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# Wind Potential in Bulgaria

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December 2010

# Bulgaria – Country Specific Information



## Bulgaria

Area:  
Population:  
Population density:  
Gross electricity demand  
Energy share from RES  
Target share from RES in 2020

110 879 km<sup>2</sup>  
7,4 Mio.  
65 ppl / km<sup>2</sup>  
29,9 TWh/year  
8%  
16%

## Germany

357.104 km<sup>2</sup>  
82 Mio.  
229 ppl / km<sup>2</sup>  
639,1 TWh/year  
14.8%  
18%

- Historically Bulgaria has been an exporter of energy, due to large installations of nuclear power (Kozloduy, now only 2GW as partly decommissioned)
- Currently Bulgaria produces most of its renewable energy from **hydropower** plants
- Wind amounts to only 6.4% of the electricity produced from renewable sources in Bulgaria
- Bulgaria's NREAP submitted to EU in 2010 claims the following targets for **on-shore wind project** development :

2010: **336 MW** >>>> 2015 : **984 MW** >>>> 2020 : **1256 MW**

Offshore installed capacities are not considered in Bulgaria's NREAP

- In 2020, 30% of renewable energy will be generated by wind power plants

# Map of Existing Wind Turbines in Bulgaria



# Bulgaria – Key Energy Sector Players and Regulatory Bodies



## Utility companies >

NEK, the former vertically integrated state-owned monopoly, is currently active in hydro generation, imports/ exports, trading and transmission through ownership of the transmission system and part of the generation capacity.

The Government privatised seven **power distribution companies**, selling them to the Czech Republic's CEZ, Germany's E.ON, and Austria's EVN in 2005.



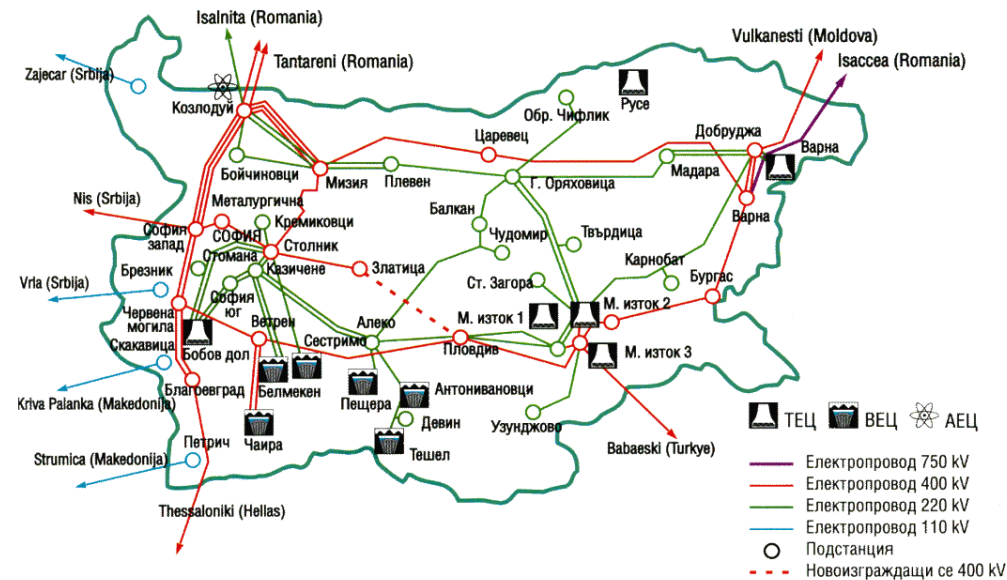
## Foreign investment energy players >

ENEL to enter Belene nuclear plant

Global Wind Power developed four projects in Bulgaria in 2008 and 2009 with a total capacity of 52 MW - all of them with Vestas turbines

## National regulatory bodies >

State energy and water regulatory commission SEWRC



## Feed-in tariff for Wind in Bulgaria in 2010

- up to 2 250 work hours and of 800 kW or more installed capacity
  - 190,59 BGN/MWh = **97,4 EUR/MWh**
- over 2 250 work hours and of 800 kW or more installed capacity
  - 174.44 BGN/MWh = **89,2 EUR/MWh**
- Fixed for 15 years
- However, at end of 2010, **new legislation** piece is **expected to reduce high level of support** to renewable energy

## Estimated total wind potential in Bulgaria

Bulgaria is located in a region with relatively low wind energy potential and it is assumed that installations will operate for 1500 to 1800 full effective hours.

