



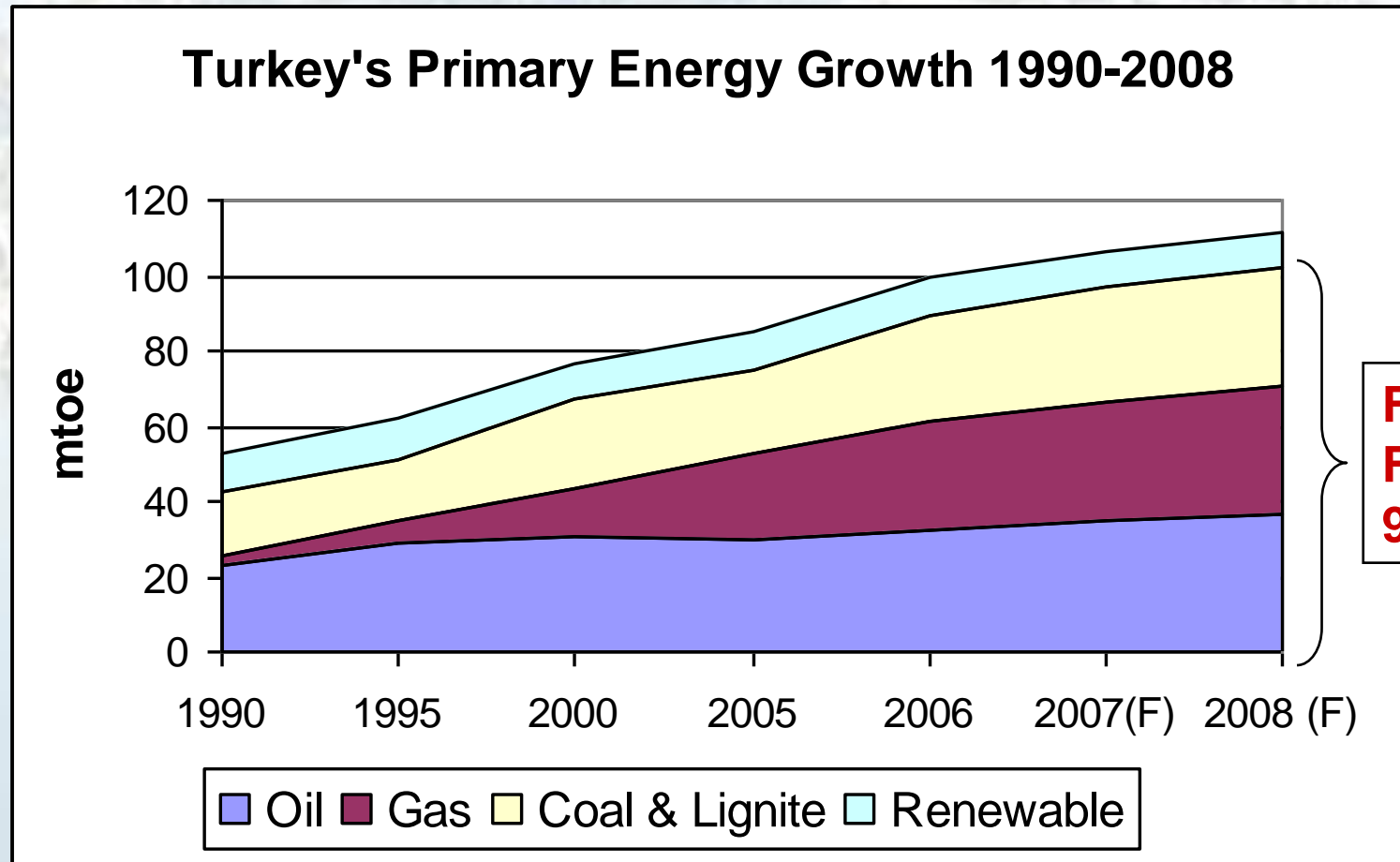
# **International Solar Energy Arena – STEAM**

