

# **TURKEY CTF INVESTMENT PLAN UPDATE AND ACTIVATION OF STAGE II**

**CTF TRUST FUND COMMITTEE MEETING  
NOVEMBER 3, 2012  
İSTANBUL**

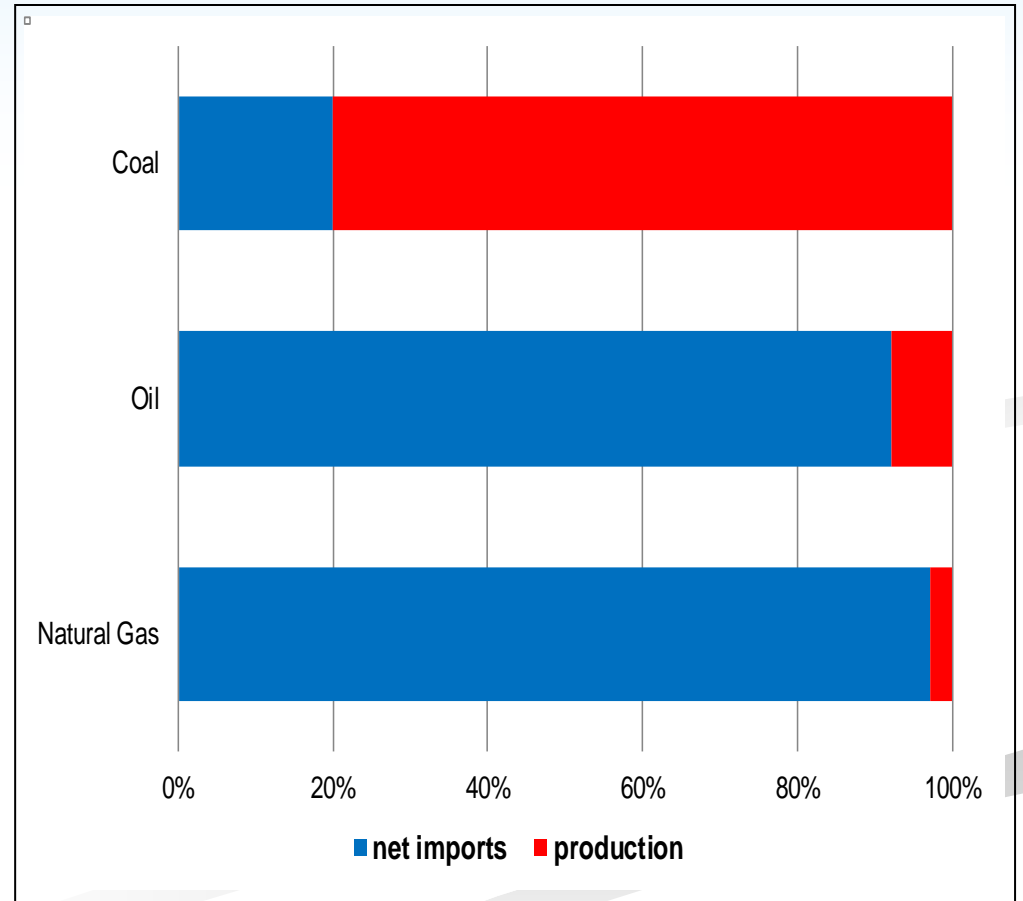
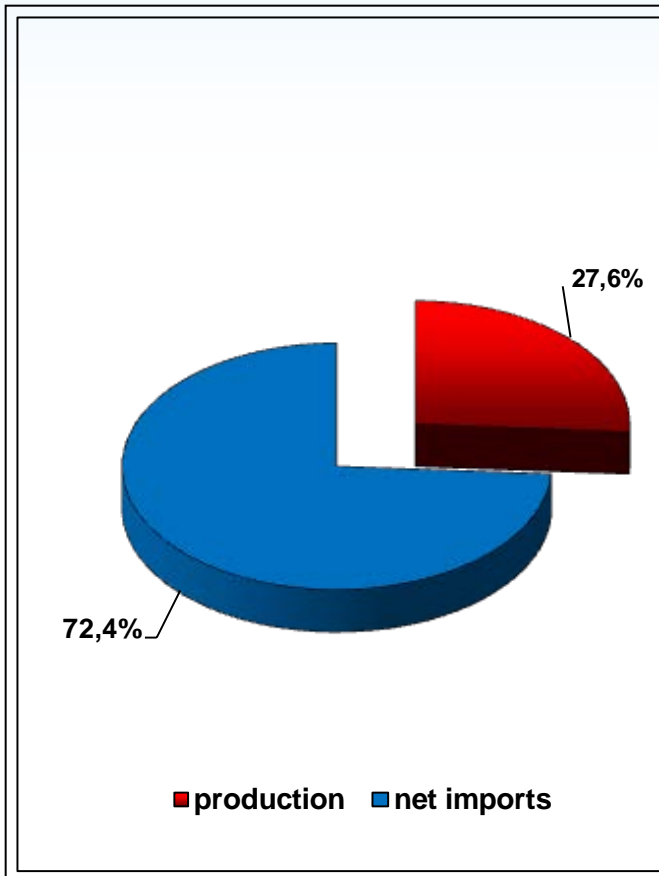
# Key Legislations