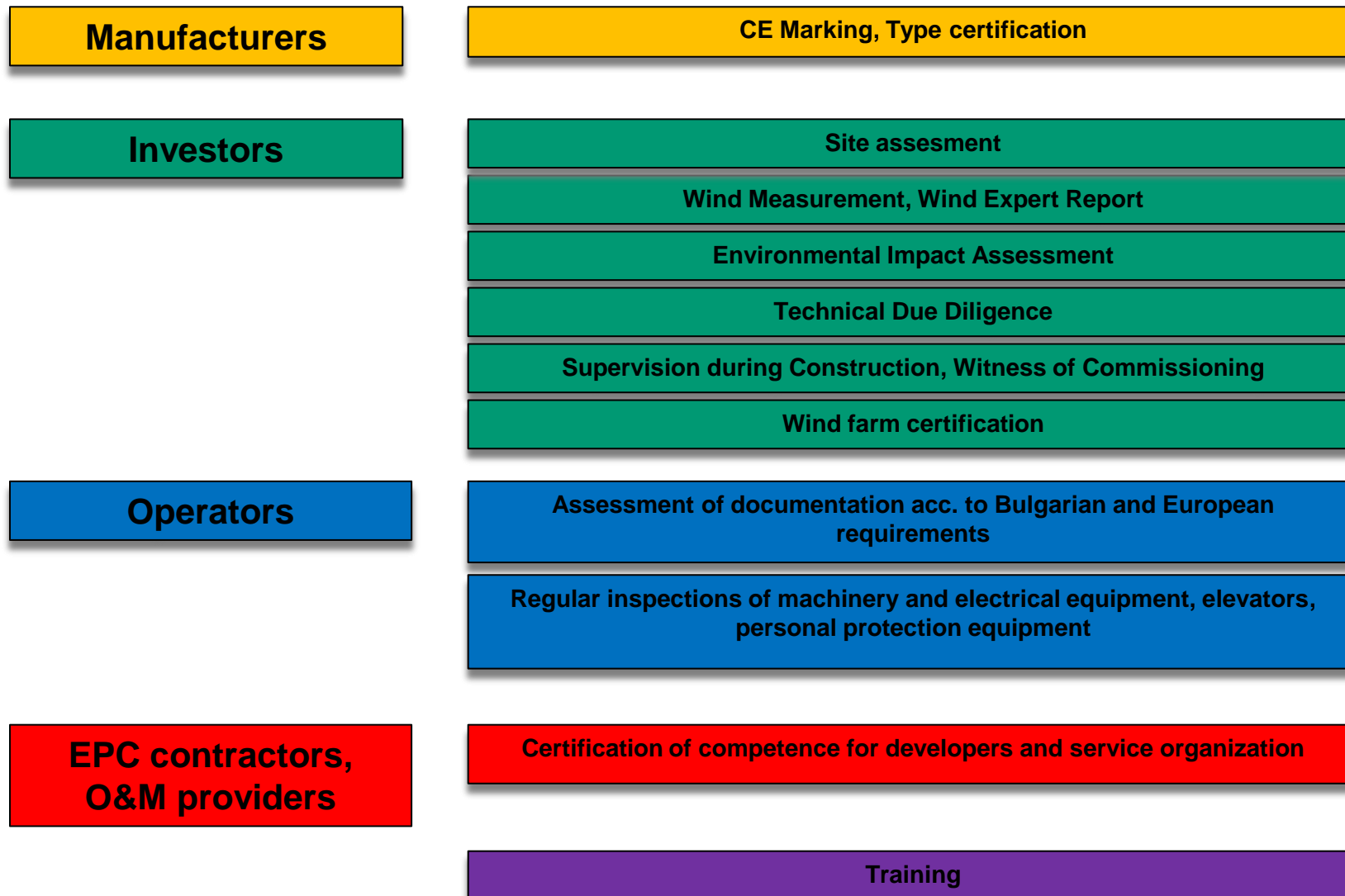
In general, the wind potential of Bulgaria is not so large. The estimations show that an area of 1400 km<sup>2</sup> approximately has annual wind speed over 6,5 m/s, which is the breakeven of a wind energy project. So, the most appropriate zones for initiating a wind project are some mountain regions and the North coast.