**Renewable Energy: A Major Opportunity  
Solar Energy in Turkey**

**Ulrich Zachau  
The World Bank  
January 23, 2009**



# Energy Growth in Turkey





# High Fossil Fuel Use Drives Turkey's GHG Emissions ...

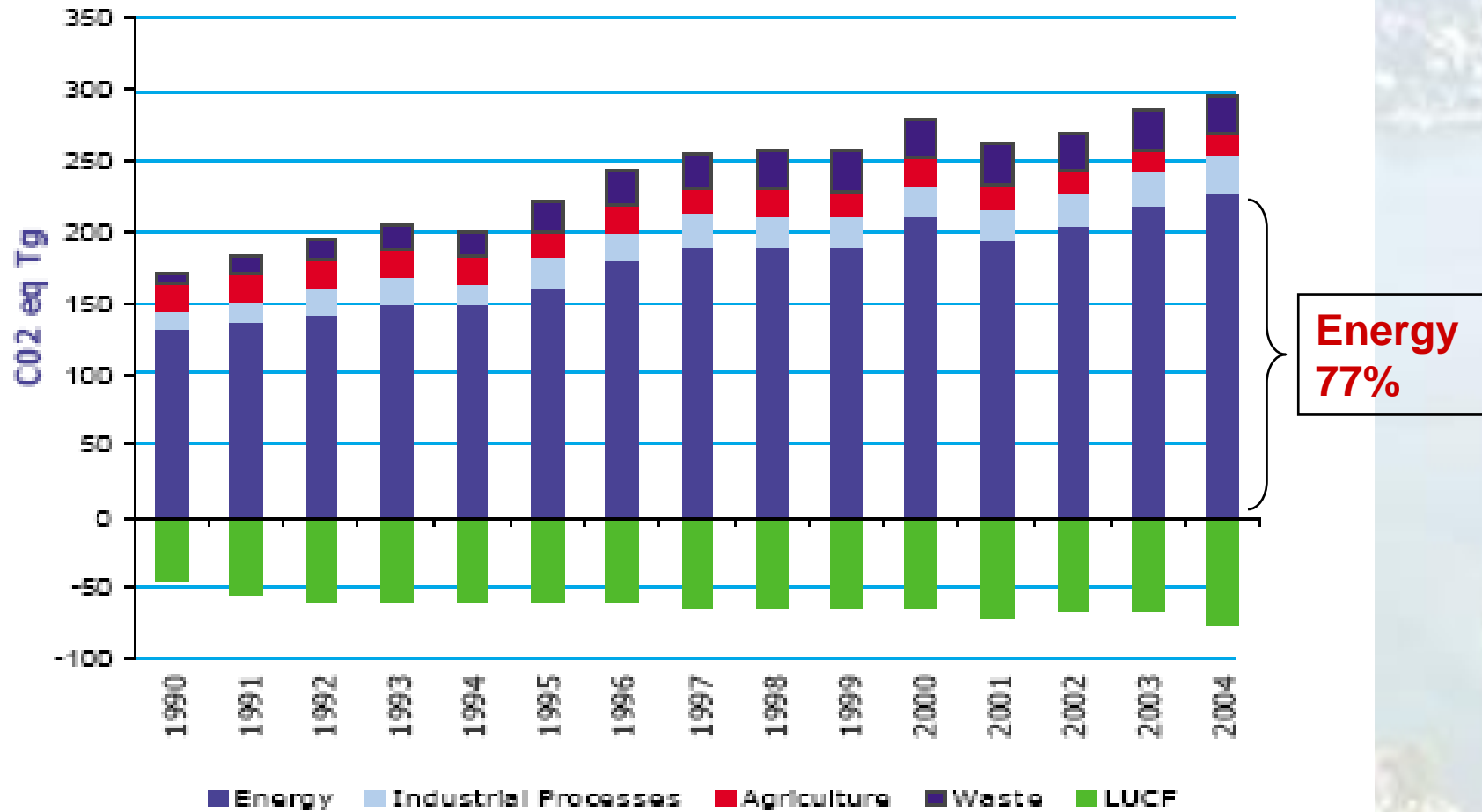
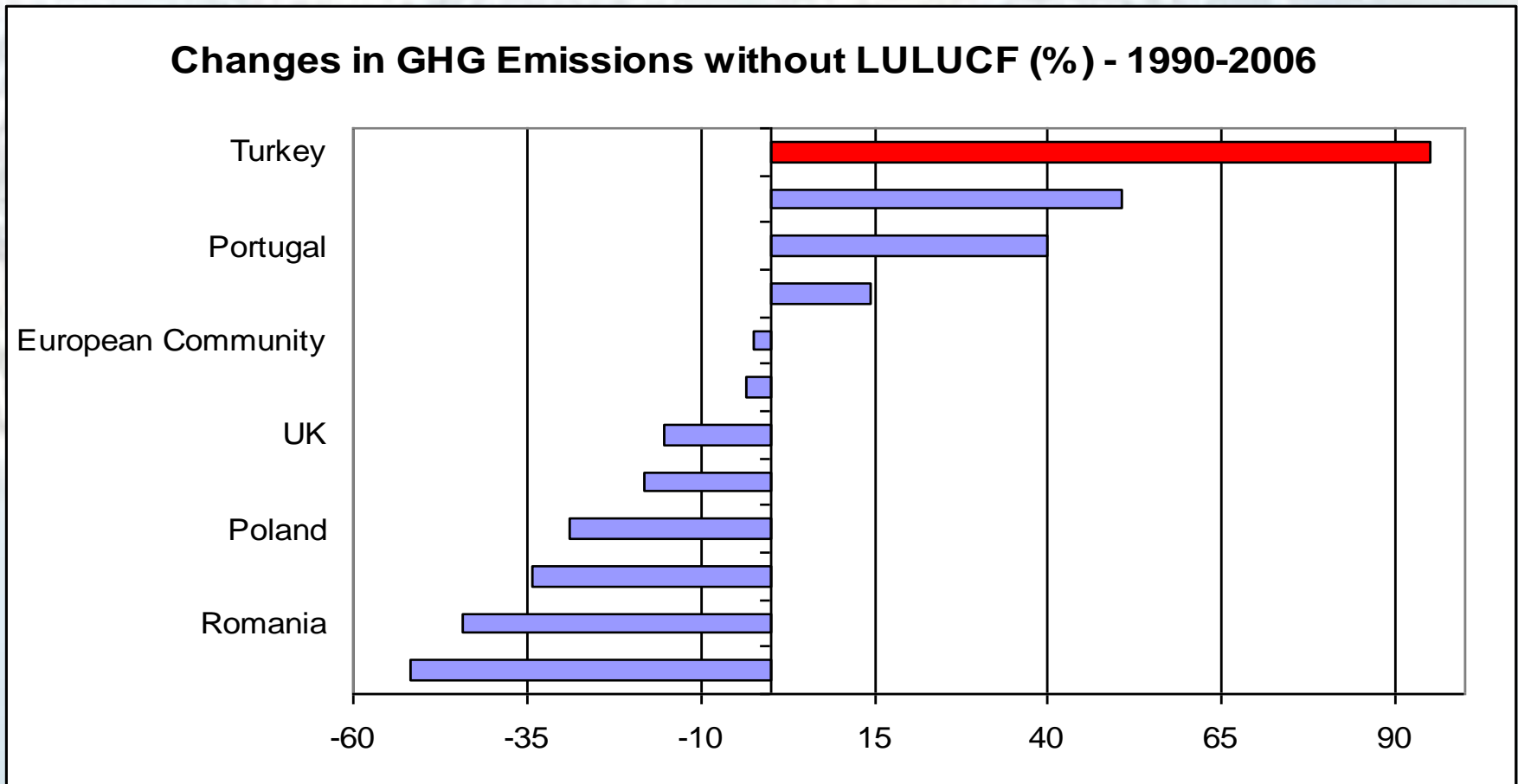


