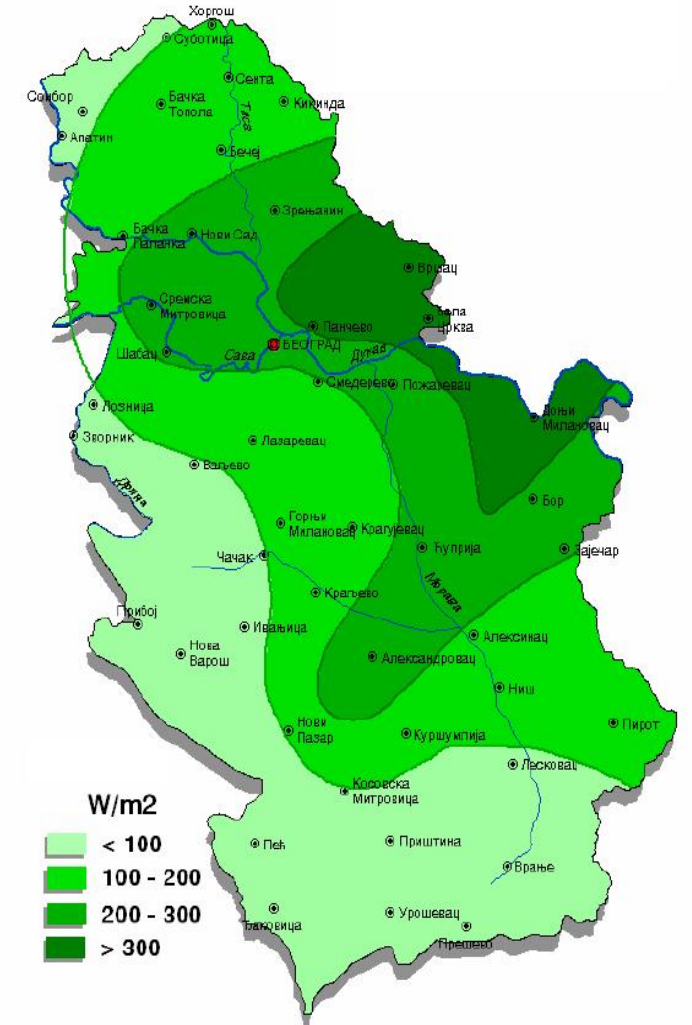


Renewable energy sources of Vojvodina

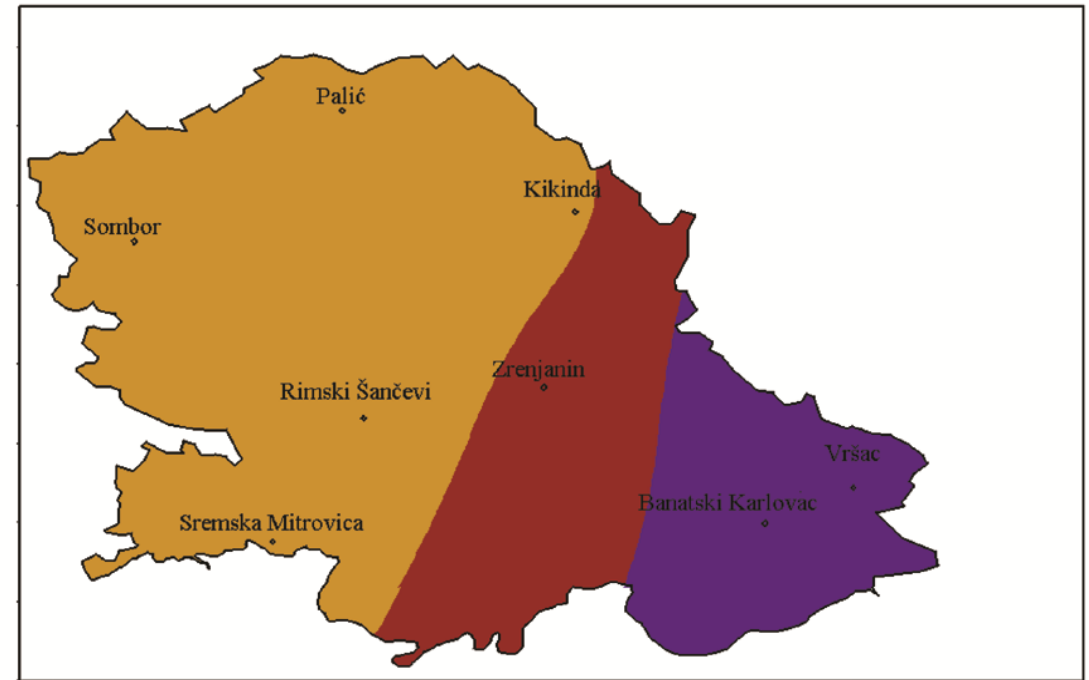
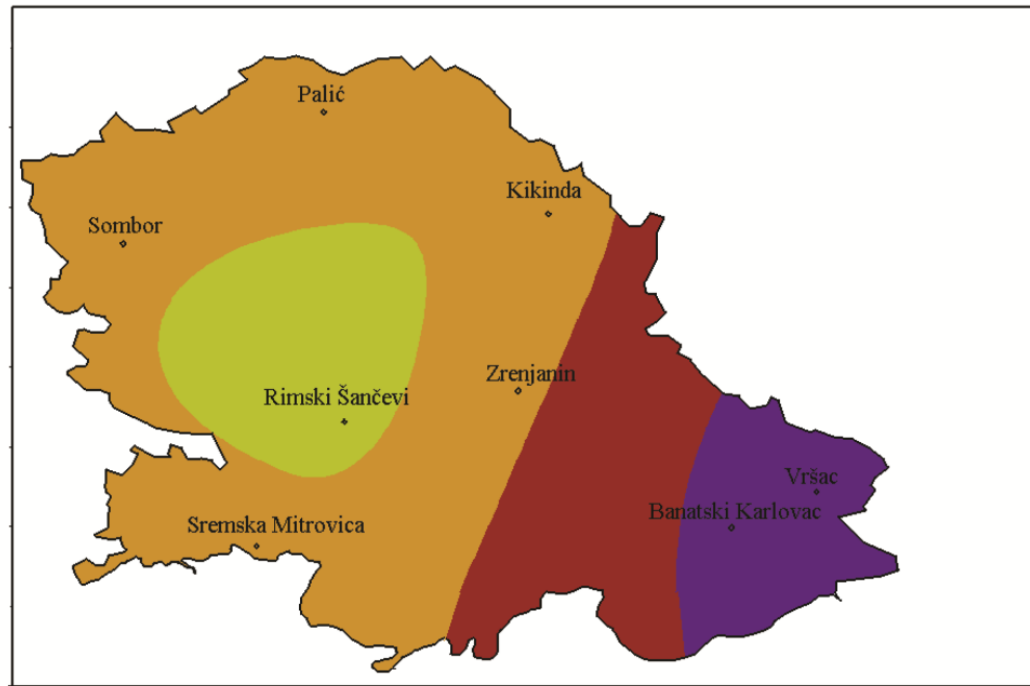
Autonomous Province of Vojvodina – Wind energy potential

- Focus of researchers;
- Average wind power density 100-400 W/m²;
- Three main areas in Serbia;
- Vojvodina the most attractive (infrastructural);
- “Wind Atlas of AP Vojvodina” – verification of the potential;