### Other relevant facts

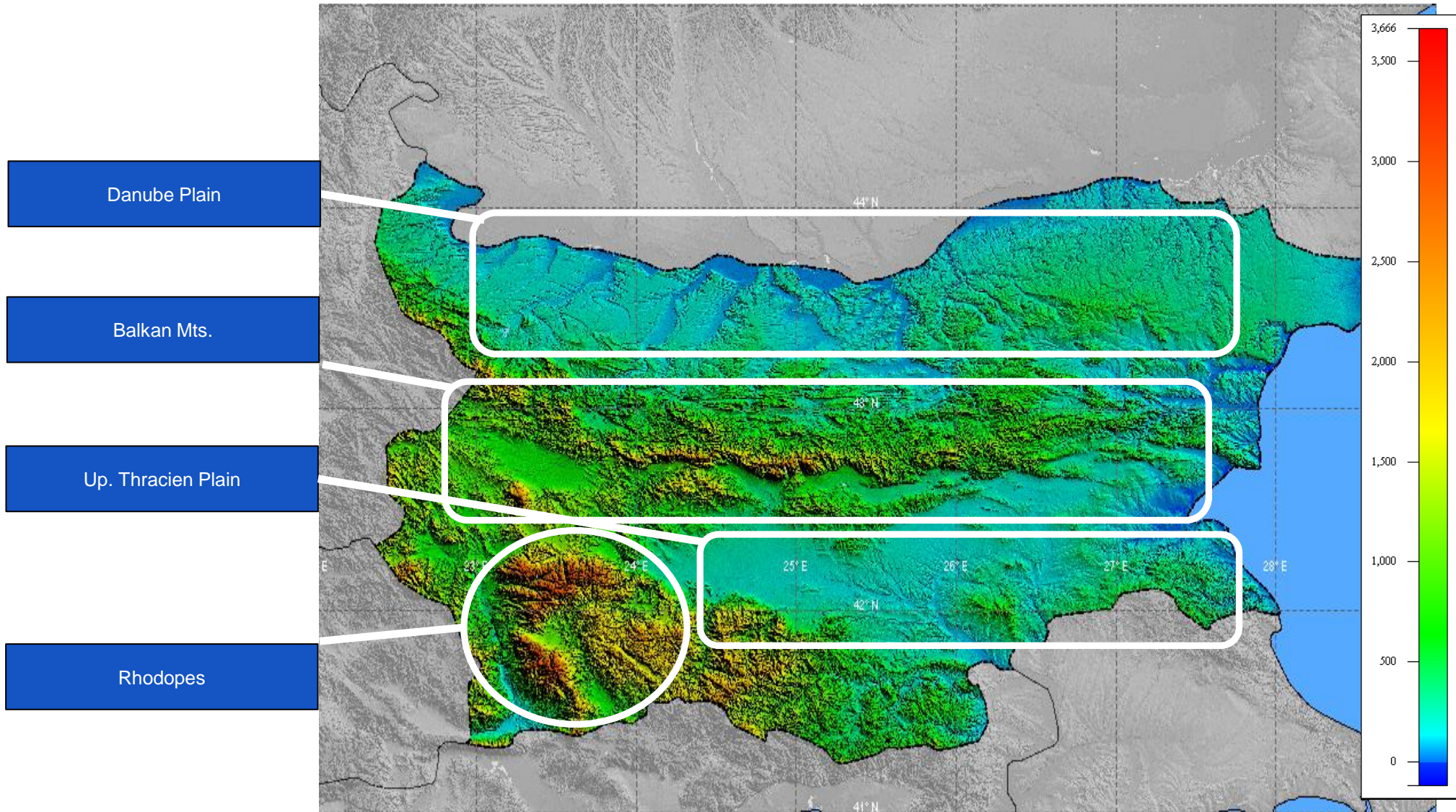
In June 2010 the Parliament of Bulgaria passed a bill to amend the Law for the Protection of Agricultural Land. This bill imposes severe restrictions on the development of renewable energy projects on agricultural land. It essentially bans renewable energy projects from 28 % of the area of the entire country (category 1 – 4 land).

