



# The Renewable Energy Sources in Turkey

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**4th Southeast Europe Energy Dialogue**



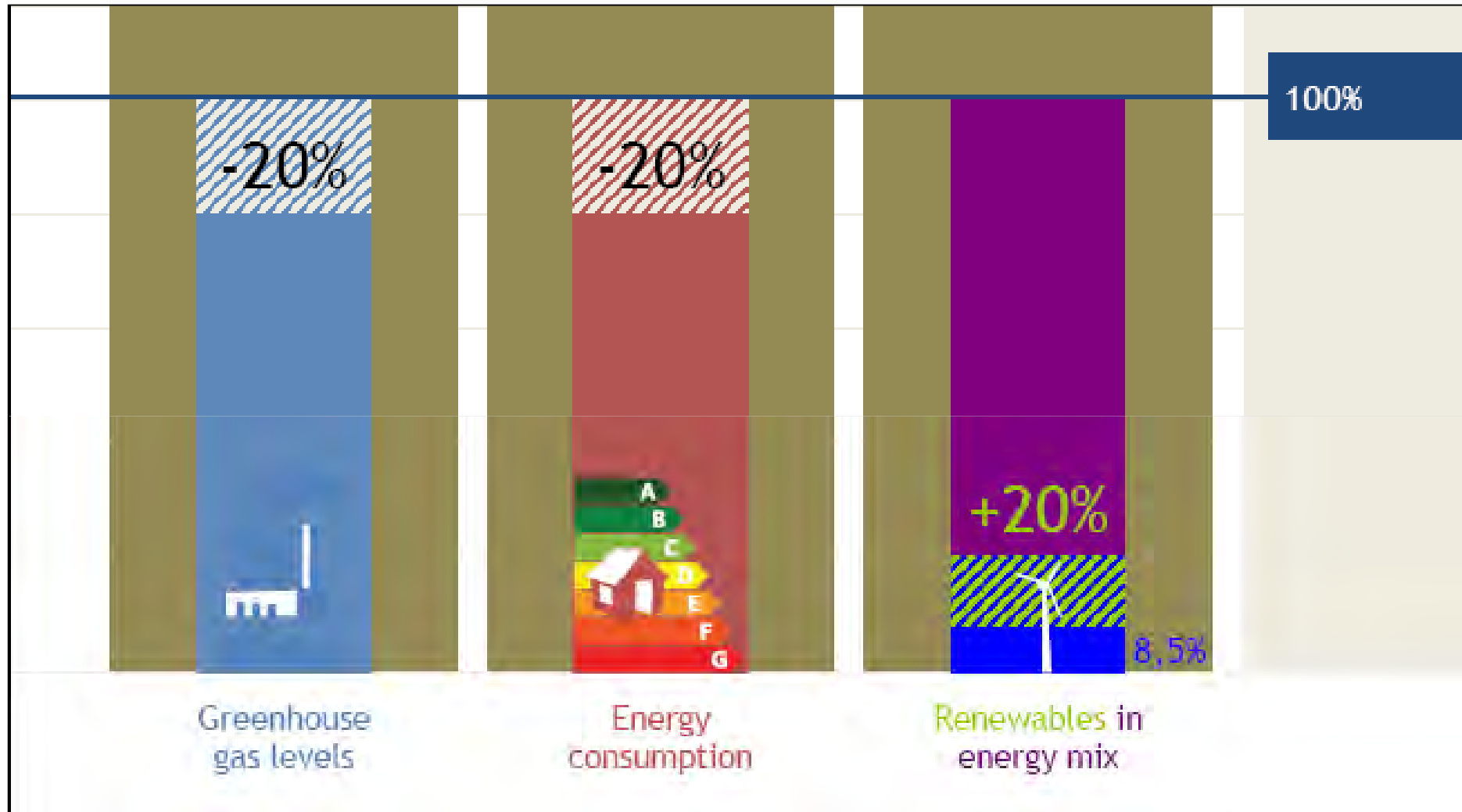
**Thessaloniki, 3 – 4 June 2010**

- ❖ Energy Policies and Renewable Energy Supply
- ❖ Renewable Energy Potential in Europe and Turkey
- ❖ Renewable Energy Policies of Companies (worldwide)
- ❖ Renewable Energy Policies of Companies (in Turkey)