- The General Structure Of The Regulatory And Legislative Framework Pertaining To Renewable Energy In Turkey
  - Renewable Energy Law: Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity (2005); amendment was made in Dec. 2010
- **Energy Efficiency Law (2007)**

# Import Dependency

## Relative Insufficiency of Proven Indigenous Resources

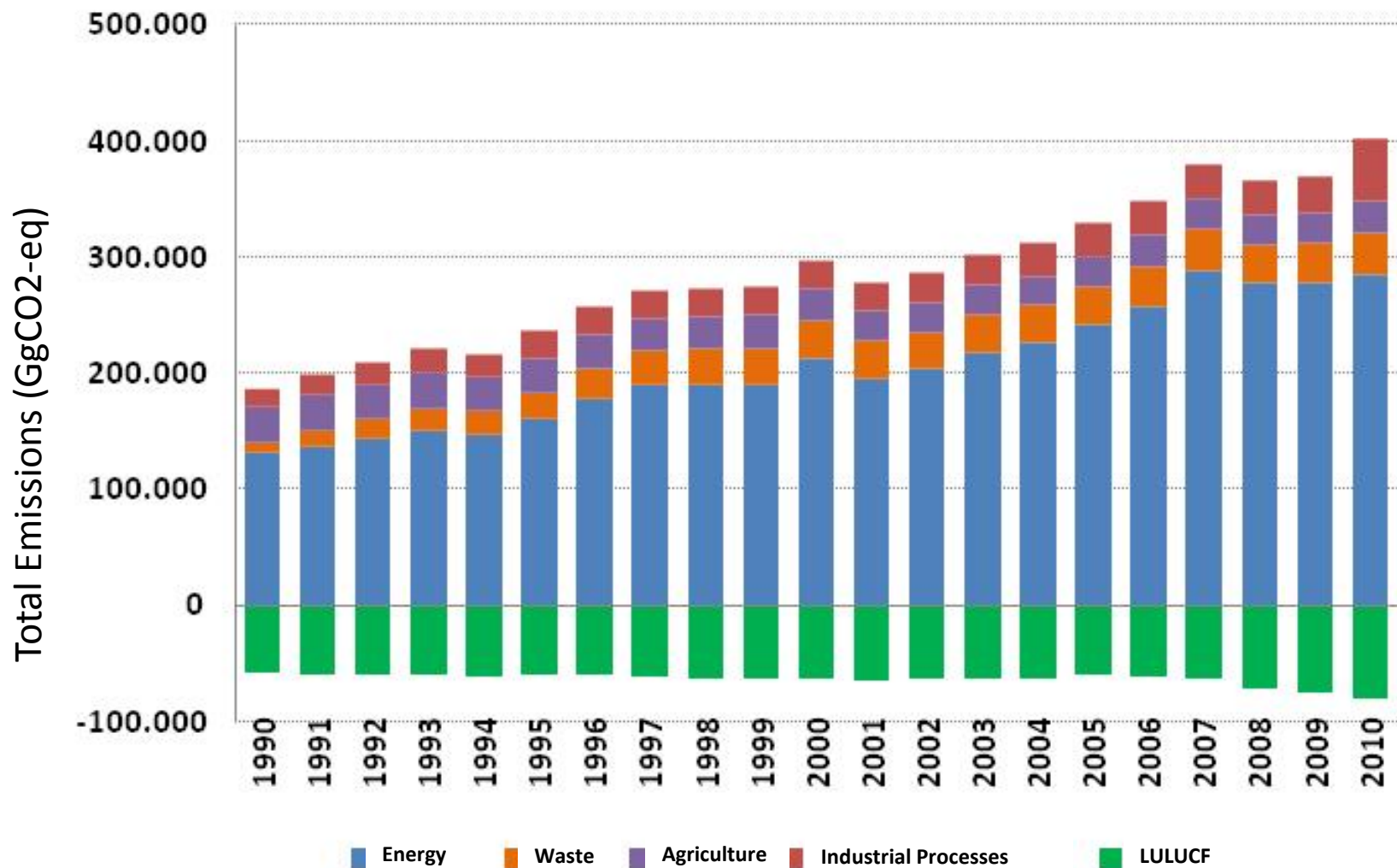
### Primary Energy Supply



Figures are for year 2010.

