



Workshop on the Danube Region Geothermal Concept (DanReGeotherm)

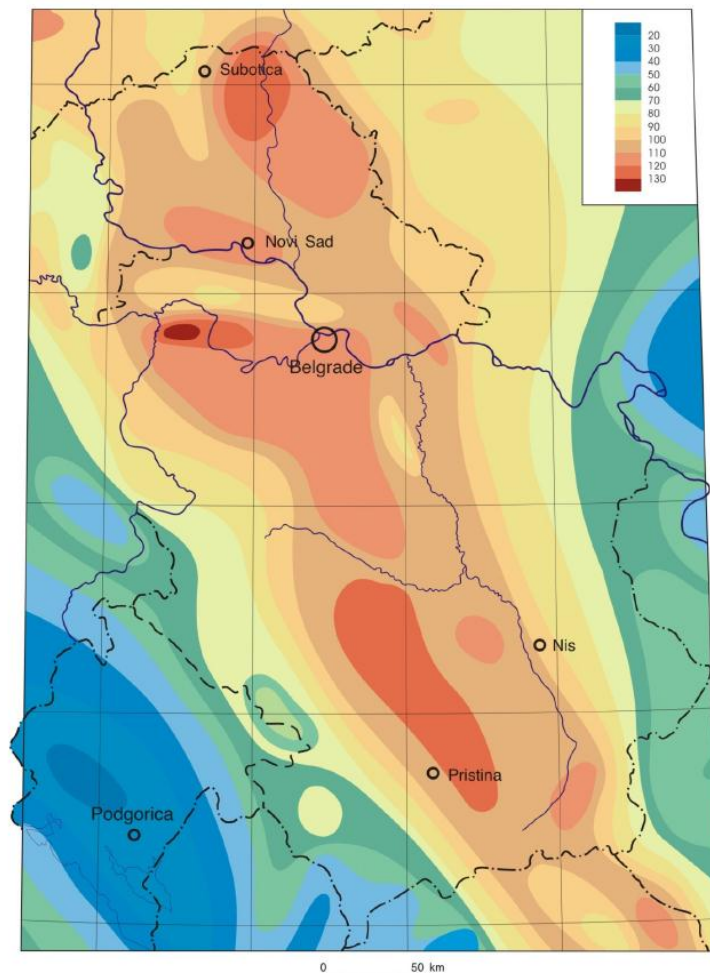
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Geological and Geophysical Institute of Hungary*

Country update: Serbia

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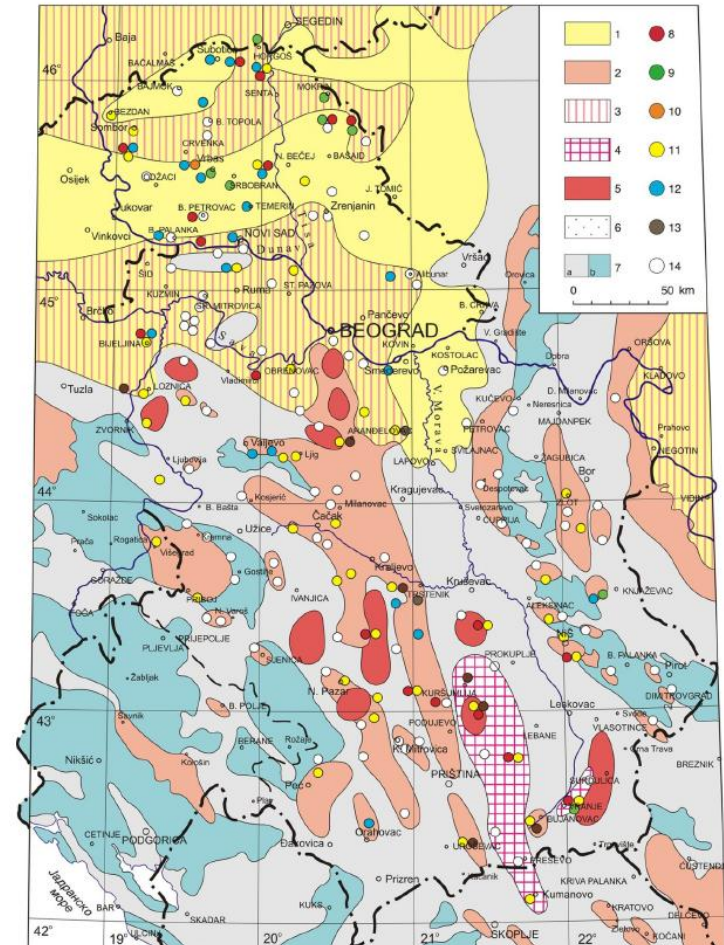
Main deep geothermal reservoirs