## Energy Policies and Renewable Energy Supply

### EUROPE and TURKEY

# European Union Renewable Energy Policy (3 x 20% target)

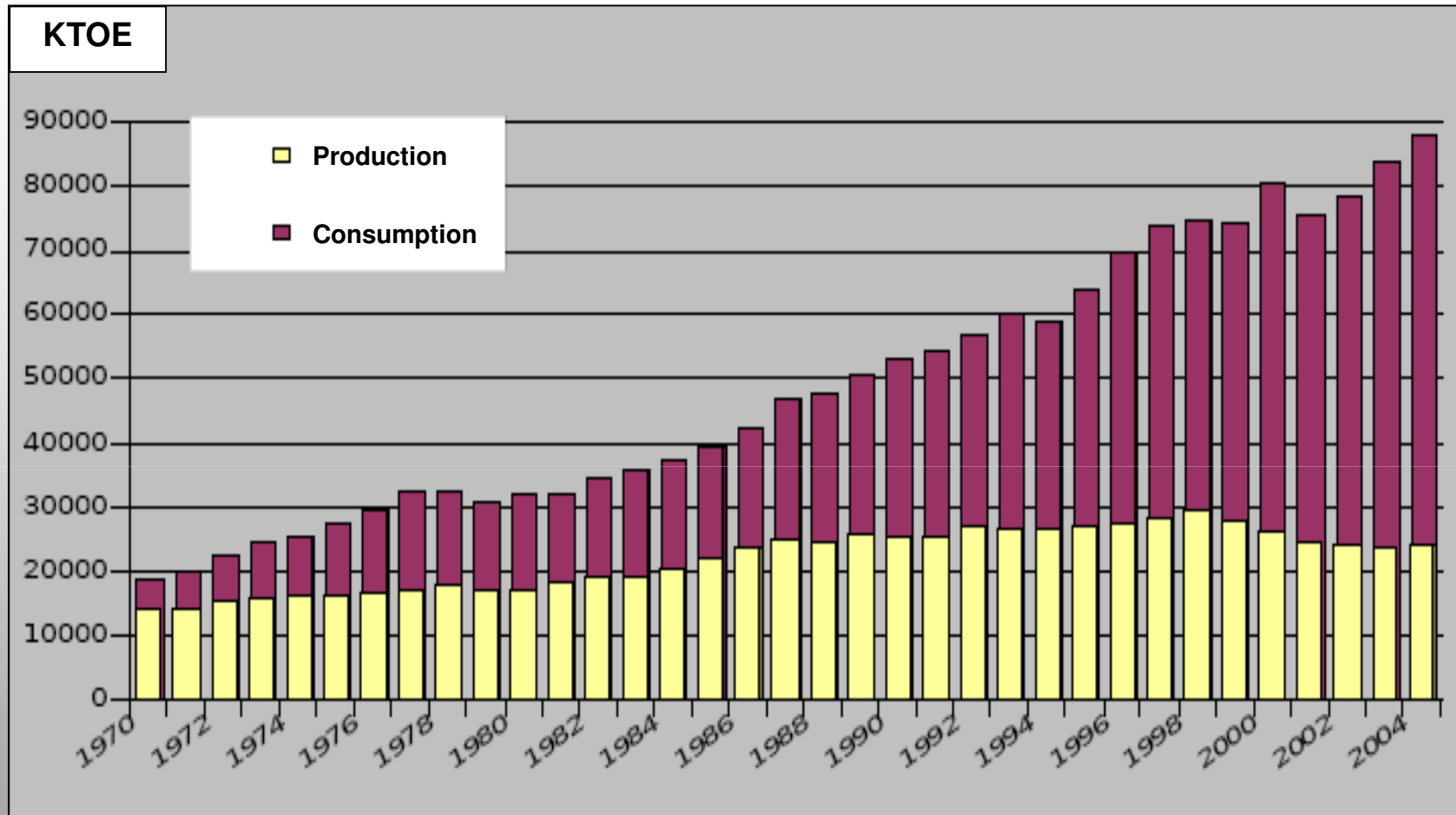


## Installed Electricity Generation Capacity in the EU from RE

Energy Source	2002	2006	2002-2006 Annual growth, %	2010 Outlook	2006-2010 Annual growth, %	2020 Outlook	2010-2020 Annual growth, %
Wind	23,1 GW	47,7 GW	19,9	80 GW	13,8	180 GW	8,5
Hydroelectric	105,5 GW	106,1 GW	0,2	111 GW	1,1	120 GW	0,8
PV	0,35 GWp	3,2 GWp	73,9	18 GWp	54,0	150 GWp	23,6
Biomass	10,1 GWe	22,3 GWe	21,9	30 GWe	7,7	50 GWe	5,2
Geothermal	0,68 GW	0,7 GW	0,7	1 GW	9,3	4 GW	14,9
Solar thermal	-	-	-	1 GW	-	15 GW	31,1
Ocean	-	-	-	0,5 GW	-	2,5 GW	17,5

