

*“Renewable Energy Sources - Current  
Status and Future Prospects”*  
**Belgrade, March 7<sup>th</sup> , 2012**

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*“Renewable Energy Sources – A Special Focus in West Balkans”*

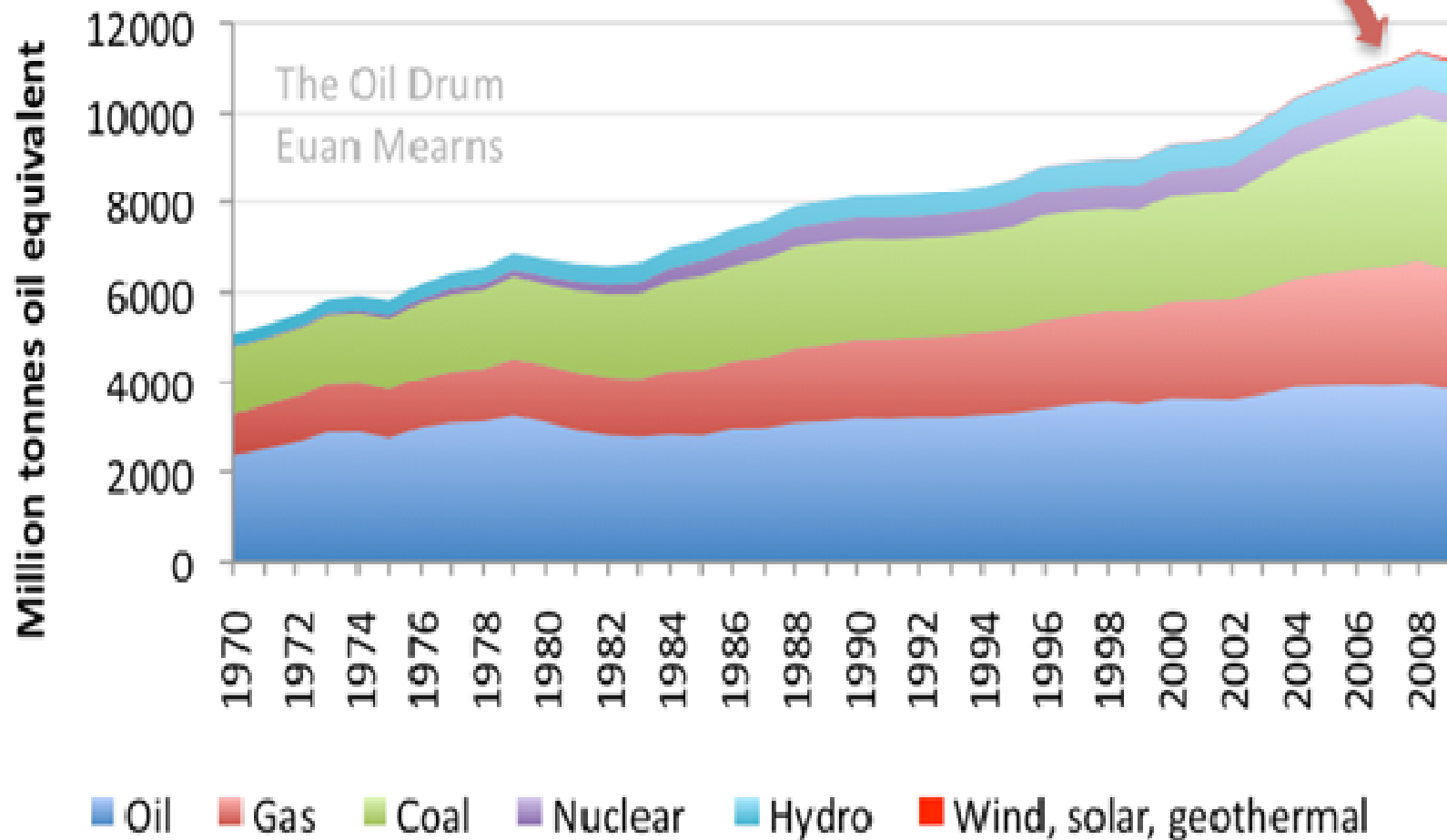