Fig.1.2 Sectoral Greenhouse Gas Emissions and Removals between 1990 and 2004

LUCF – Land Use Change and Forestry



# ...and High GHG Emissions Growth



LULUCF – Land Use, Land Use Change and Forestry

# ... and High Energy Import Dependency



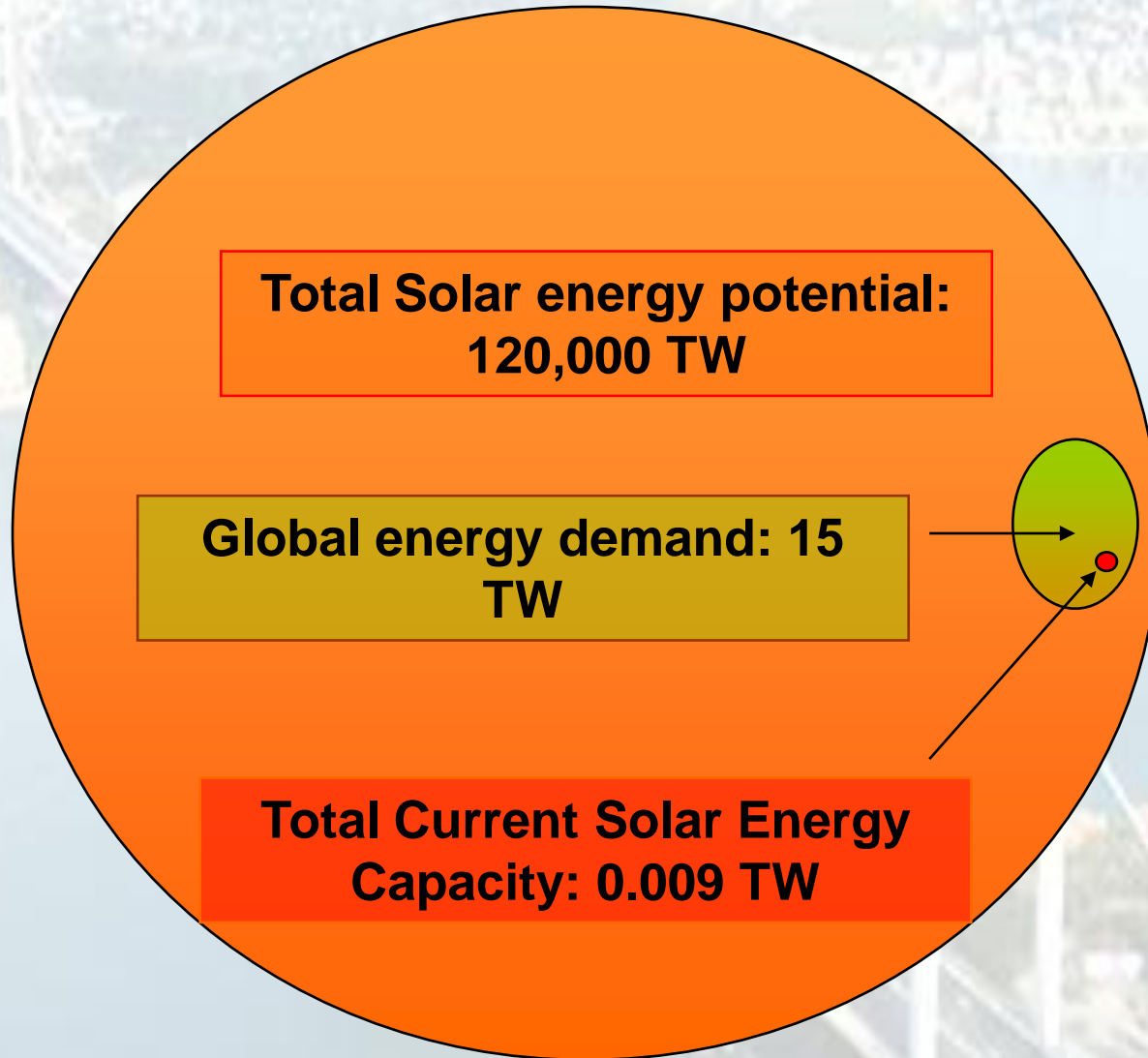
# Opportunity: Turkey Can Scale Up Renewable Energy Dramatically





