Renewable Geothermal Heat Energy Potential in the City of Valjevo and Surrounding Areas

EURO LiTHIUM BORATES+

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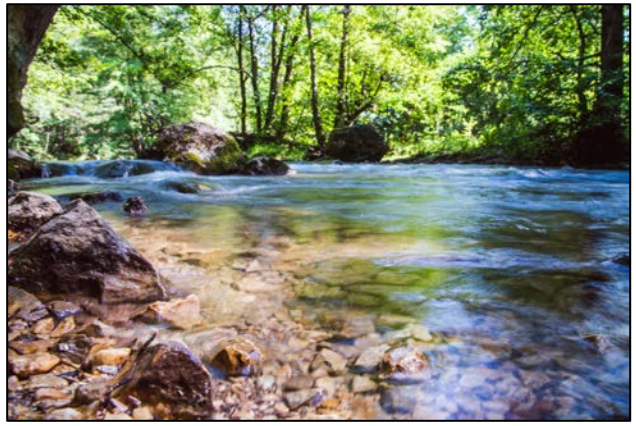
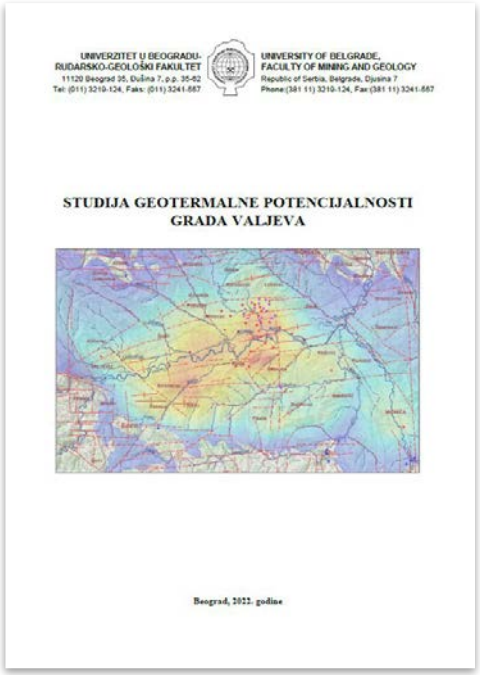


2023

Hydrogeological Study and Further Research

- On the initiative of the company Euro Lithium Balkan (ELB) in cooperation with the Faculty of Mining and Geology, a "Study of the geothermal potential of the town of Valjevo" was carried out.
- As part of this research, the most promising areas with the expected quantities and temperatures of underground water were singled out. This potential has been processed as a geothermal resource that can be used to produce thermal energy in the remote system of Heat Plant of Valjevo.
- Thanks to the study's positive results, project documentation for two exploration areas was prepared and submitted to the Ministry.


UNIVERZITET U BEOGRADU-
RUDARSKO-GEOLOŠKI FAKULTET

UNIVERSITY OF BELGRADE,
FACULTY OF MINING AND GEOLOGY

STUDIJA GEOTERMALNE POTENCIJALNOSTI
GRADA VALJEVA

Beograd, 2022. godine


EURO LiTHIUM

PROJEKAT
primenjenih hidrogeoloških istraživanja za
utvrđivanje geotermalne potencijalnosti
na istražnom području Valjevo - Beloševac

Valjevo, Oktobar 2022.

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PROJEKAT
primenjenih hidrogeoloških istraživanja za
utvrđivanje geotermalne potencijalnosti
na istražnom području Šušoka - Mrčić

Valjevo, Oktobar 2022.

Geothermal Potential Exploration Areas in Valjevo (1)