# Presentation Outline

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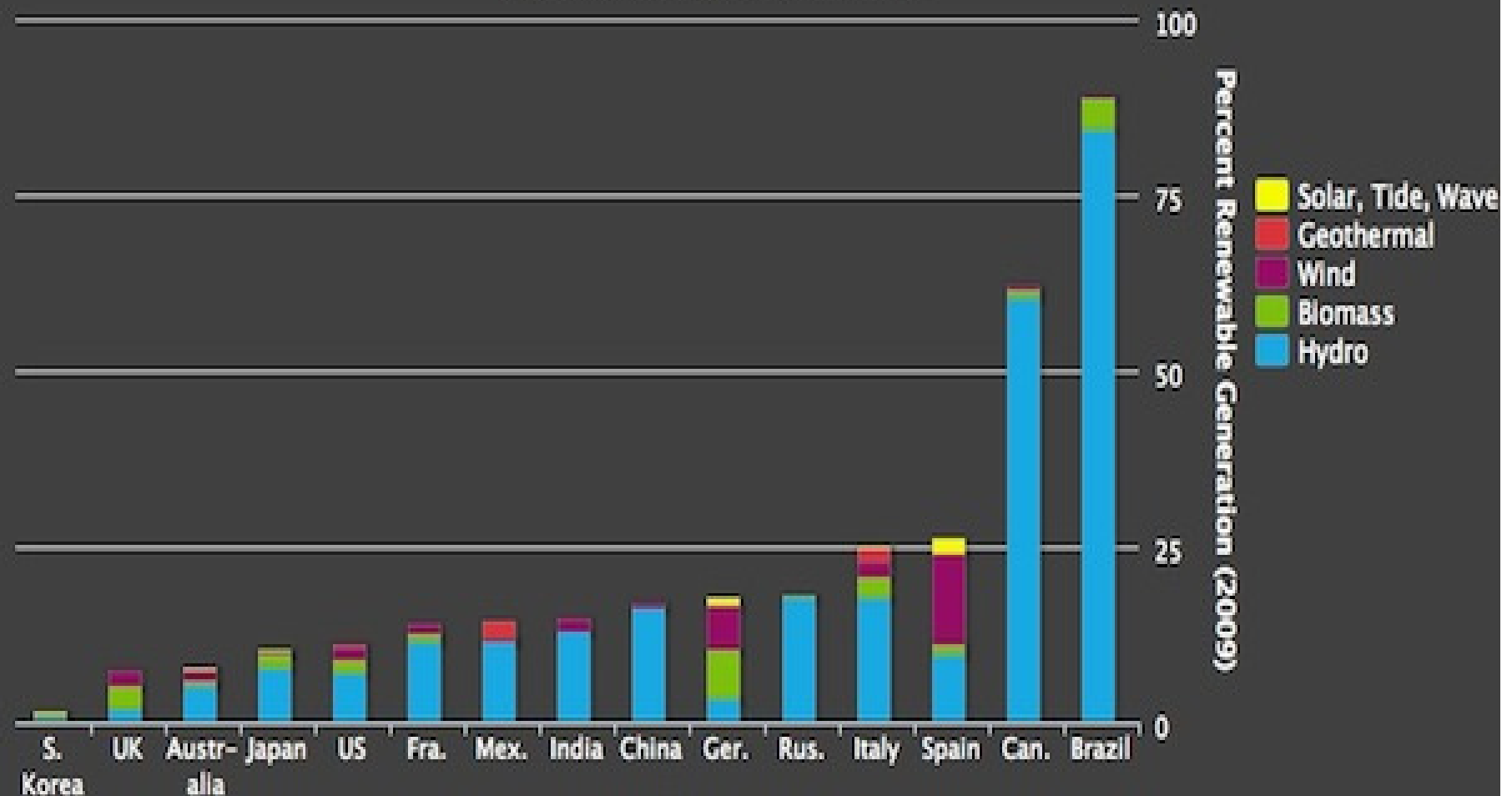


- Renewable Energy Sources - The Global Image
- Global RES Investments
- European Targets & Existing RES Installations
- SE Europe's RES Potential
- Wind, PV and Solar Thermal in SE Europe
- Estimated Investments in RES