Source: EREC

# Total primary energy supply and consumption in Turkey



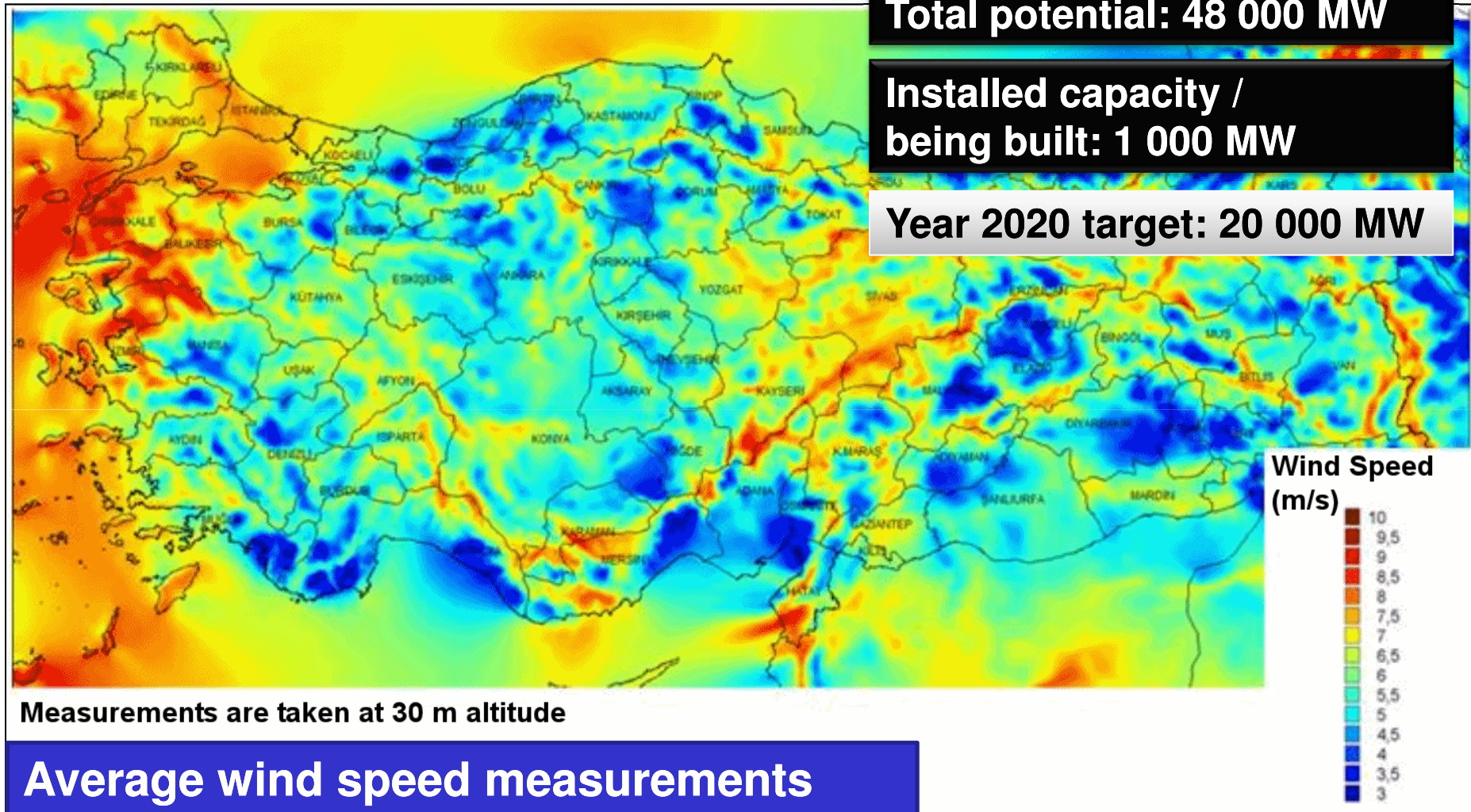
**At present over 75 % dependence on foreign sources!**