# Turkey's Greenhouse Gas Emissions Inventory

## Greenhouse Gas Emissions by Sector



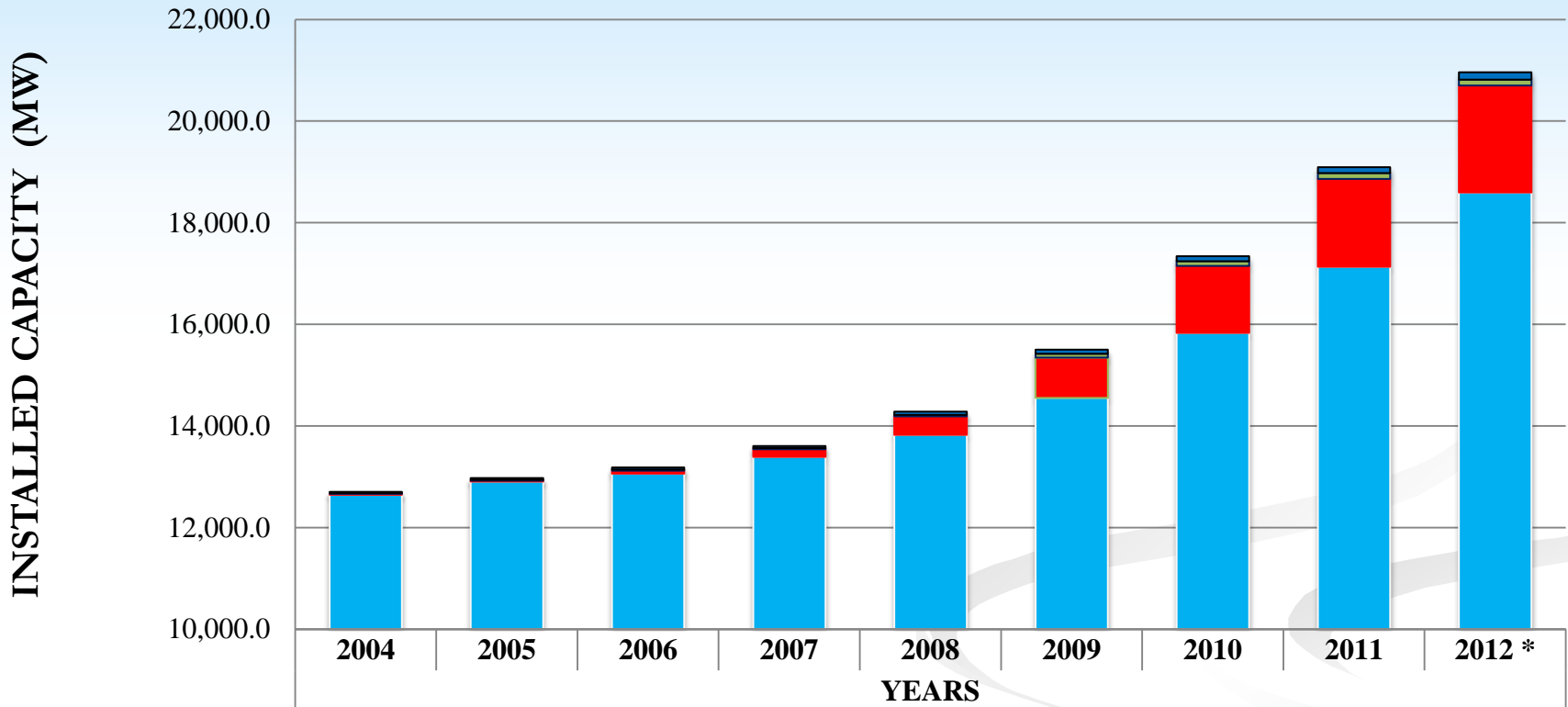
# Resource Potentials

<b>Hydro</b>	<b>Billion kWh/year</b>	<b>135</b>
<b>Wind</b>	<b>Potantial (MW)</b>	<b>48.000</b>
	<b>2023 Target (MW)</b>	<b>20.000</b>
	<b>Under operation (MW) (April 2012)</b>	<b>1.876</b>
	<b>Production (2011)</b>	<b>52338,6 GWh</b>
<b>Geothermal</b>	<b>MWt/year</b>	<b>31.500</b>
	<b>MWe generation</b>	<b>1650</b>
	<b>MW in operation</b>	<b>114</b>
	<b>MW under const</b>	<b>120</b>
<b>Biomass</b>	<b>MTOE/year</b>	<b>8</b>
	<b>MW operational</b>	<b>115</b>
<b>Solar</b>	<b>MTOE/year</b>	<b>35</b>
	<b>Billion kWh/y tehcnically</b>	<b>380</b>

# Main Priorities of Turkish Energy Policy...

- Meet the energy demand by means of indigenous resources as much as possible;
- Diversify energy services, particularly encouraging harnessing of renewable resources in electricity production, and in other alternative areas;
- Increase efficiency in all segments of energy chain both in supply side and demand side;
- Encourage and intensify Research & Development in energy technologies such as hydrogen technologies;
- Liberalize the energy sector to increase productivity and efficiency, to create a competitive energy market, and provide transparency

## RENEWABLE ENERGY



<b>OTHER + WASTE</b>	27.6	35.3	41.3	42.7	59.7	81.5	96.9	115.4	147.1
<b>GEOTHERMAL</b>	15.0	15.0	23.0	23.0	29.8	77.2	94.2	114.2	114.2
<b>WIND</b>	18.9	20.1	59.0	146.3	363.7	791.6	1,320.2	1,728.7	2,105.9
<b>HYDRAULIC</b>	12,645.4	12,906.0	13,062.7	13,394.8	13,828.7	14,553.4	15,831.2	17,137.1	18,595.9