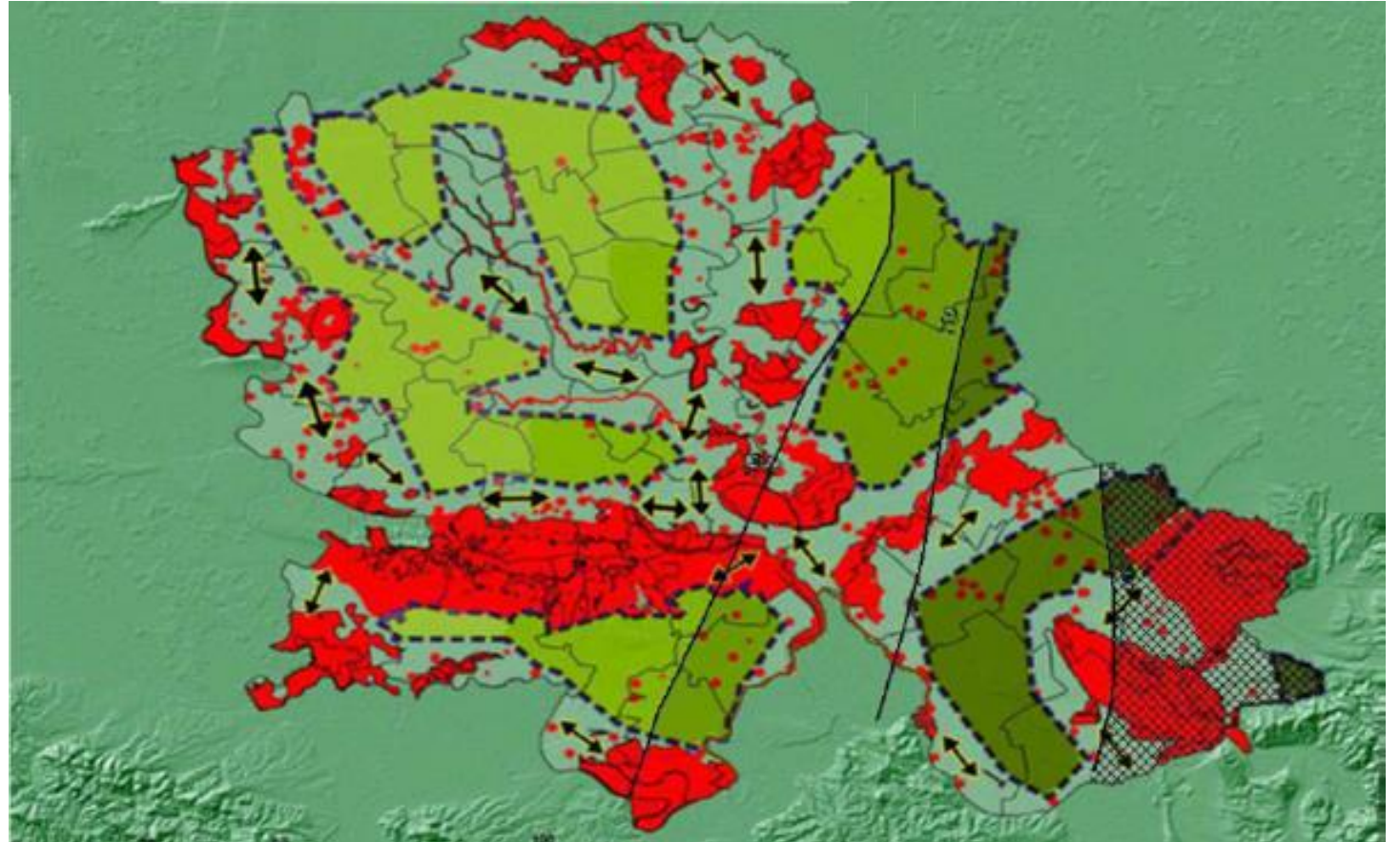
Autonomous Province of Vojvodina – Wind energy potential

- Average annual wind speed [m/s] (left), and average wind power density [W/m²] (right), at 100 m above the ground, annual energy density 1700 kWh/m² for wind speed 3.5 – 4.5 m/s;



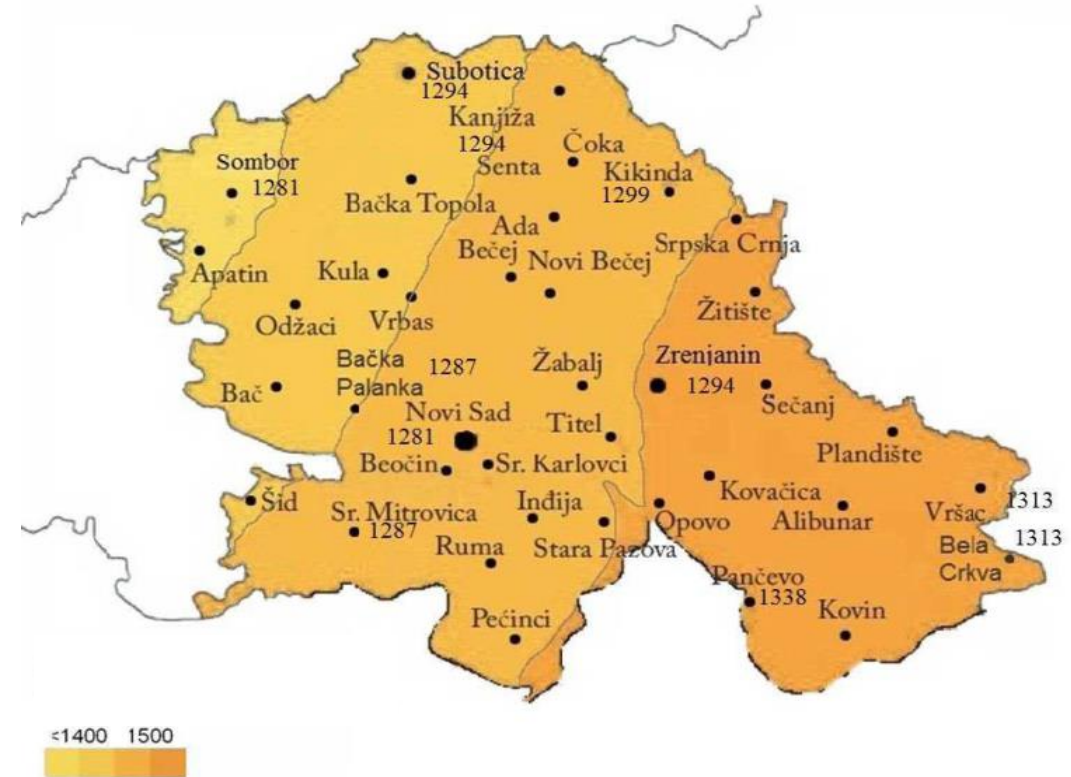
Autonomous Province of Vojvodina – Wind energy potential