Source: KPÖİK

## Comparative Renewable Energy Potential

### EUROPE and TURKEY

# Wind Energy Potential in Turkey

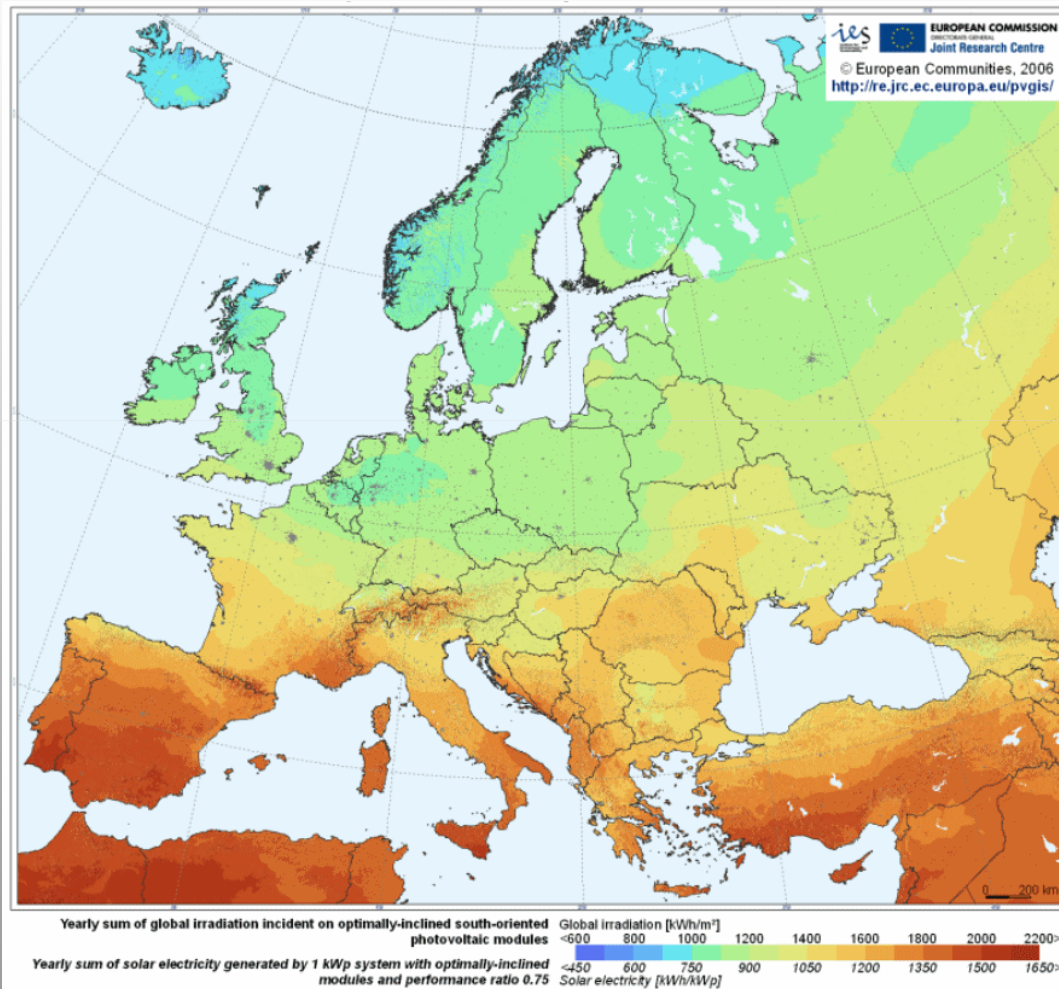


Source: Rüzgar borsası website



# Solar Energy Potential in Europe

## Global Yearly Irradiation Distribution in Europe



**The Solar Energy Potential of Turkey alone is higher than several