\*September 2012

# Paving the way for a Sustainable Energy Future (an Effective Way: Feed-in-Tariff)

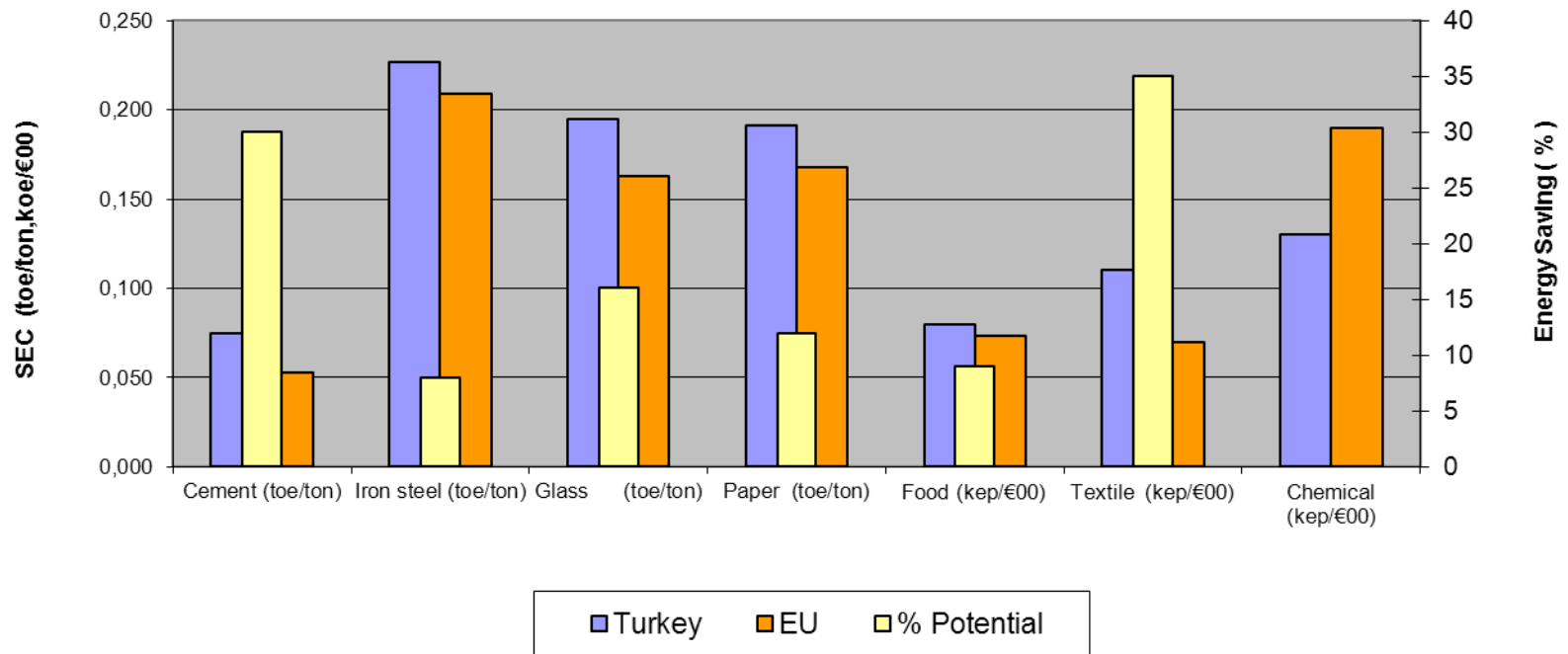
- The Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity (Amendment –Dec.2010)
- Purchasing guarantee of a defined price has been given to the electricity generated from renewables for 10 years after the plant is commissioned; the purchase guarantee is a price that Turkish Lira corresponding;

7.3 USDolarCent/kWh	Hydro
7.3 USDolarCent/kWh	Wind
10.5 USDolarCent/kWh	Geothermal
13.3 USDolarCent/kWh	Solar
13.3 USDolarCent/kWh	Biomass