# Solar Power:

## Huge Global Potential, Largely Uncharted





# Solar Power: Both PV and CSP Applications Have Potential



Conventional PV Solar for Residential Water Heating



Solar PV – Serpa, Portugal



Solar Power Tower – Seville, Spain

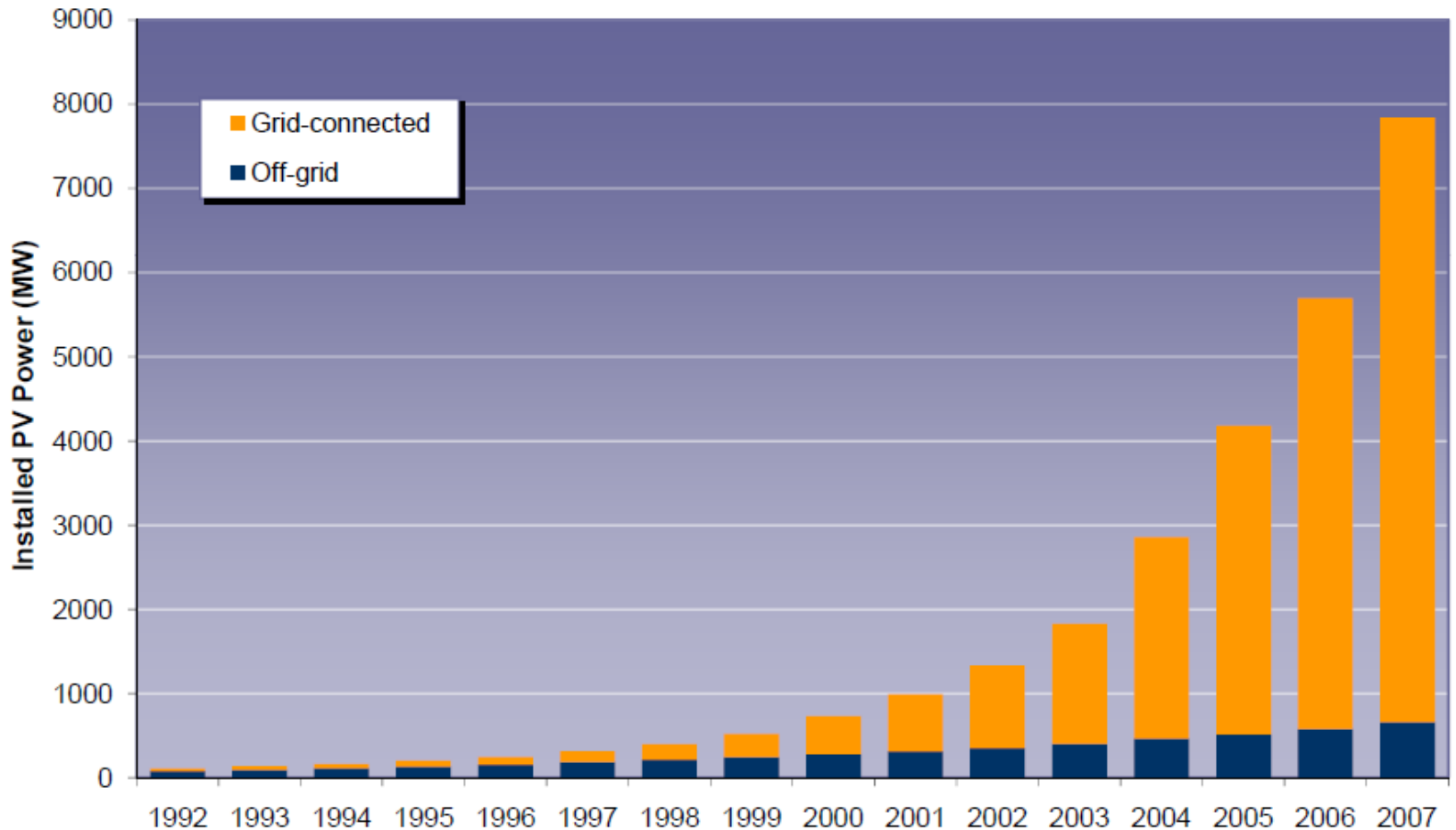