The opposition to the bill is widespread and uniform.

# Services of TÜV SÜD for Wind Business in Bulgaria



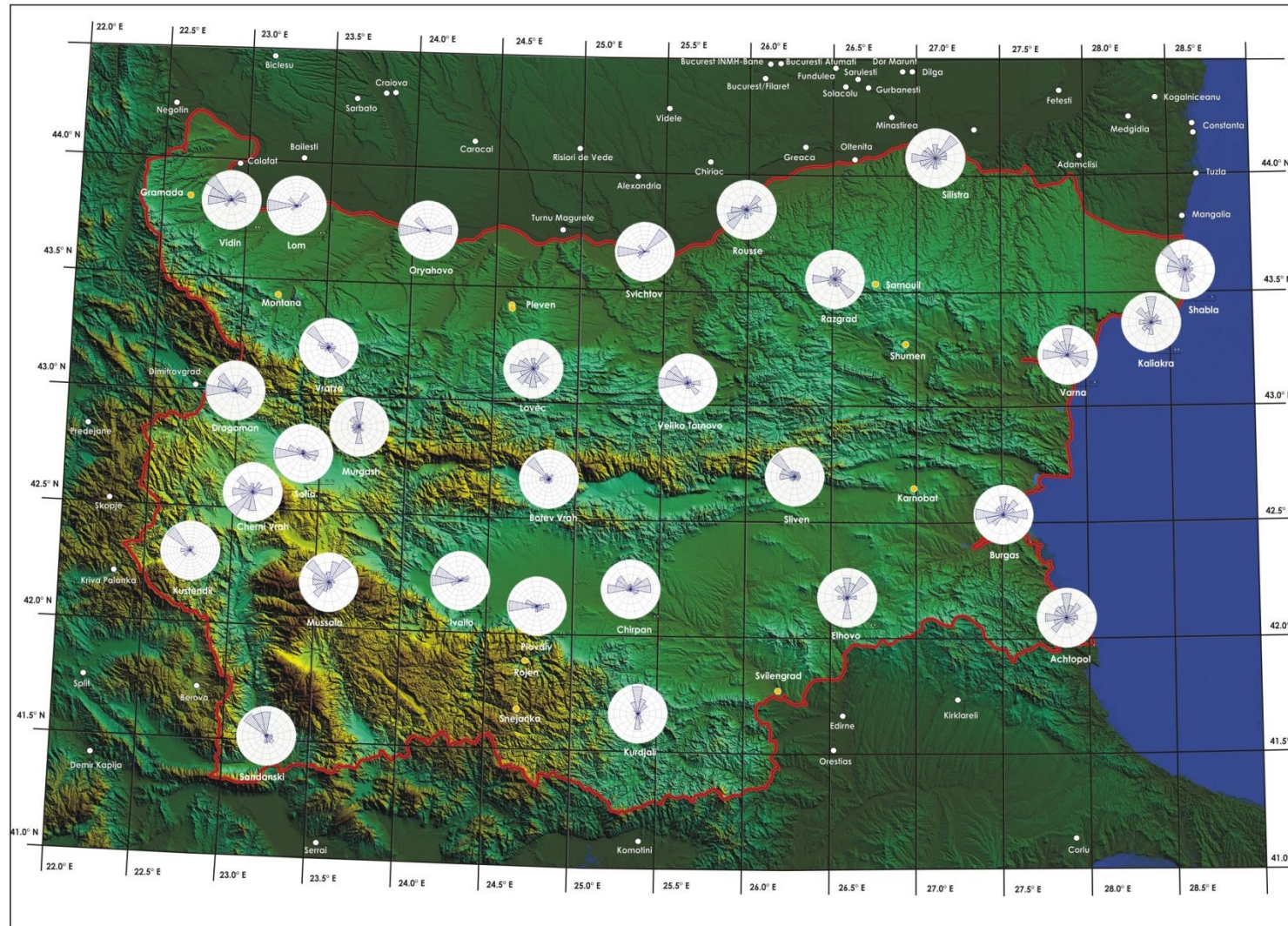