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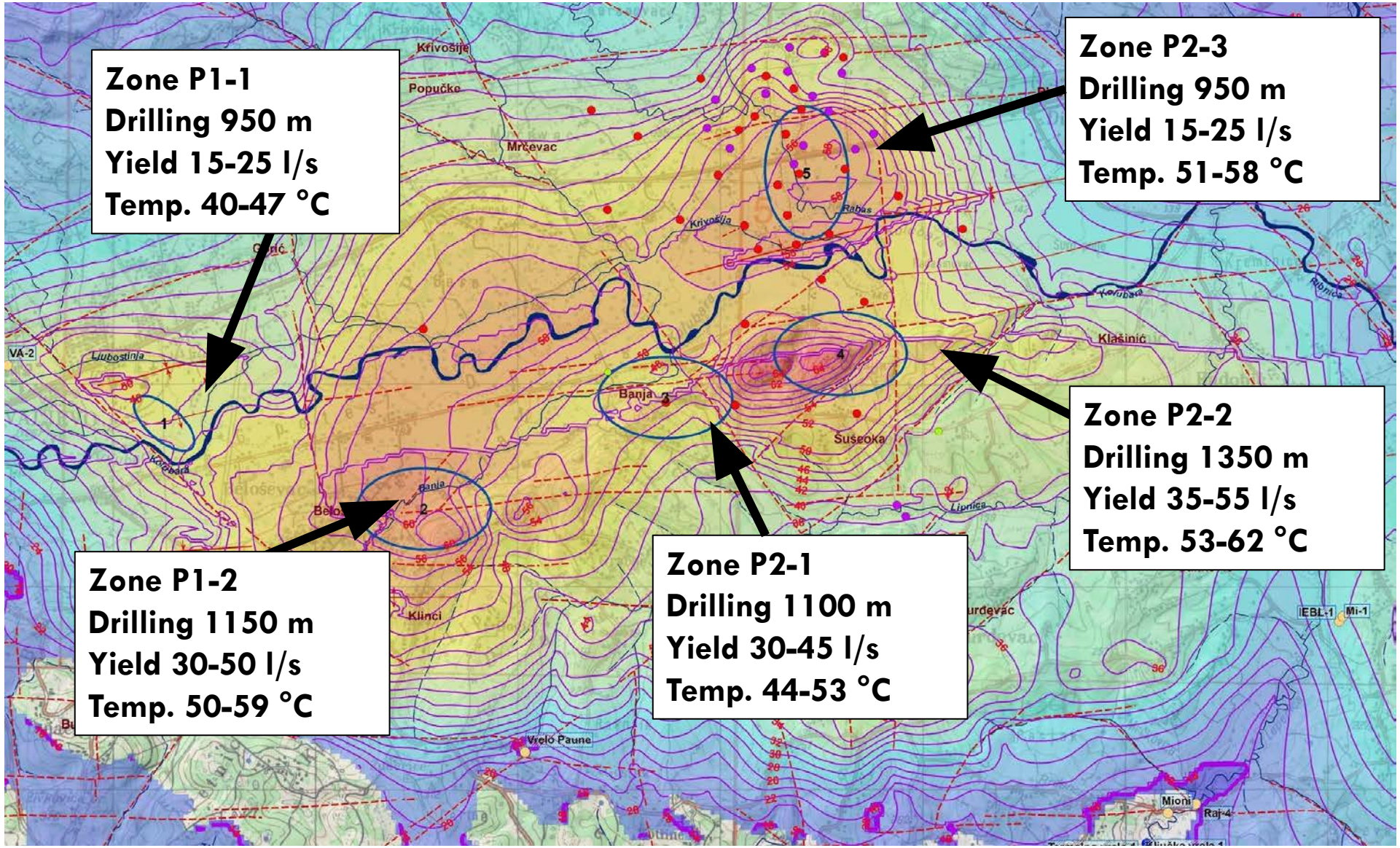