European countries combined**

**The average yearly global irradiation value for Turkey is around 1700 kWh/m<sup>2</sup>**

**The same value for Northern Europe is around 1100 kWh/m<sup>2</sup>**

Source: JRC

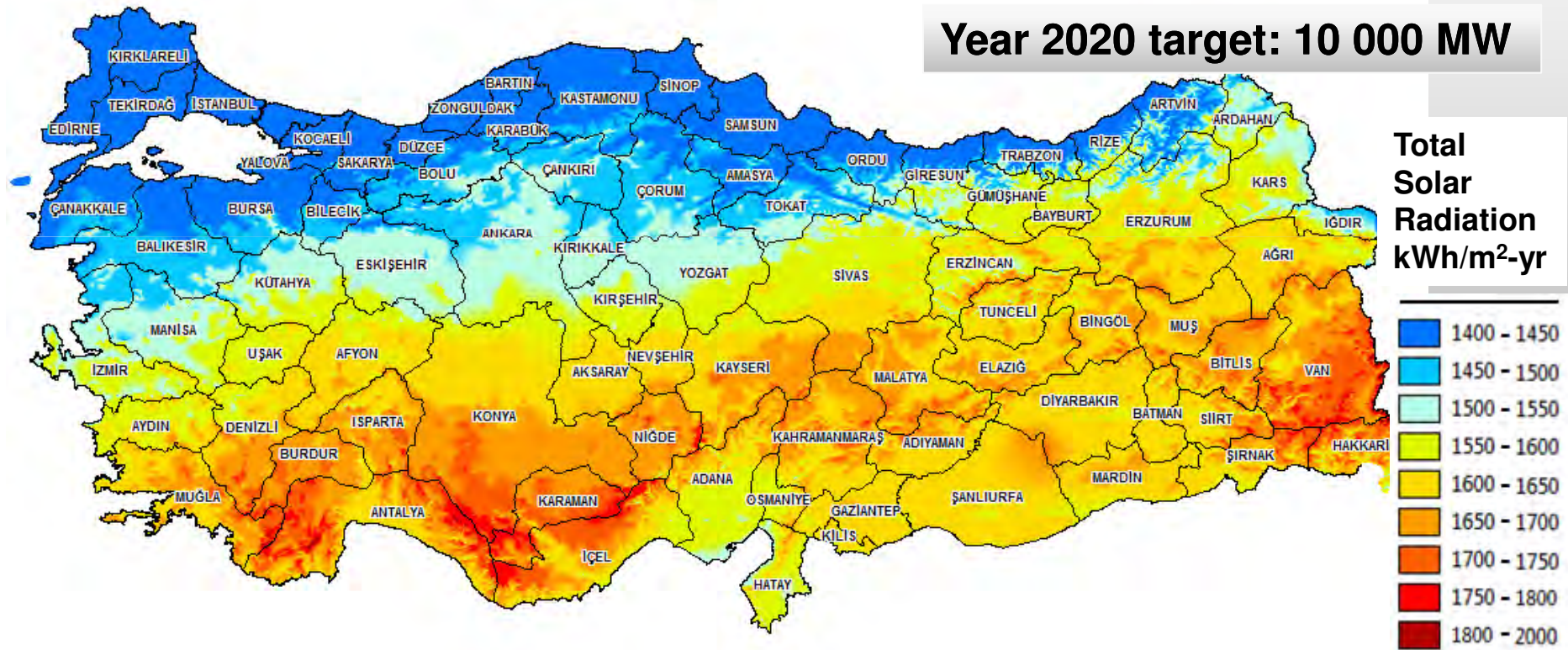
# Solar Energy Potential in Turkey

Yearly Irradiation Distribution  
in Turkey