Concentrating Solar Power (CSP)  
Parabolic Troughs – Nevada USA



# Global Solar Energy Use: Small, but Growing Rapidly...

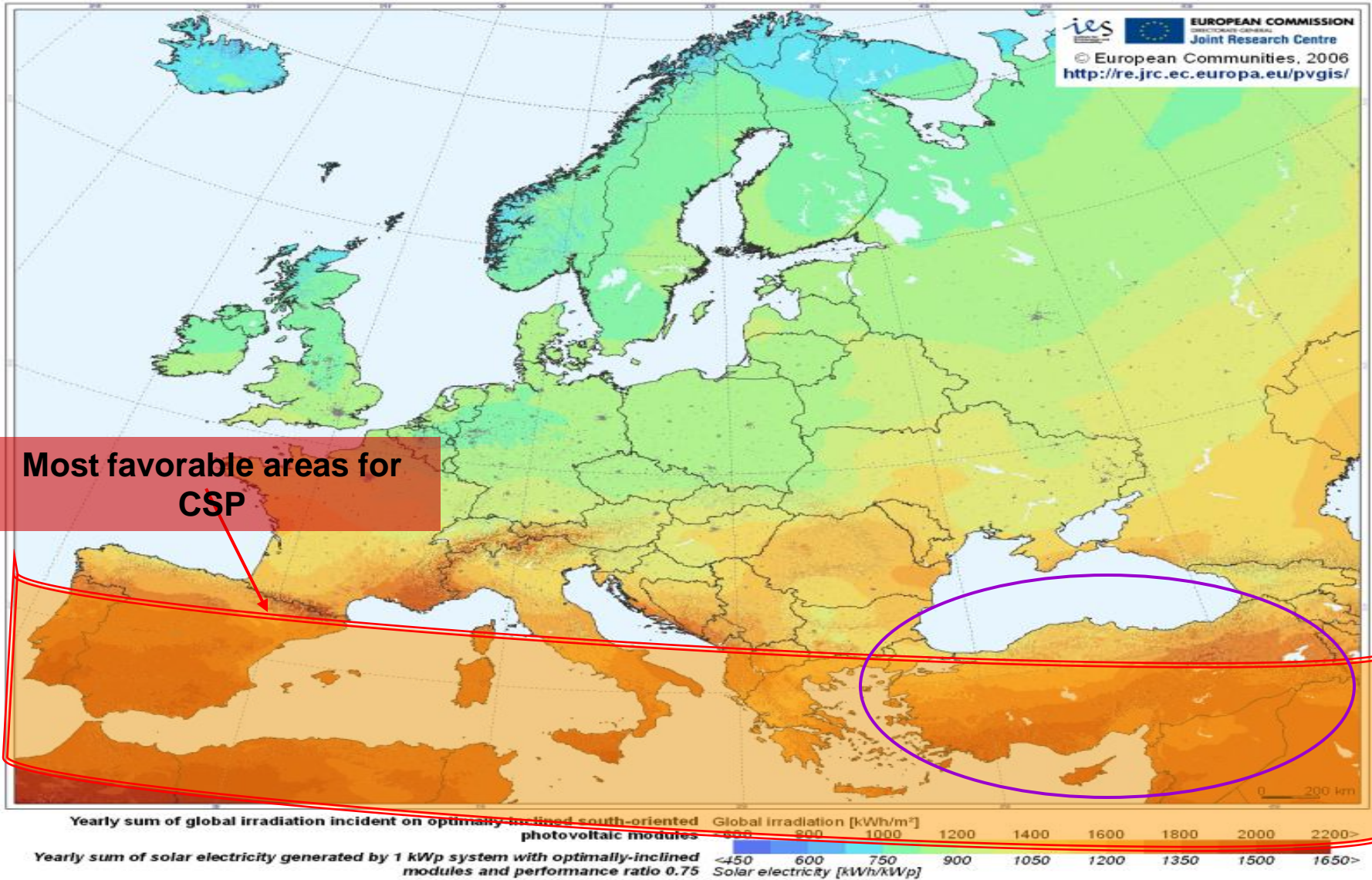
Cumulative installed grid-connected and off-grid PV power in the reporting countries –  
Years 1992-2007