# World primary energy production



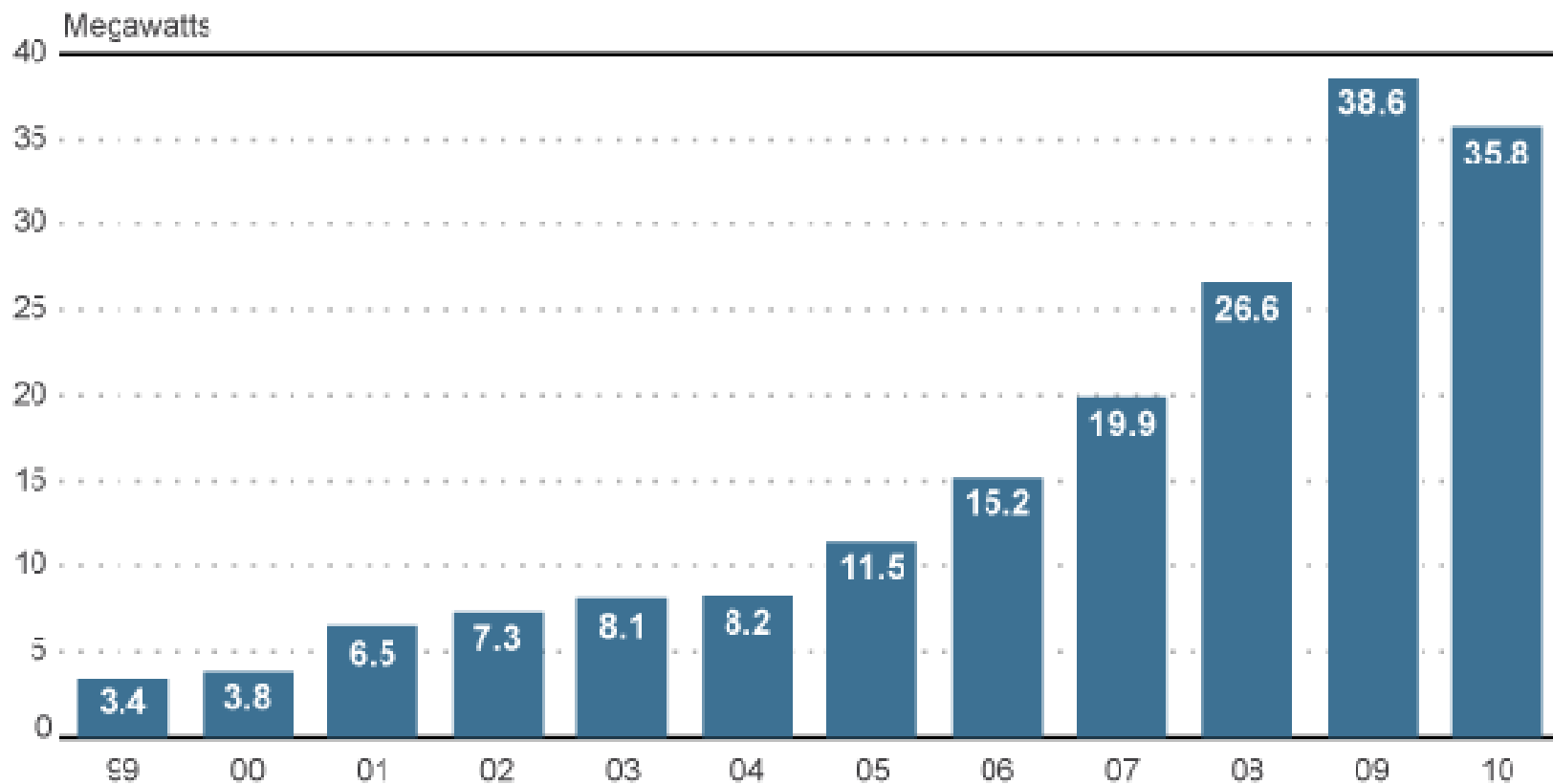
## Renewable Electricity Generation as a Percent of Total Generation Top 15 Electricity Producers in 2009