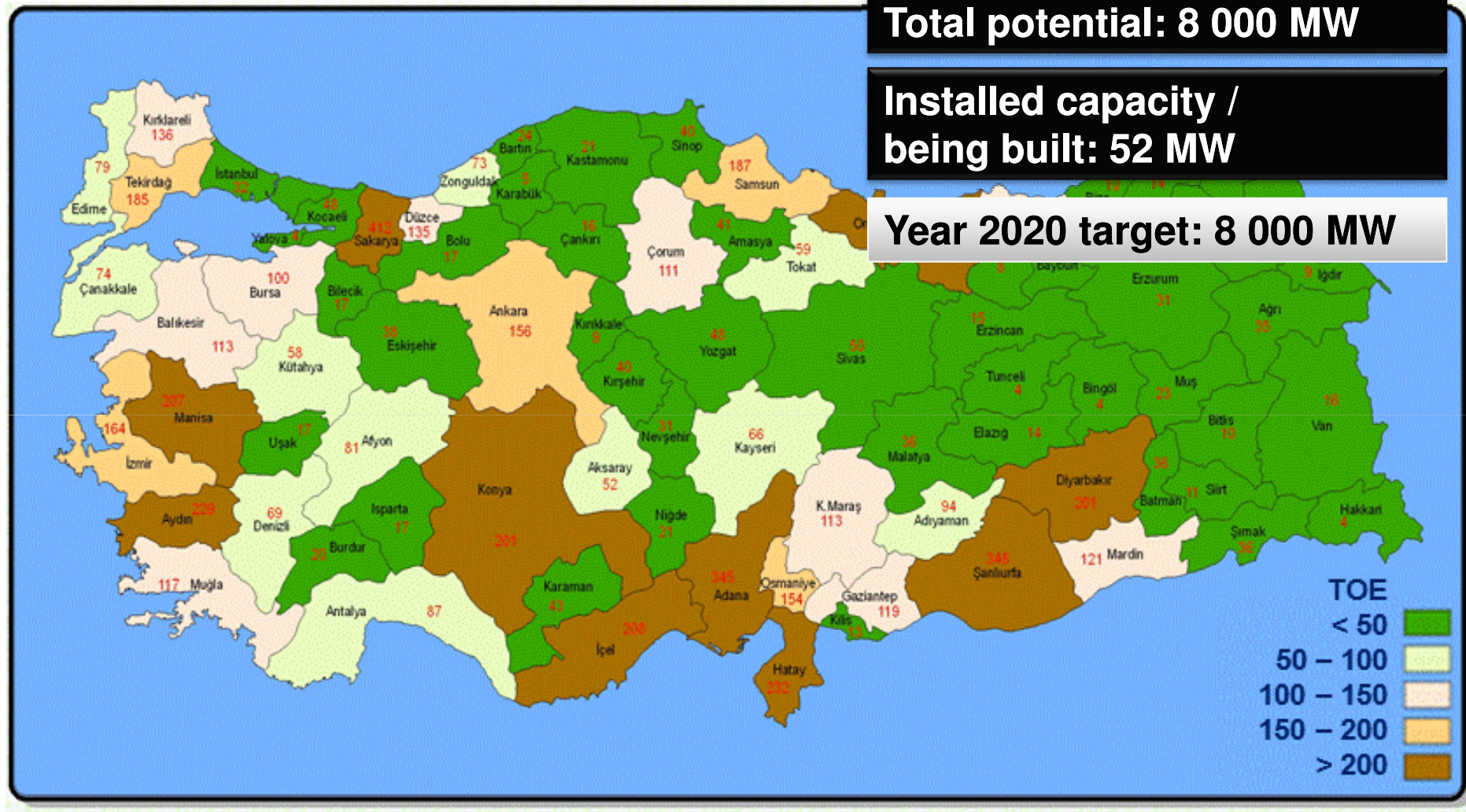
Total potential: 56 000 MW

Installed capacity /  
being built: 2 MW

Year 2020 target: 10 000 MW



# Agricultural Biomass Potential in Turkey



Source: ETKB

# Hydroelectric Potential in Turkey



**Total potential: 36 000 MW**

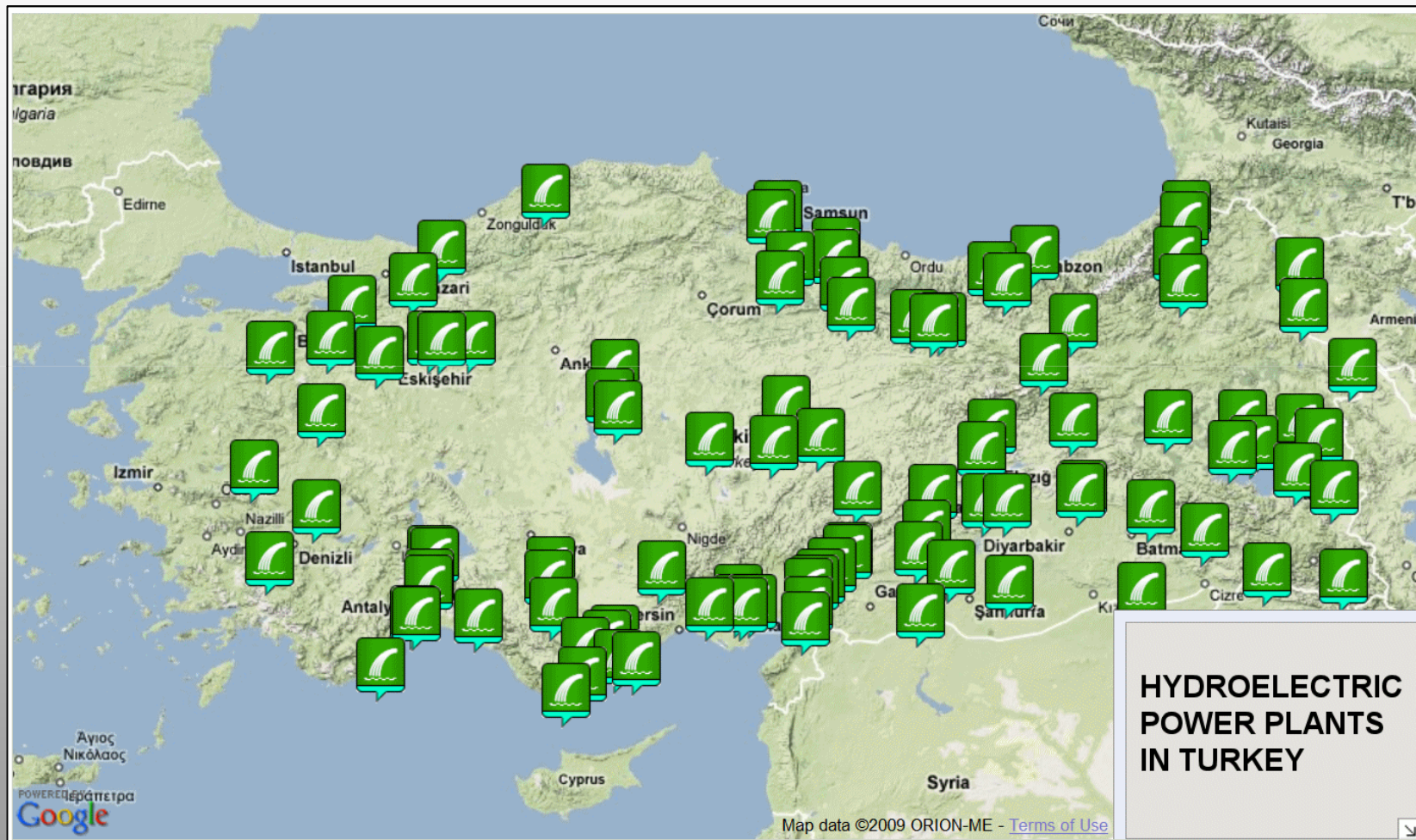
**Installed capacity /  
being built: 13 000 MW**