- ▶ Considering the present state of our knowledge of the geologic composition and hydrogeothermal properties of rocks to a depth of 3000 m, there are 60 convective hydrogeothermal systems in Serbia.
- ▶ Of this number, 25 are in the Dinarides, 20 in the Carpatho-Balkanides, 5 in the Serbian-Macedonian Massif, and 5 in the Pannonian Basin under Tertiary sediments.
- ▶ Conductive hydrogeothermal systems are developed in basins filled with Paleogene and Neogene sedimentary rocks. The majority of these are in the Pannonian Basin in Vojvodina, northern Serbia. The other 14 systems are less interrelated and less important.



Main deep geothermal reservoirs

- ▶ Within the territory of Serbia excluding the Pannonian Basin, i.e. the terrain comprising solid rocks, there are 159 natural thermal springs with temperatures over 15 °C.
- ▶ The warmest springs (96 °C) are in Vranjska Spa, followed by Josanicka Spa (78 °C), Sijarinska Spa (72 °C) Kursumlijska Spa (68 °C), Novopazarska Spa (54 °C).
- ▶ The total flow of all natural springs is about 4000 l/s.
- ▶ The highest flows are from thermal springs draining Mesozoic karstified limestones, and the next highest are those from Tertiary granitoids and volcanic rocks.
- ▶ The greatest number of thermal springs are in the Dinarides, then the Carpatho-Balkanides, the Serbian-Macedonian Massif, and the lowest, only one in each, the Pannonian Basin and the Mesian Platform.



Main types of current utilization of geothermal energy

Present and planned geothermal district heating (DH) plants and other direct uses, total numbers						
	Geothermal DH Plants		Geothermal heat in agriculture and industry		Geothermal heat in balneology and other	
	Capacity (MW _{th})	Production (GWh _{th} /yr)	Capacity (MW _{th})	Production (GWh _{th} /yr)	Capacity (MW _{th})	Production (GWh _{th} /yr)
In operation end of 2012	53.646	231.254	16.955	82.811	55.595	258.410
Under construction end of 2012	6.296	44.516	/	/	1.882	12.823
Total projected by 2015	59.942	275.770	25.955	139.881	57.477	271.233

There are today in Serbia 59 thermal water spas used for balneology, sports and recreation and as tourist centers.

Data policy

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Temperature maps at depth 500, 1000, 2000 m	Temperature data in the subsurface (e.g. oil and gas borehole BHT/DST)
Thermal spring	
Geothermal reservoir temperature in high enthalpy geothermal fields	
Reservoir information (pressure, production level depth, flow range, fluid characteristic, enthalpy).	
Basin layout and sediment–basement interface depth	
Outlines of granitic formations	
Fault mapping, Tertiary and Quaternary fault systems	
National geothermal energy statistics does not exist	

Main stakeholders of geothermal projects

The main stakeholders related to geothermal energy in Serbia					
Stakeholder name	Type	address	website	contact person	email/availability
Faculty of Mining and Geology	Scientific association	Djusina 7, Belgrade, Serbia	http://www.rgf.bg.ac.rs	Dejan Milenic	dmilenic@yahoo.ie
Ministry of Energy, Development and Environmental Protection	Authority	Nemanjina 22-26, Belgrade, Serbia	http://www.merz.gov.rs		
Ministry of Natural Resources, Mining and Spatial Planning	Authority	Nemanjina 22-26, Belgrade, Serbia	http://www.mprpp.gov.rs		
Geological Institute of Serbia	Research institute	Rovinjska 12, Belgrade, Serbia	http://www.gzs.gov.rs		
NIS Gasprom neft	Company		http://www.nis.eu		