- Overview of suitable locations for building wind farms in AP Vojvodina;
- Restrictions:
 - Bird migration;
 - Protected natural areas;
 - Infrastructural issues;
- Production of wind farm components in Vojvodina;



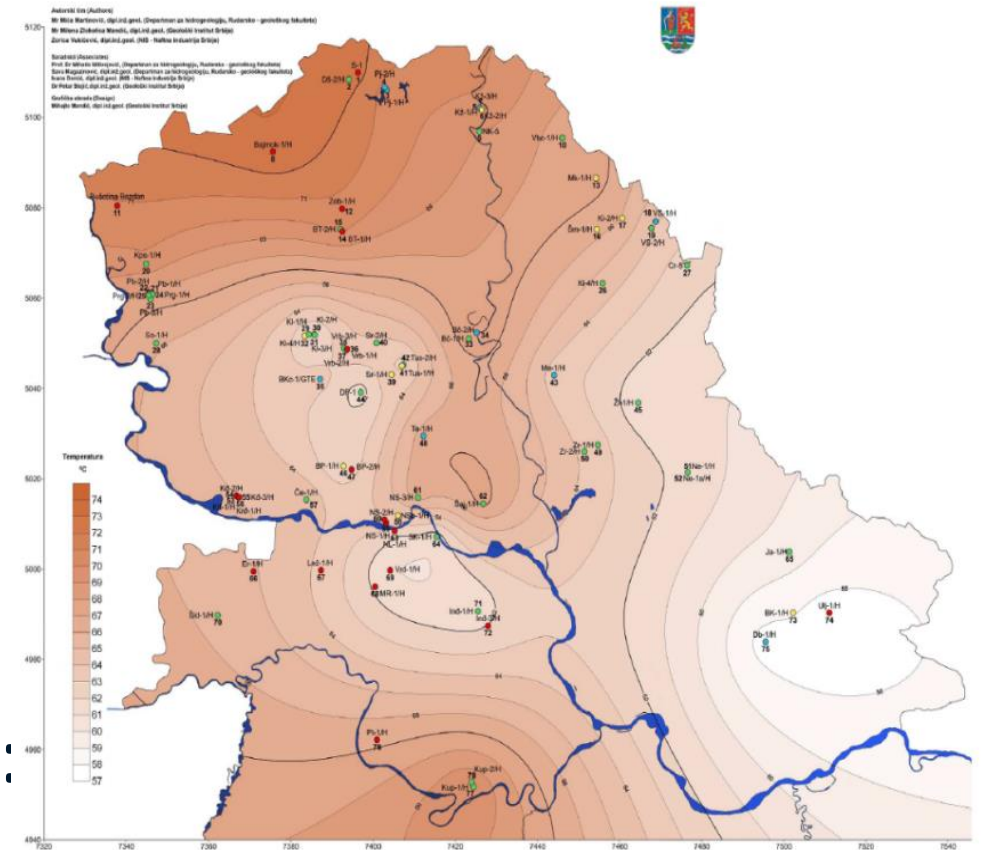
Autonomous Province of Vojvodina – Solar energy potential