Source: U.S. Energy Information Administration

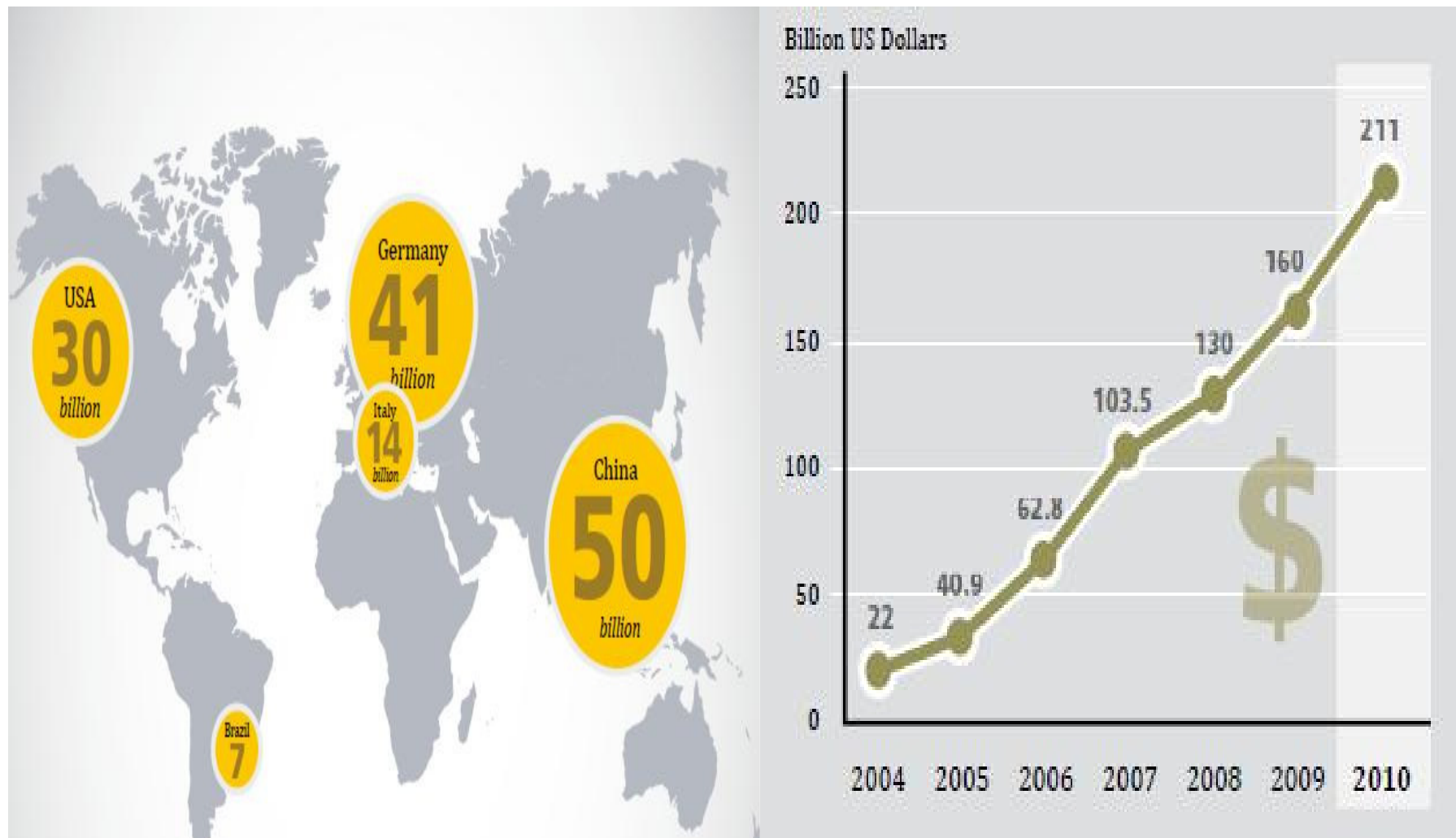
Highcharts.com

# Global wind power installation market

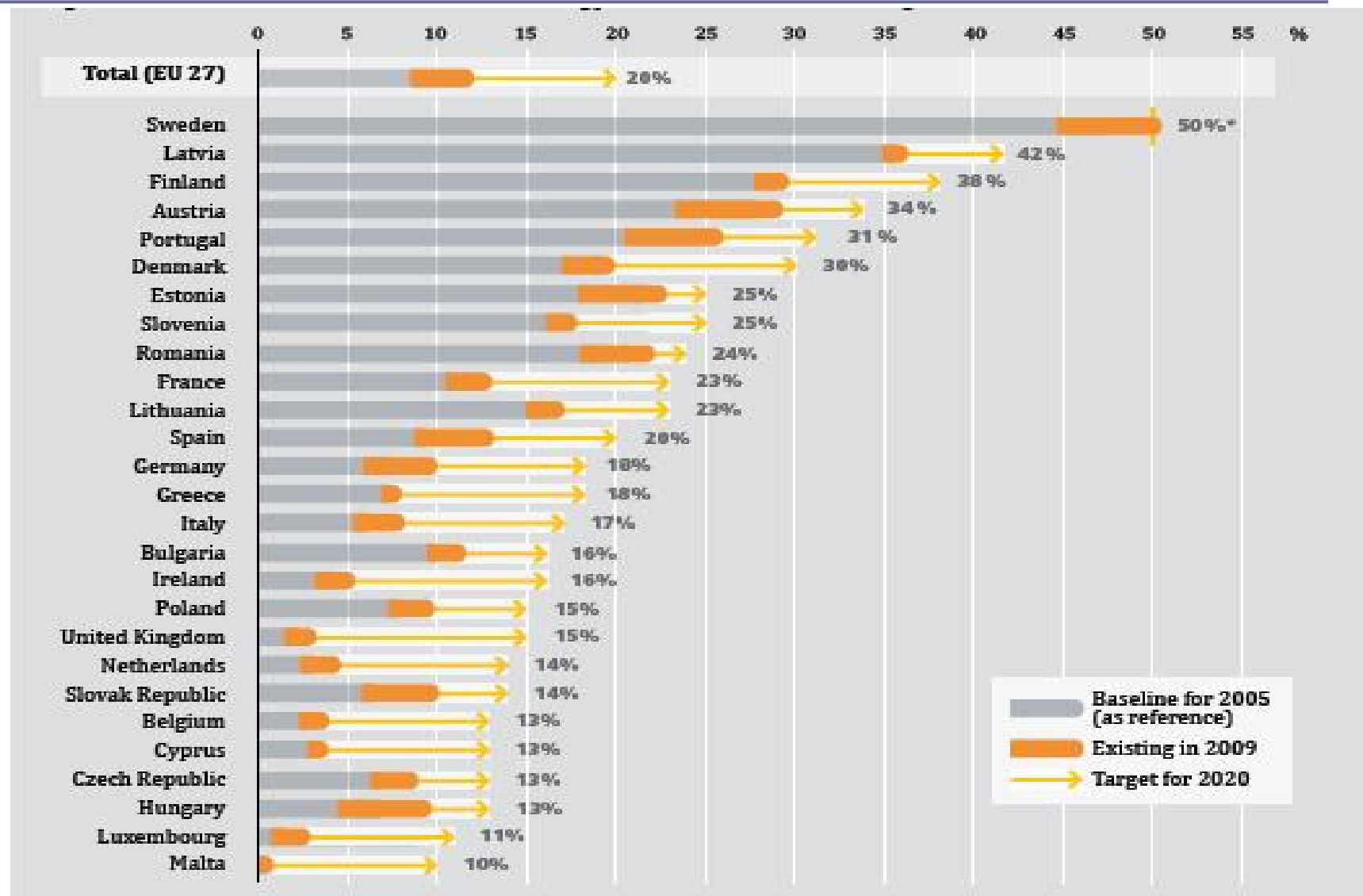


Source: Global Wind Energy Council