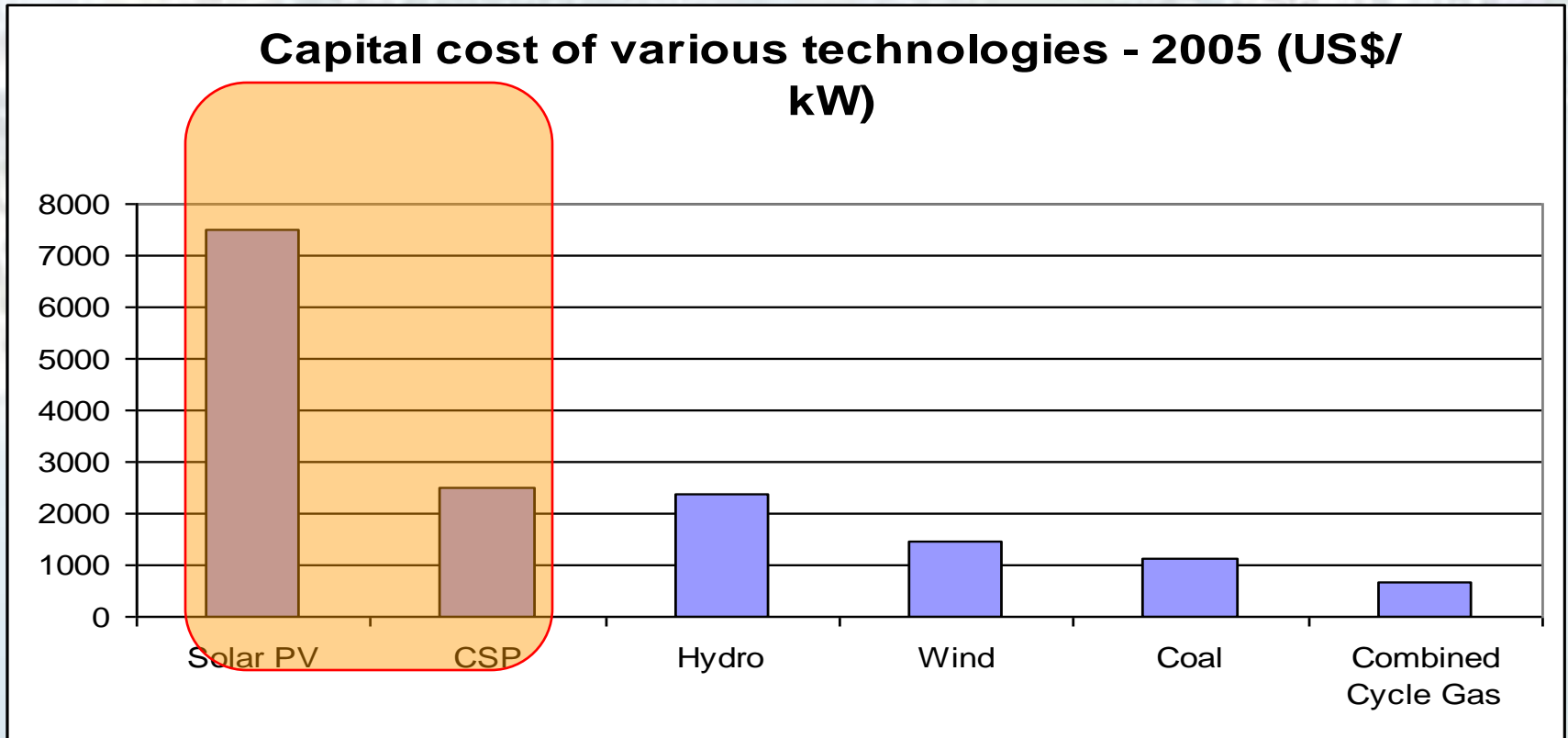
# Turkey: High Solar Energy Potential ...

## Photovoltaic Solar Electricity Potential in European Countries





# ... though Costs are Still High



Commercial viability requires still high tariffs (US cents 30-40/ kWh) – which will fall as technology advances



# Enabling Environment for Private Solar Power Investment in Turkey

- **Basic Framework in Place:**
  - Renewable Energy Law – feed-in tariff system, assured purchase arrangements
  - Regulatory framework
- **Some Possible Next Steps:**
  - Higher feed-in tariffs
  - Concessional finance
  - Clear and transparent framework for licensing, evaluation methodology etc.



**Teşekkür Ederim!**