**Year 2020 target: 36 000 MW**

Source: ETKB

# Hydroelectric Potential in Turkey

## Hydro-Electric Power Plants in Turkey



Source: ETKB

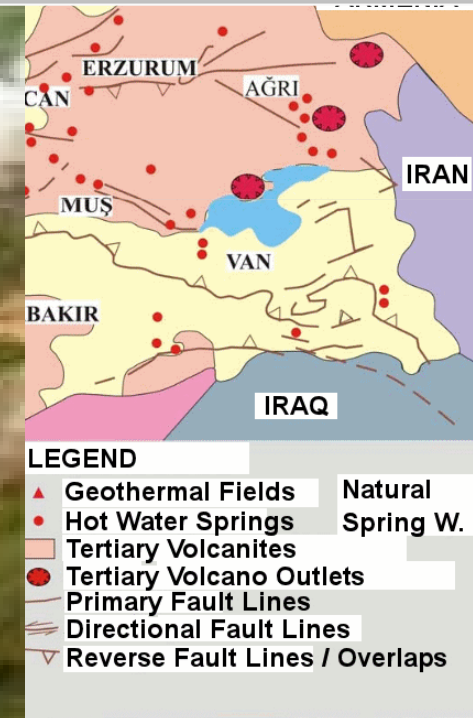
# Geothermal Energy Potential in Turkey



**Total potential: 1000 MW**

**Installed capacity /  
being built: 92 MW**

**Year 2020 target: 1000 MW**



Source: ETKB

## Renewable Energy Policies of Companies

### WORLDWIDE

# Renewable Energy Policies of Companies (worldwide)



One of the world's largest investor-owned power and gas companies



MU = Market Unit



# Renewable Energy Policies of Companies (worldwide)



**Experience in wind energy systems**

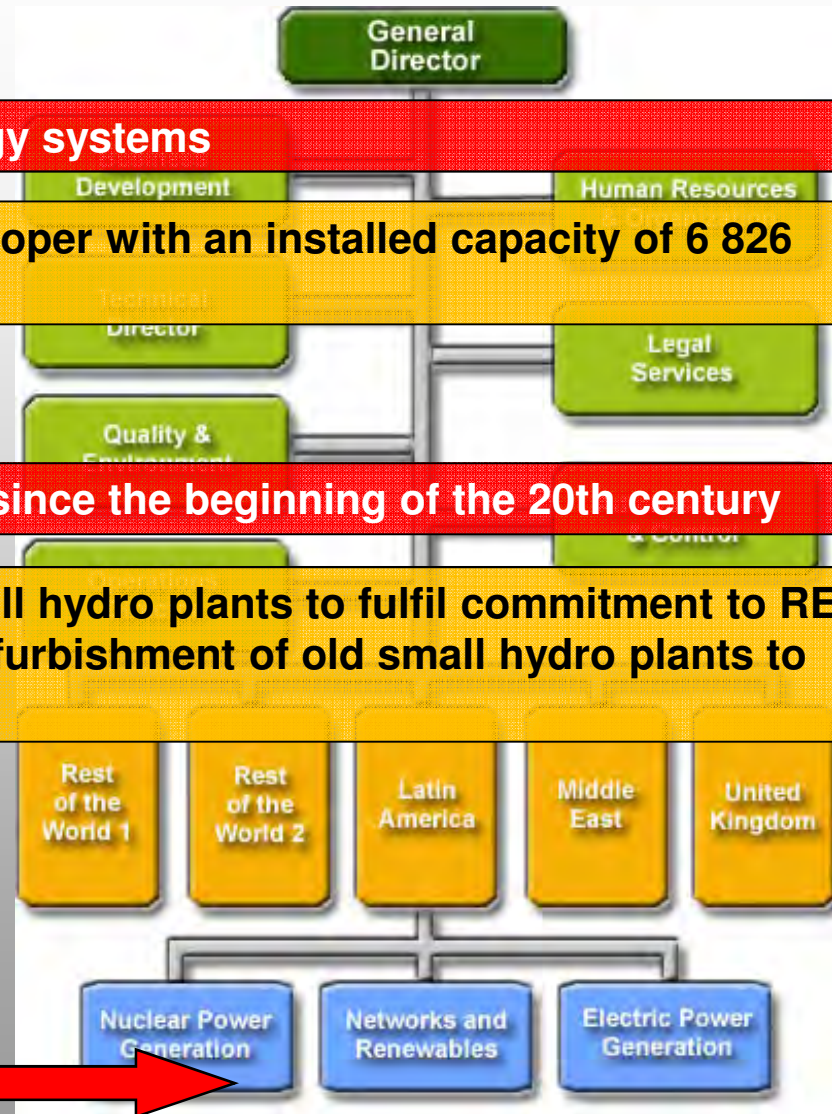
**Active wind energy developer with an installed capacity of 6 826 MW in 2006**



**Hydropower experience since the beginning of the 20th century**

**Construction of new small hydro plants to fulfil commitment to RE production, as well as refurbishment of old small hydro plants to increase performance**

**Engineering branch of one of the leading electric utilities in Europe**



# Renewable Energy Policies of Companies (worldwide)



**RWE Innogy – The Company for Renewable Energy**

**Wind energy applications**

**Hydropower**



**New applications**  
• Wave power  
• Solar  
• Geothermal



**Biomass based systems**

## Renewable Energy Policies of Companies

### TURKEY

# Renewable Energy Policies of Companies (in Turkey)



## SOYAK Energy

Soyak Energy plans to establish a total of 1 500 MW licensed energy plants in Turkey



Hydroelectric systems