# World RES Investments

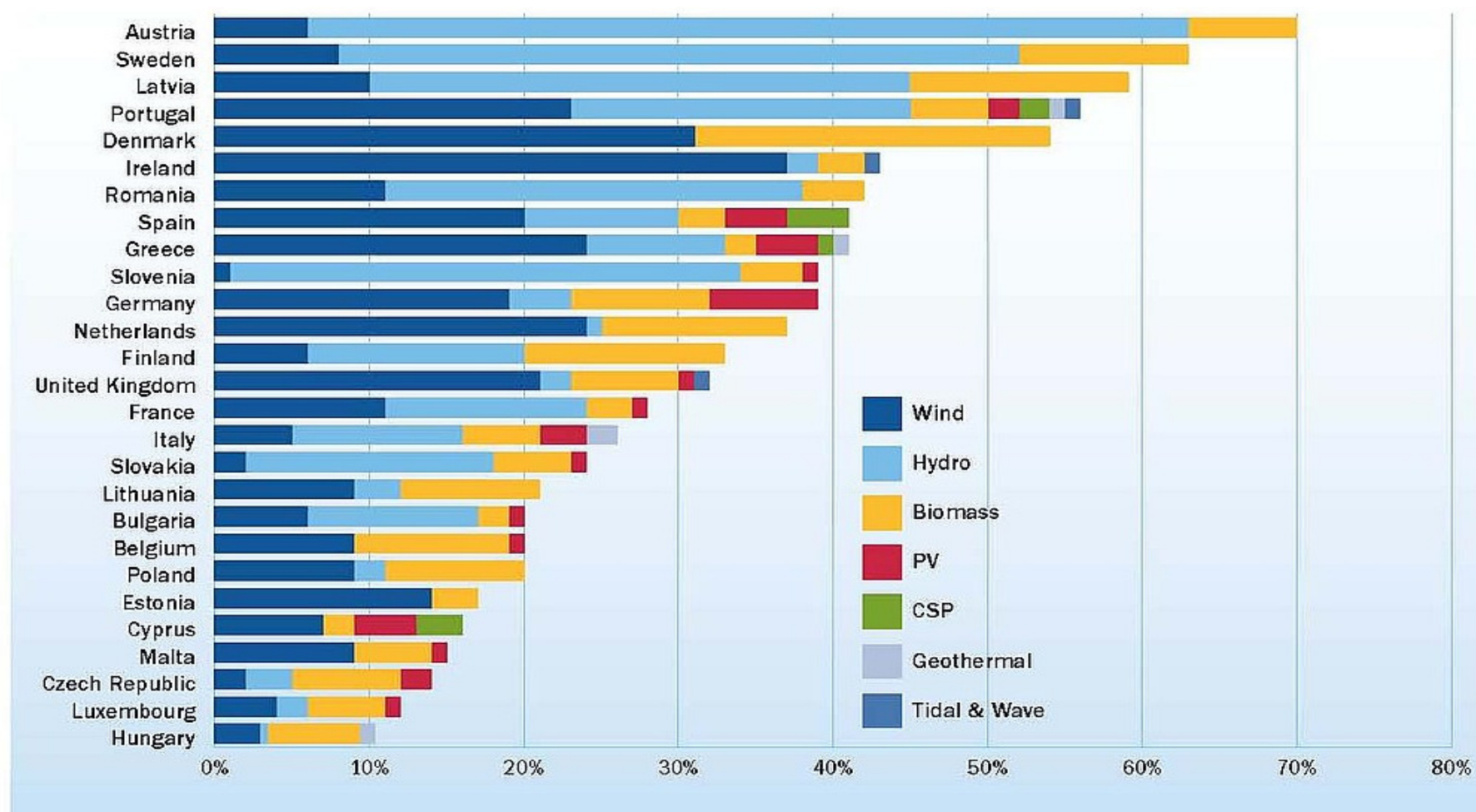


# European Policy – Existing Installations and Targets for 2020 targets for 2020



# European Policy – Share of RES per Member State

FIG 8: RES SHARE OF ELECTRICITY CONSUMPTION PER MEMBER STATE (%)