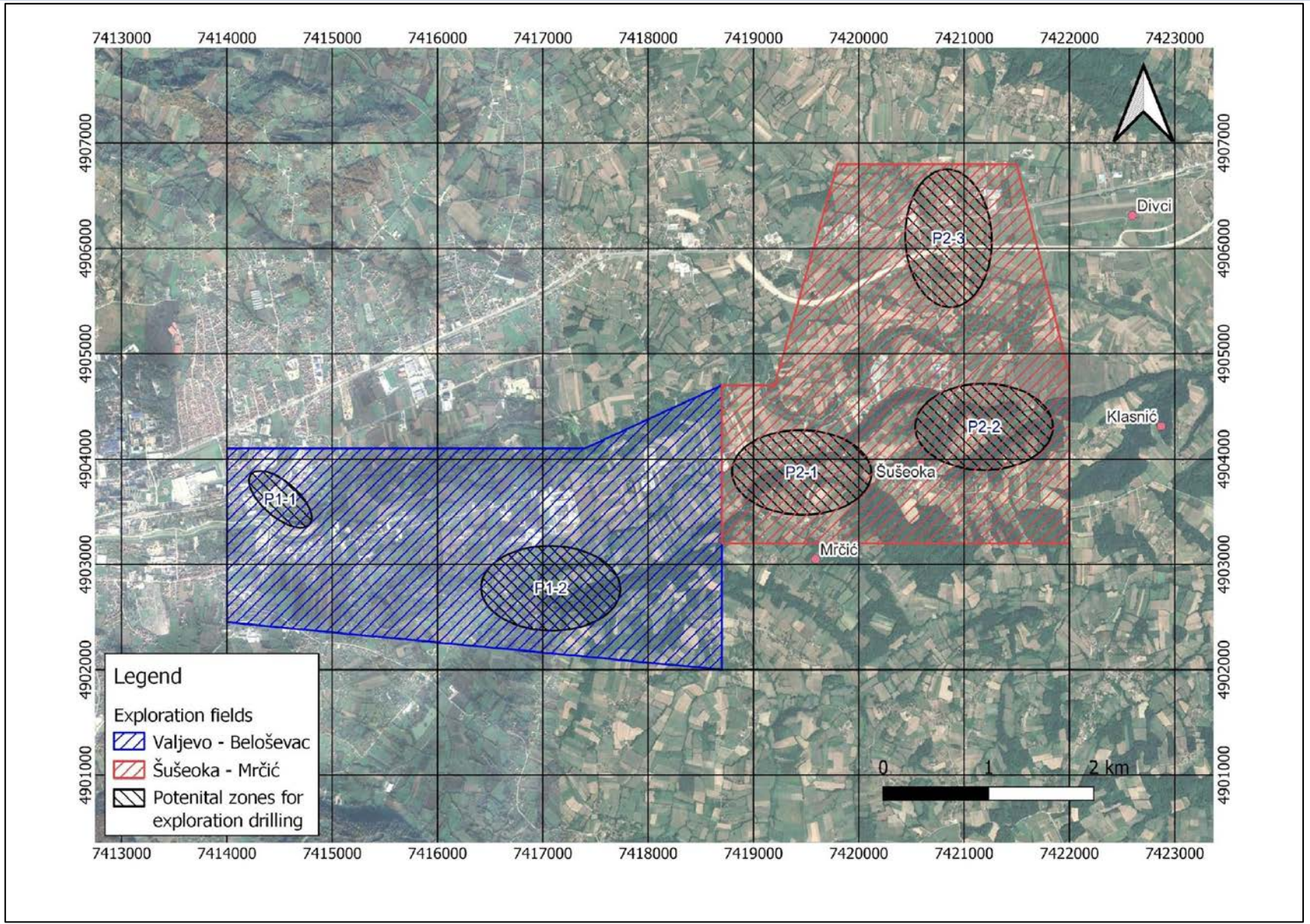
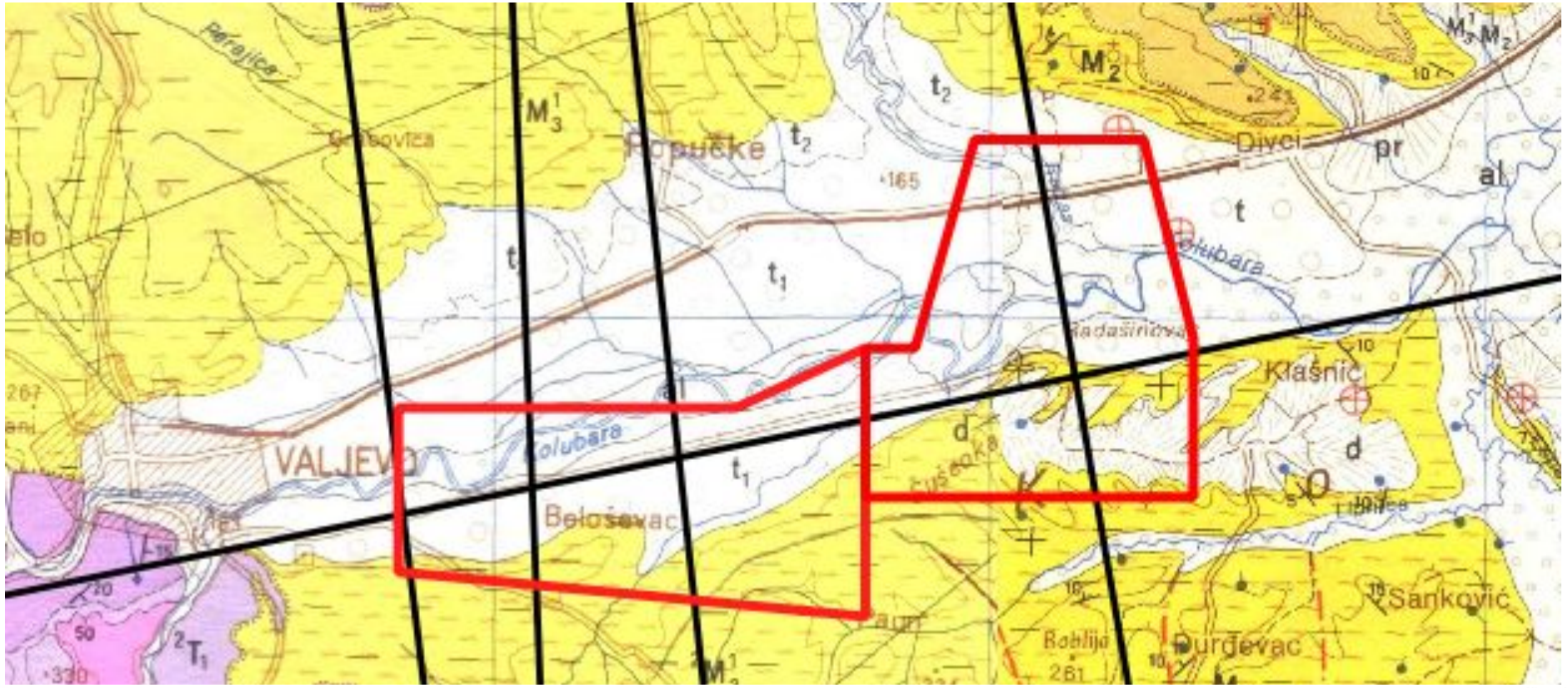


