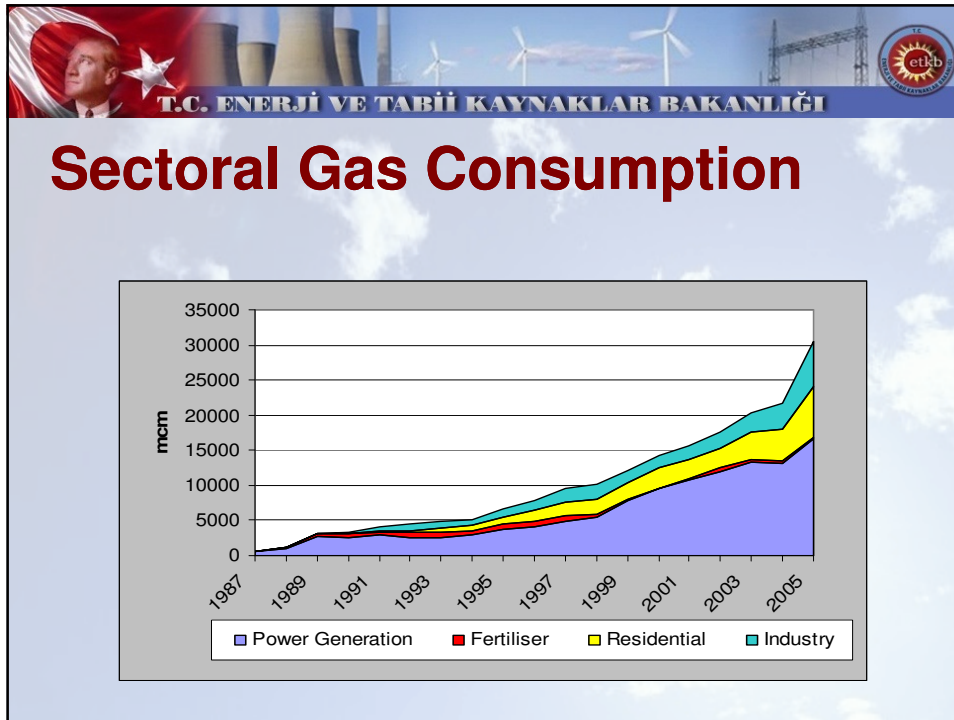
Turkey's situation

Chances & Troubles:

- Rapid economic growth
- Matching demand growth in electricity (Second after China)
- OECD country
- EU Membership Candidacy








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DSM-How?

1. Change quantity
Ex: Efficiency
2. Change pattern
Ex: Load shaping




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1. Change in Quantity(e.g. Efficiency)

Tools:


- Standards
 - Cars , Buildings, Industry
- Incentives (Price effects)
 - Tax
 - Subsidies
 - Tariffs
- Information
 - Labelling , education



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1.1 Standards

- Probably the most effective
- Should be revised constantly
- Penetration rate of the new standards



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1.2 Incentives

- **Tax**
In Turkey, this is a more popular tool, because of increasing consumer spending and inflationary pressures
- **Subsidies**
No tax credits

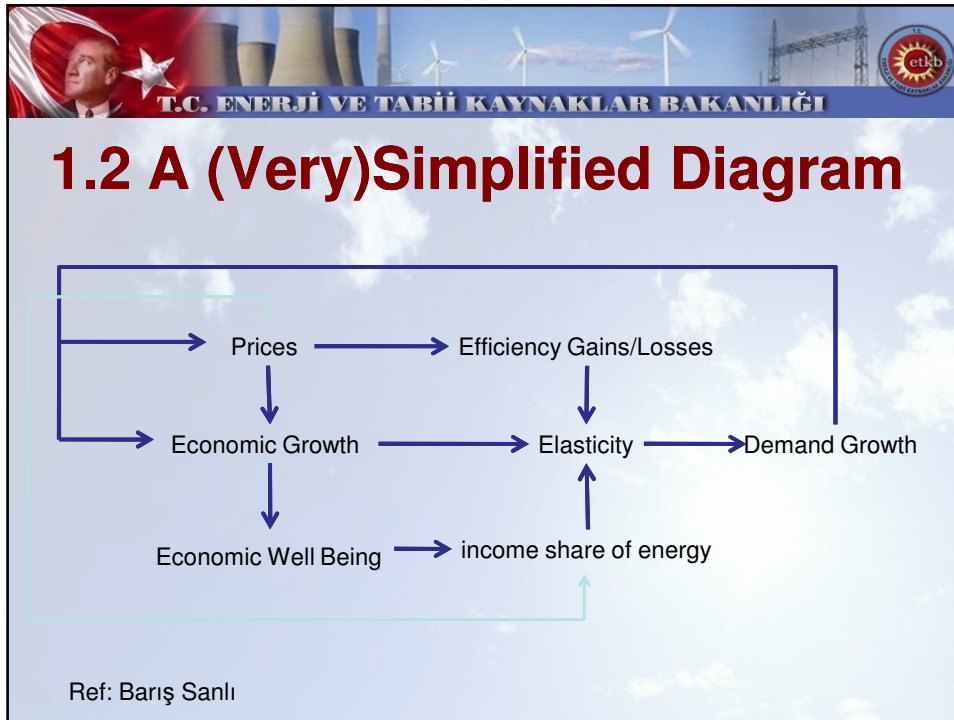


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1.2 Prices & Efficiency

Higher Prices:
Better Efficiency
Dampened Economic Growth

Lower Prices:
Better Economic Growth
Dampened Efficiency gains




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1.3 Information

- Labelling
- Campaigns


! Consider awareness-action gap !