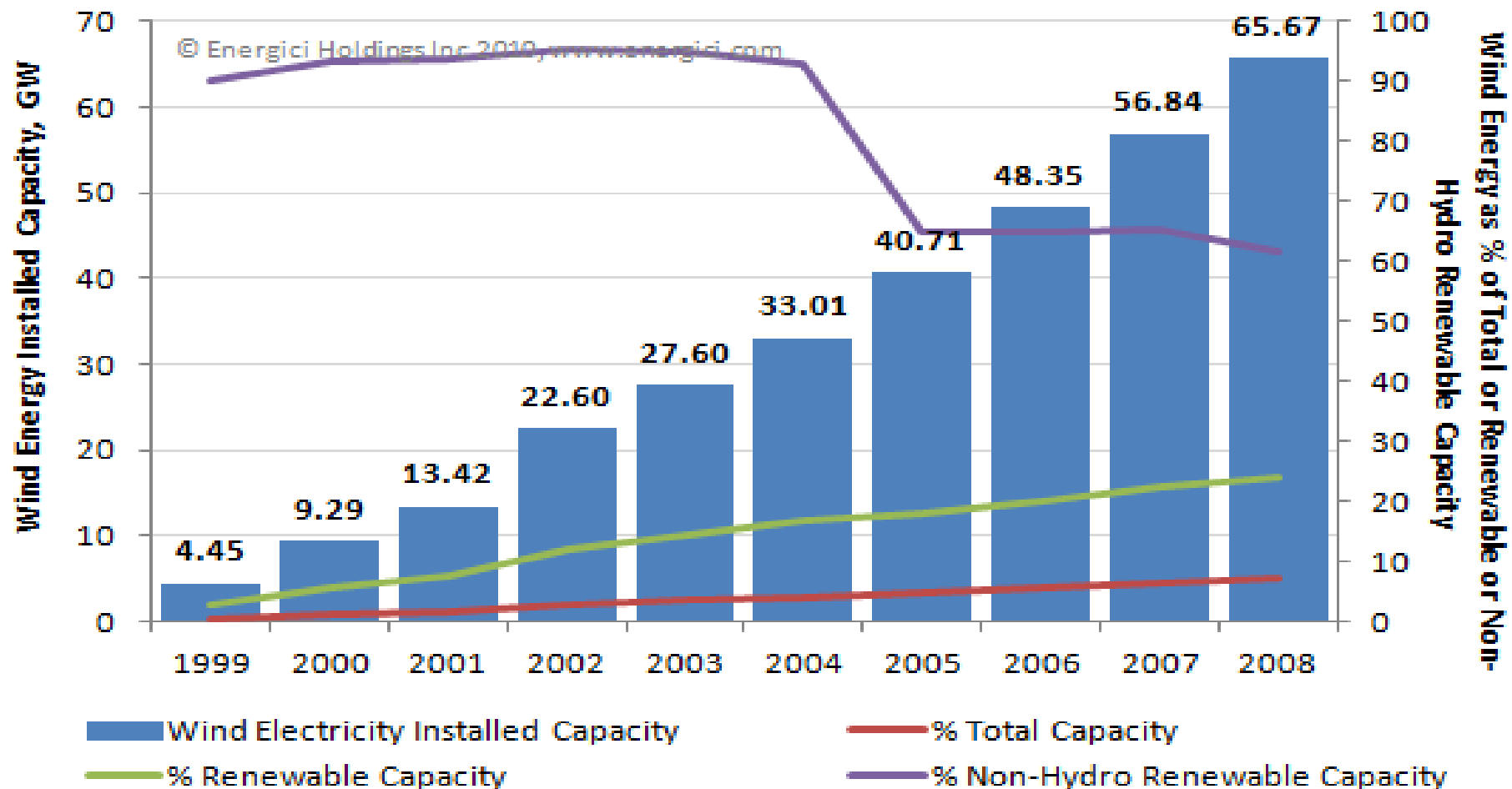




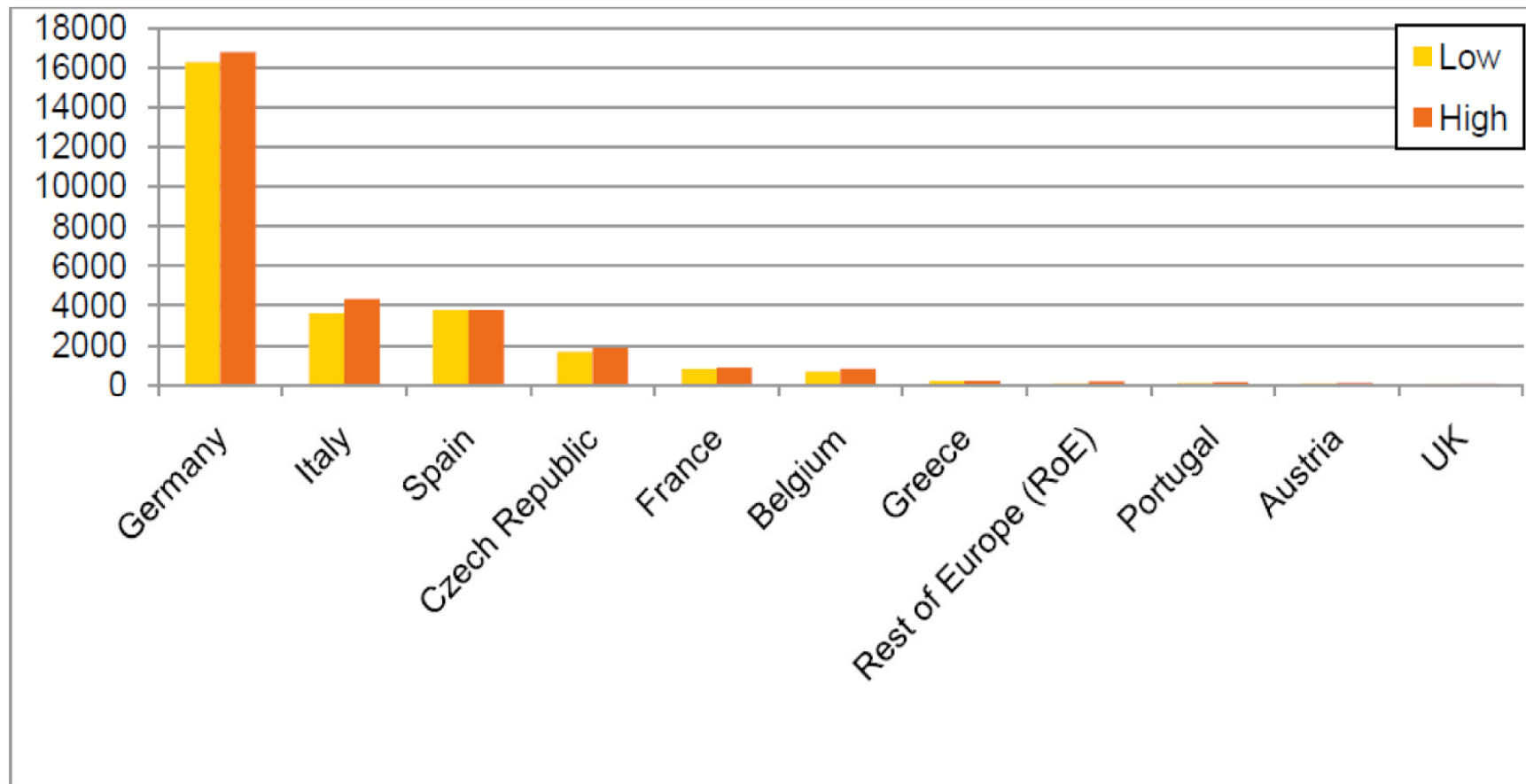
# Wind Energy Installed Capacity in Europe