# Bulgaria - Geography



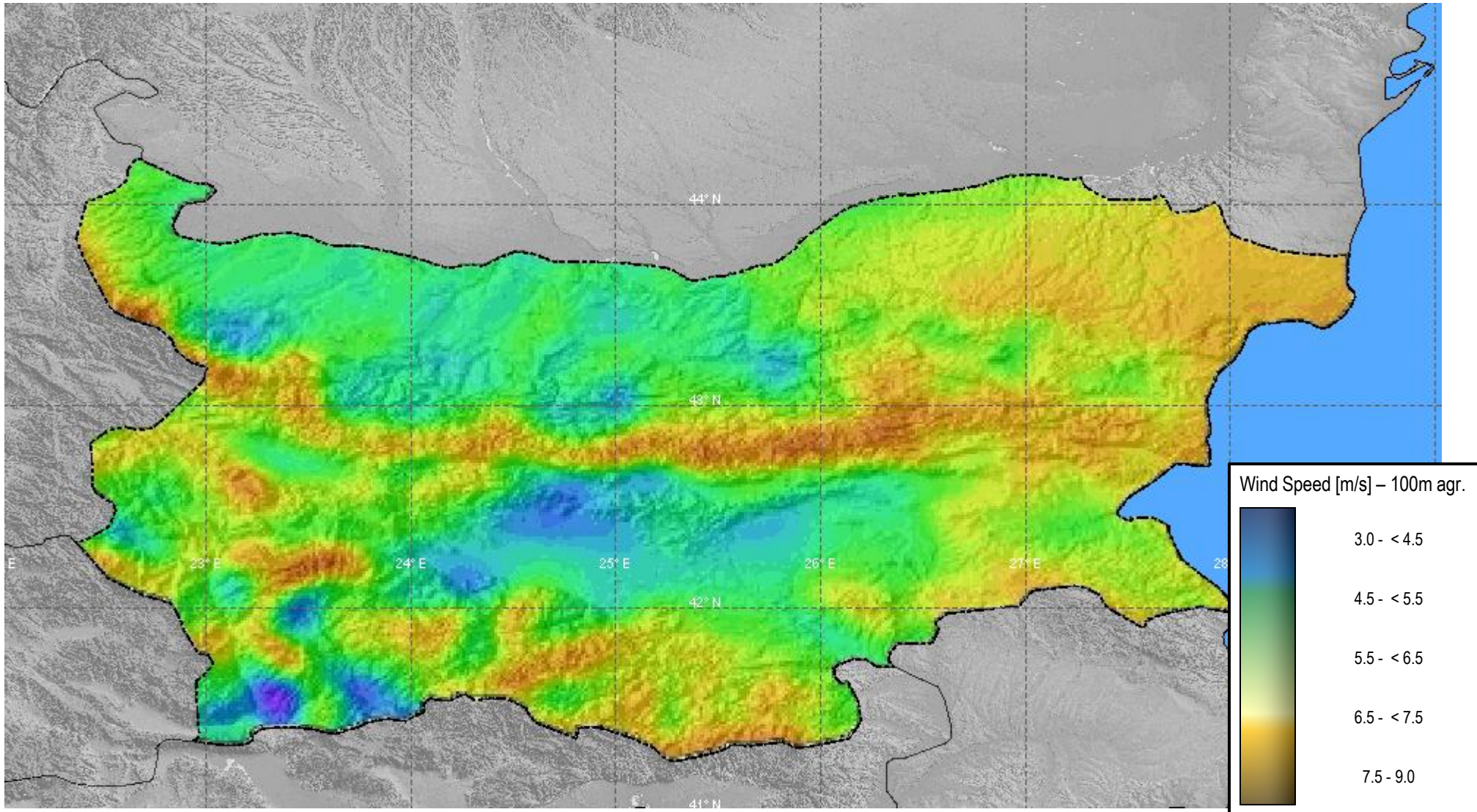
# Bulgaria – Wind roses



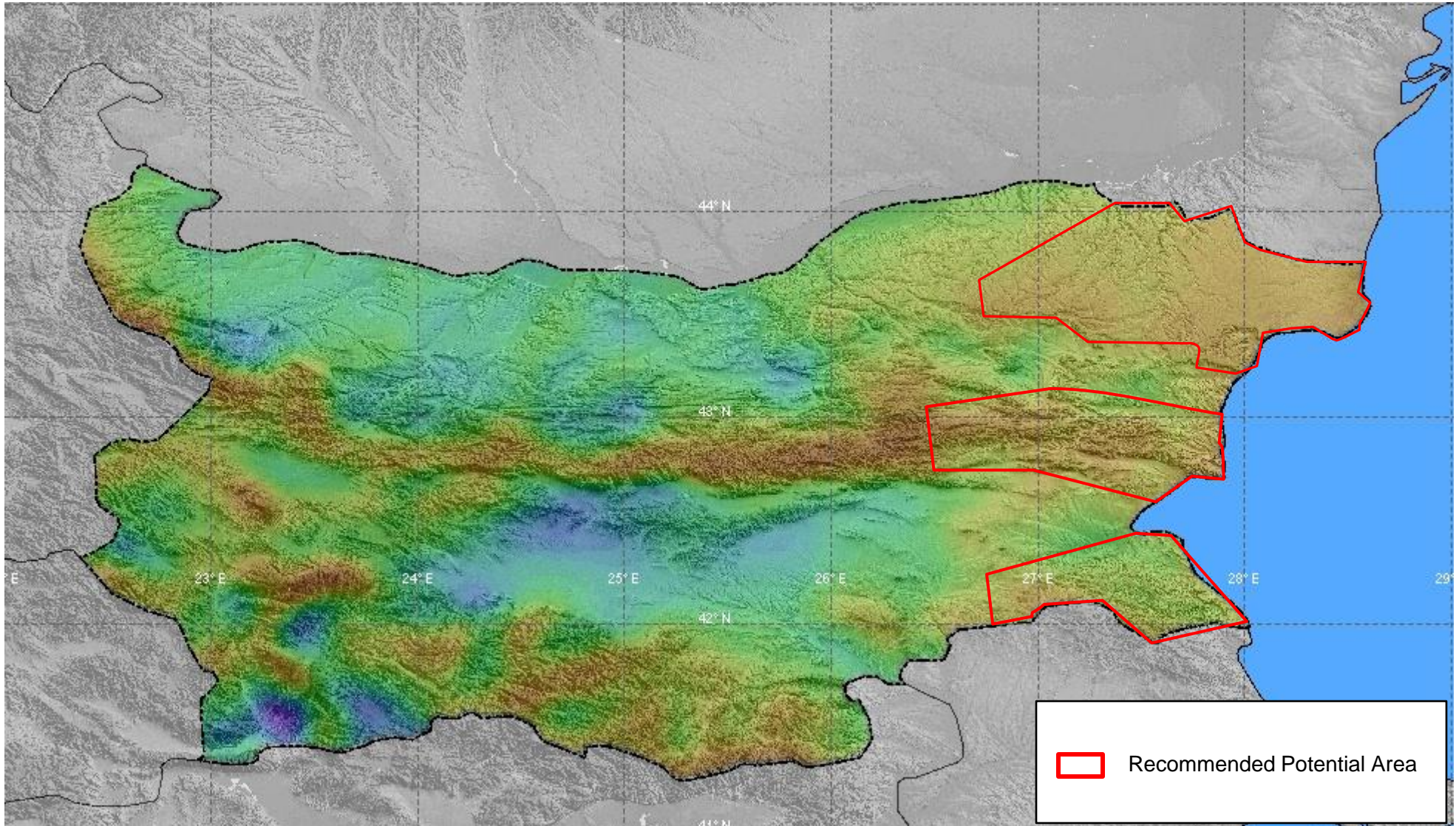
WIND GAUGING STATIONS IN BULGARIA (and adjacent areas)



# Bulgaria – Potential Analysis I



# Bulgaria – Potential Analysis II



# Bulgaria – Potential Analysis III