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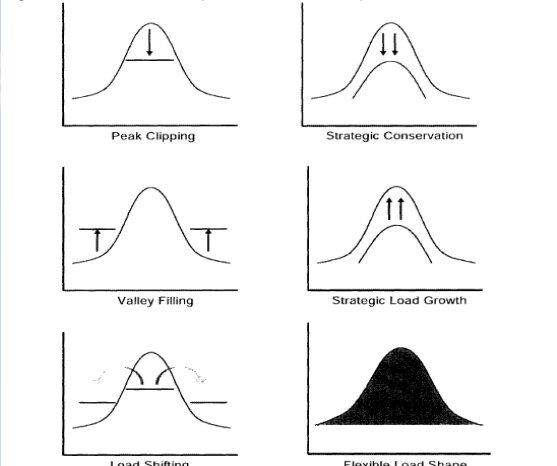
2. Change Pattern

1. Time pattern
2. Magnitude
(This may not mean a total reduction in consumption)



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2. Time Pattern & Magnitude



Peak Clipping

Strategic Conservation


Valley Filling

Strategic Load Growth

Load Shifting

Flexible Load Shape

Source: Gellings & Chamberlin, 1993, 2nd ed., EPRI, 1986



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DSM in Energy Policies

- **Main Questions**
 - What are the main demand side factors that drive the growth?
 - What are the effective DSM technology and policy approaches to reduce demand and change load shape while not harming economic growth?

Ref: Electricity Demand-Side Management for an Energy Efficient Future in China: Technology Options and Policy Priorities by C.C.Cheng (PhD. Thesis MIT , September 2005)




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Two Possibilities

- Technological and behavioral factors from the end-users side that determine quantity and time associated patterns of demand
- Technological and policy oriented demand-side management measures that can reduce demand, improve efficiency and environmental conditions


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Integrated Framework

1. Problem Definition
2. End-use load simulation & Scenario Analysis
3. DSM Policy Formulation
4. DSM Policy Feasibility Analysis


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1. Problem Definition

- Energy consumption structure & characteristic
- DSM options (Technological & Behavior Changes) →
- Energy Supply Systems & Market Conditions
- DSM Experiences of Other Countries

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2. End-use Load Simulation & Scenario Analysis

- Scenario Formulation
 - Energy Efficient Technologies
 - Sectoral End-Uses
 - Environmental Performance & Fuel Consumption
- Uncertainty Analysis

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Integrated Scenario Analysis →

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3. DSM Policy Formulation

- Socio-Economic Structure & Problems
- Identification of Robust DSM Options
- Current Technological & Institutional Capacity
- Environmental Conditions & Problems

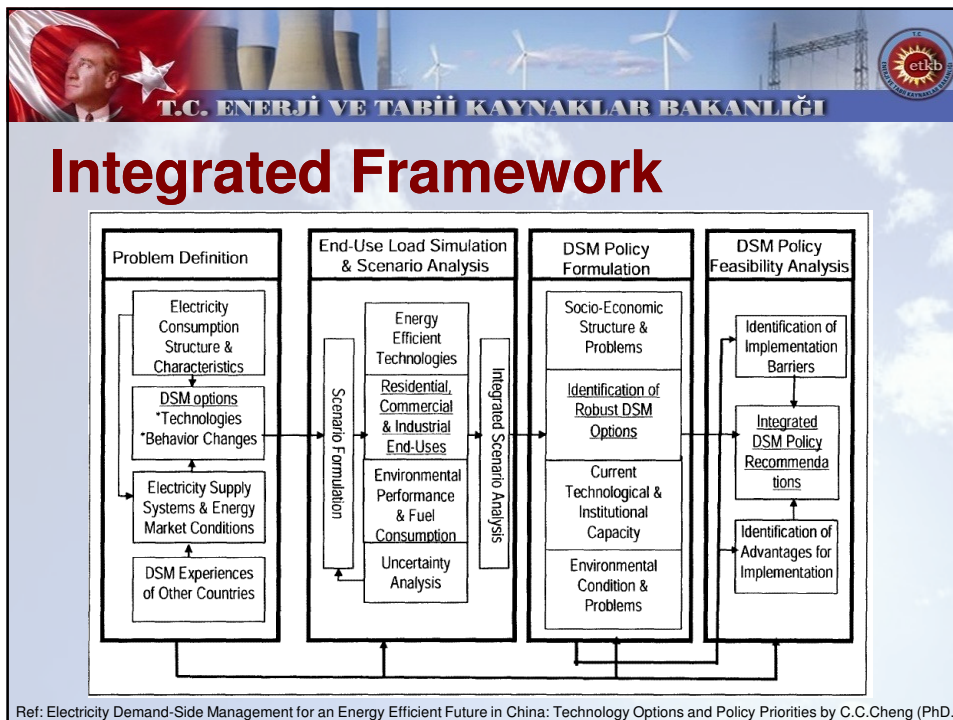
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4. DSM Policy Feasibility Analysis

- Identification of Implementation Barriers
- Integrated DSM Policy Recommendations
- Identification of Advantages for Implementation

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Thank You

- Questions

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DSM and Energy Sources

- Natural Gas
 - Appliances (Condensed Heaters)
- Oil
 - Transportation (Car standards)
- Electricity
 - Tariffs, Appliances



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DSM and Sectors (Currently)

- Residential & Commercial
Buildings, appliances (promoting technological change)
- Industrial
Technological change and tariffs