# Energy Saving Potential

**ENERGY SAVING POTENTIAL OF HEAT  
IN SUB-SECTORS IN INDUSTRY  
(2009)**



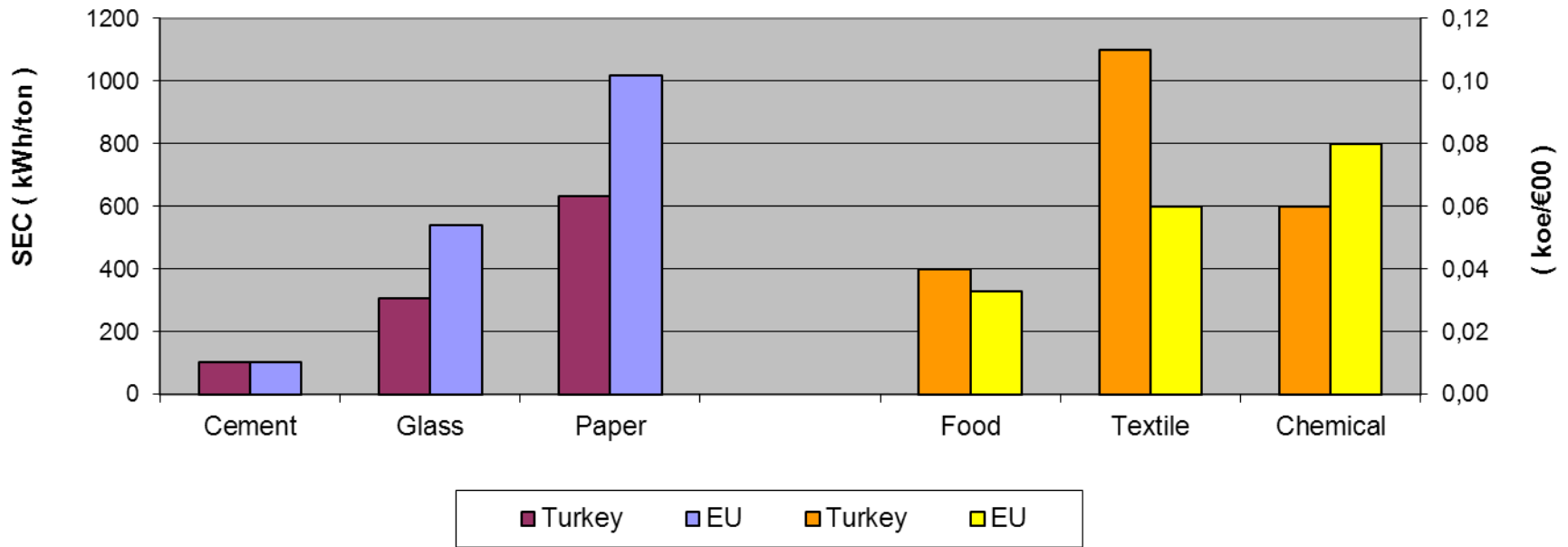
**Cement 30 %** (increasing with additives rate), **Iron-steel 8%**, **Glass 16%**, **paper 12%**, **Food 9%** and **Textile 35%**

Sources: GDRE, ENERDATA

*Republic of Turkey*

# Energy Saving Potential

**ENERGY SAVING POTENTIAL OF ELECTRICITY  
IN SUB-SECTORS IN INDUSTRY  
(2009)**



**Food 17%, Textile 44% and Cement 0.4%**

# Role of CTF

- Energy identified as the key sector for CTF Investment Plan of Turkey
- Two main pillars identified for CTF support to tackle with dual challenges
  - Renewable Energy
  - Energy Efficiency

# CTF INVESTMENT PLAN FOR TURKEY

Approved on January 29, 2009

Project \ Financing Source	Turkey	World Bank	IFC/EBRD	CTF	Total Cost
<b>STAGE I</b>					
RE/EE2 (Stage I)	530	500	-	100	1,130
IFC/EBRD RE/EE (Stage I)	170	-	250	100	520
TEIAS Transmission incl. SmartGrid for CTF	100	300	-	50	450
<b>Total (Stage I)</b>	<b>800</b>	<b>800</b>	<b>250</b>	<b>250</b>	<b>2,100</b>
<b>STAGE II</b>					
RE/EE2 (Stage II)	320	300	-	30	650
IFC/EBRD RE/EE (Stage II)	130	-	150	20	300
SME & Public Sector RE/EE	300	400	-	100	800
<b>Total (Stage II)</b>	<b>750</b>	<b>700</b>	<b>150</b>	<b>150</b>	<b>1,750</b>
<b>Total CTF Program</b>	<b>1,550</b>	<b>1,500</b>	<b>400</b>	<b>400</b>	<b>3,850</b>

# CTF Investment Plan Stage I Achievements

- CTF Stage I has outperformed expectations despite delays in project approvals
  - 3 out of 5 projects (172 million Dollars in total) were approved and disbursed.