Europe : Wind Energy Installed Capacity, 1999-2008



# Cumulative PV installed capacity in Europe in 2010 (MW)





## Status of Renewable Energy Sources in S.E. Europe

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- Solar Thermal

*Well developed markets in Greece, Cyprus and Turkey*

- Solar PV

*Approximately < 400 MW total PV installed, with Greece being the most developed market, followed by Bulgaria*

- Wind

*Key players: Greece, Turkey, Bulgaria, Romania Installed Capacity < 4.000 MW*

- Mini Hydro

*Well developed in Western Balkans. Considerable Potential in Greece and Turkey*

- Biomass

*Embryonic market for power generation but extensively used for house heating*

- Geothermal

*Large untapped potential in Greece, Turkey, Bulgaria, Romania, Serbia and Croatia*



## RES in S.E. Europe

RES in Gross Final Energy Consumption						Target
%	2005	2020	% diff	2030	% diff	2020
Albania	32.6	25.7	2.8	26.0	5.3	?
Bosnia	18.8	20.9	4.7	24.4	7.9	?
Bulgaria	11.1	23.5	12.2	34.3	18.1	16%
Croatia	13.6	16.3	2.9	18.7	5.2	?
Greece	7.6	17.8	7.1	22.5	10.1	20%
FYROM	15.7	22.8	5.8	25.6	10.6	?
Romania	18.9	25.8	6.8	29.0	8.2	24%
Serbia & Montenegro	18.9	19.5	4.3	18.7	5.1	?
Balkans excl. Turkey	14.9	21.4	6.5	24.8	8.9	
Turkey	15.5	13.3	3.7	14.6	5.4	?
All SEE	15.2	17.0	5.6	19.0	7.5	
EU27	8.6	20.0	5.2	22.2	3.8	20%

# Renewable Energy Sources in SE Europe





# Wind Power Installed Capacity in SE Europe (2010)



<b>Wind power in SE Europe (2009 - 2010)</b>				
<b>Capacity (MW)</b>	<b>Installed 2009</b>	<b>End 2009</b>	<b>Installed 2010</b>	<b>End 2010</b>
Bulgaria	57	177	198	375
Cyprus	0	0	82	82
Greece	102	1,087	123	1,208
Romania	3	14	448	462
Croatia	10	28	61	89
Turkey	343	801	528	1,329
FYROM	0	0	0	0
<b>Total</b>	<b>515</b>	<b>2107</b>	<b>1,440</b>	<b>3,545</b>

# Solar Photovoltaic Installed Capacity in SE Europe (2010)



Country	Installed Capacity (MW)
Bulgaria	25.0 (e)
Cyprus	6.0 (e)
Greece	300.0
Romania	2.0 (e)
Turkey	5.0 (e)
<b>Total</b>	<b>348.0</b>

## S.E. Europe Renewables – Solar Thermal Market

Installed capacity of solar collectors in 2008 and cumulative capacity

No	Countries	Installed capacity in 2008		Cumulative capacity, end 2008	
		in m <sup>2</sup>	in MWth	in m <sup>2</sup>	in MWth
1	Bulgaria	6,000	4.2	62,000	43
2	Cyprus	40,550	28	665,300	465
3	Greece	300,000	210	3,550,000	2,485
4	Romania	10,000	7	79,600	56
5	Turkey	NA	NA	12,000,000	8,400





Capital	Beograd
Official languages	Serbian
Government	Parliamentary republic
President	Boris Tadić
Prime Minister	Mirko Cvetković
Area	77,474 km <sup>2</sup>
Population	7,379,339* [July 2009]
GDP (PPP)	
Total	\$84.207 billion* [2008]
Per capita	\$11,457* [2008]
GDP (nominal)	
Total	\$ 50.061 billion* [2008]
Per capita	\$ 6,811* [2008]
HDI	▲ 0.826* (high) [2007]
Currency	Dinar* (RSD)



# RES Investment Information

<b>S.E. Europe Renewable Energy Investment Information</b>		
<b>Project Sector</b>	<b>Description</b>	<b>Investment Estimate in Million Euros</b>
<b>RES</b>	Small Hydro	SE Europe: 1.900
		Turkey: 5.400
	Wind Farms	SE Europe: 1.850
		Turkey: 8.000
	Photovoltaics	SE Europe: 7.460
		Turkey: 4.000
	Concentrated Solar Power	SE Europe: 350
		Turkey: 400
	Biomass	SE Europe: 920
		Turkey: 500
	Geothermal	SE Europe: 633
		Turkey: 800
	Solar Water Heating	SE Europe: 17.330
		Turkey: 1.300
<b>Total Estimated RES Investment by 2020 (including Turkey)</b>		<b><u>66.843</u></b>