- The annual average of solar radiation on a horizontal surface in Vojvodina – 1300 kWh/m² per annum;
- 267 sunny days with over 2000 sunny hours;
- Average daily irradiation:
 - From 1.0 kWh/m² to 1.4 kWh/m² (January);
 - From 6.0 kWh/m² to 6.3 kWh/m² (July);
- Annual daily average (30° inclined) – 4.0-4.6 kWh/m²;



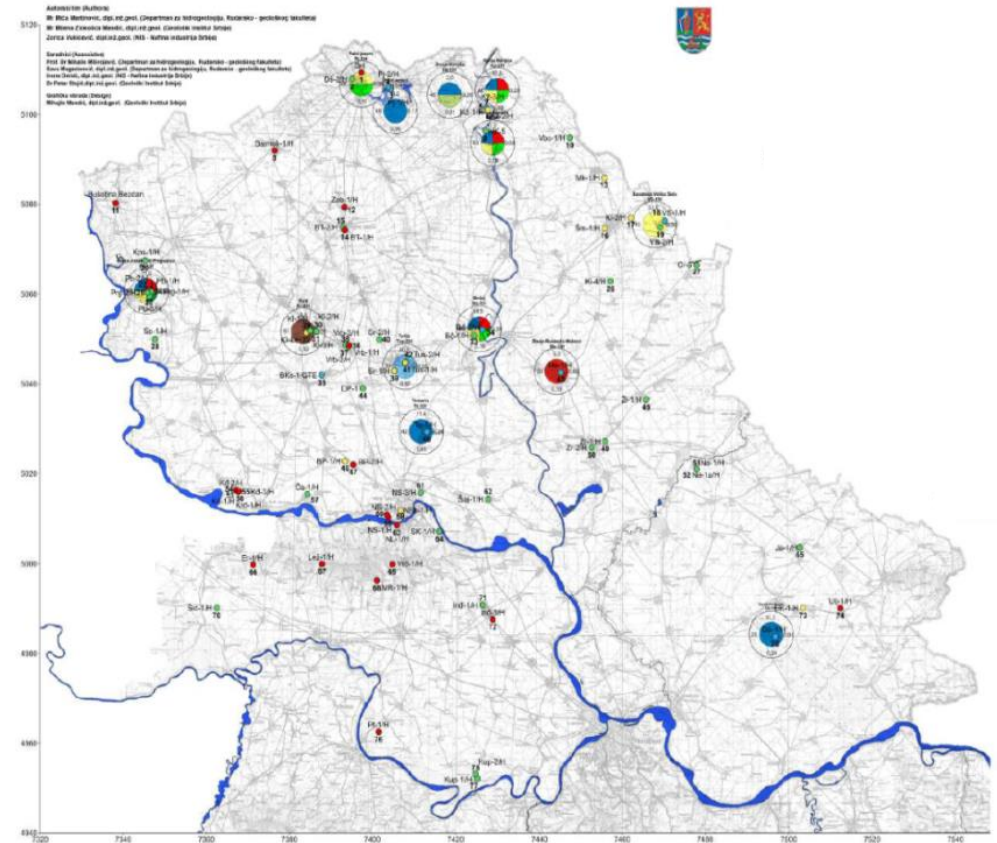
Autonomous Province of Vojvodina – Geothermal energy

- Geothermal potential of Vojvodina at 1000 m (“Geothermal atlas of Vojvodina”);
- Geothermal – 13.6 EJ (1200 m);
- Hydro-geothermal – 3.95 EJ;
- Only 25 % practically available:
 - Approximately 1 EJ;
- Low temp. resources at 200 – 300 m:
 - Potentially 280 MW – heat pumps ;



Autonomous Province of Vojvodina – Geothermal energy

- Geothermal energy is mostly used as hydro-geothermal;
 - 78 hydrothermal wells;
 - 9 l/s average yield;
 - 48.8°C average temperature;
 - 54 MW of total heat potential – 19 MW used for heating purposes in balneology and tourism;
 - 897 m of average well depths;
- 1 million m³ of mineral water consumption;



Autonomous Province of Vojvodina – Biomass energy

- Potential in Biogas production (livestock excrement) – livestock number and livestock mass;

	Cattle	Pigs	Poultry
Total for APV	224,808	1,390,243	11,165,877
PE and Collective farms	24,716	486,963	5,164,458

	Number [thousands]	Mass [t]	Livestock Units	Livestock Units - [Large farms]
Cattle	248	94,250	188,500	45,200
Pigs	1,387	87,816	175,632	101,300
Poultry	13,682	22,269	44,538	26,700
Total			408,670	173,200