Target	IP Stage 1 Planned	IP Stage 1 Disbursed*	Difference
Total Investment (\$ million)	2,100	2,154	+54
CTF Investment (\$ million)	250	172	-78
Co-Finance (\$ million)	1,850	1,982	+132
CTF Leverage (invested \$/CTF \$)	8.2	10.8	31%
GHG Savings (million tonnes of CO2e/yr)	3.2	4	+25.0

\*as of end October

**Republic of Turkey**

# CTF Investment Plan Stage I

## Projects to be Approved

- 2 projects (78 million Dollars in total) are to be approved.
  - IBRD - TEIAS Smart Grid Project
  - IFC Private Renewable Energy and Energy Efficiency

# CTF Investment Plan Stage II

- Building on encouraging results of Stage I
- There are barriers to be addressed:
  - High transaction costs
  - Underdeveloped energy services sector
  - Lack of awareness

# Turkey CTF Investment Plan Stage II

## Indicative Financing

### Stage II Indicative financing (US\$ million)

Financing Source	IFC CSEF II	EBRD RE/EE (TurSEFF II, ResiSEFF MunSEFF)	World Bank SME Energy Efficiency	Total
<b>CTF</b>	20	70	50	140
<b>World Bank</b>			200	200
<b>IFC</b>	80-100			80-100
<b>EBRD</b>		250		250
<b>Turkey</b>		175	45	220
<b>Others</b>	80	5	11	96
<b>Total</b>	<b>180-200</b>	<b>500</b>	<b>307</b>	<b>987-1007</b>



# Turkey CTF Investment Plan Stage II

- In Stage II focus will be on:
  - Less conventional renewable technologies
  - EE beyond large industrial sector
  - EE in residential and buildings
  - Development of sustainable municipal infrastructure
  - Development of a ESCO industry

# IBRD

## SME Energy Efficiency Project

- Mostly focused on the private sector, project aims to
  - scale up commercial bank lending to SMEs for energy efficiency,
  - development of a private ESCO industry and
  - providing technical assistance to GD of Renewable Energy which will provide policy and market support for developing the ESCO industry.

# EBRD

## Private Sector Bank Intermediated Projects

- Scaling up RE to less conventional renewables - solar, biogas and biomass technologies (TurSEFF II)
- Expanding EE to residential and buildings (ResiSEFF)
- Development of sustainable municipal infrastructure (MunSEFF)
- Supporting ESCO industry development

# IFC Commercial Sustainable Energy Finance (CSEF) Program

- Focus will be on RE and EE in the industrial, commercial and residential sectors.

# Summary of Results Indicators for Stage II

Indicator	World Bank	EBRD	IFC	Combined
<b>Total Finance (US\$ million)</b>	<b>307</b>	<b>500</b>	<b>180-200</b>	<b>987-1007</b>
Cumulative GHG Emissions Reduction (mtCO <sub>2</sub> e)	26.6	19.4	10.6	56.6
Cumulative RE Generated (GWh)	-	10,800	2,100	12,900
Cumulative EE Energy Saved (GWh)	34,840	12,160	20,000	67,000
CTF Cost Effectiveness (over 20 years) (CTF financing / total emission reduction over 20 years)	1.59	2.58	1.89	2.02
Total Cost Effectiveness (over 20 years) (Total financing / total emission reduction over 20 years)	22.34	25.77	17.92	22.98

# Main Features of the Stage II

- Focus on areas with market barriers
- Focus on nonconventional RE/EE
- Build on the results of Stage I projects and programs
- Strong private sector focus
- High leverage from private sector resources
- Results show the significant impact of the CTF

# Thank you

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