Wind energy systems and wind farms

Geothermal energy plants

Solar energy applications

# Renewable Energy Policies of Companies (in Turkey)



## Enerji SA

Has plans in place to reach 5 000 MW capacity and a market share of 10% by 2015



Power generation systems

Electricity trade

Nationwide distribution network



Currently 455 MW established capacity with an additional 2 555 MW still under construction

# Renewable Energy Policies of Companies (in Turkey)



## Borusan Enerji

Planned investment amounts to 2 000 MW with the first construction beginning in January 2010

Joint ventures with EnBW AG (Germany)



Wind energy systems

Medium term investment amount planned to be approximately 2.5 billion euros

## Hydropower plants



## Renewable Energy Policies of Companies (in Turkey)



### Sanko Enerji

Hydropower plants of various capacities

Renewable energy systems (especially wind energy)

Cogeneration facilities (combined heat and power applications)

A five year investment plan outlines a total of 2 billion dollars in hydropower, wind farms and CHP plants throughout Turkey

# Renewable Energy Policies of Companies (in Turkey)



## Ağaoğlu Enerji Grubu

Predominantly wind power applications

Small hydropower plants and regulators

Aspires to become among the top ten private energy suppliers in Turkey by the year 2015



Plans include reaching the target of 1 000 MW capacity in three years' time



# PROBLEMS

- **Governmental Incentives (feed in tariff, purchase warranty)**

# THANK YOU

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