- Based on the data from the Study on Geothermal Potentialof the city of Valjevo, the maximum temperatures and yields of underground water were calculated for each of exploration zones.
- The drilling depths were estimated.
- Five prospective zones were singled out, which were later processed in the project documentation as two exploration areas.

Geothermal Potential Exploration Areas in Valjevo (2)

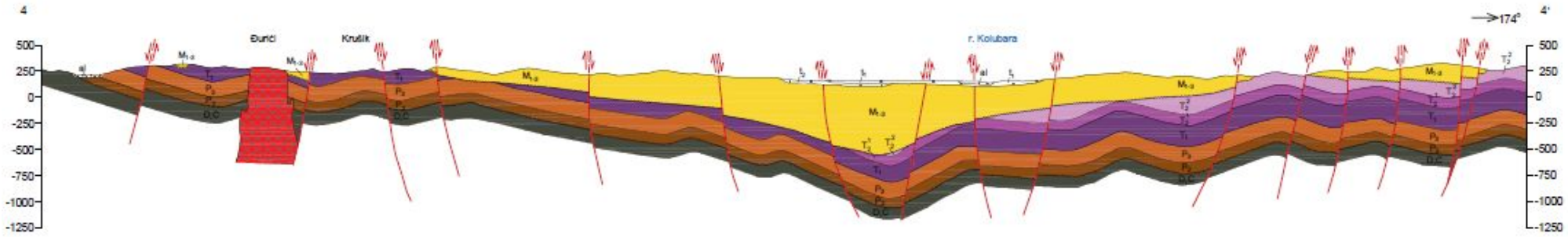


Geothermal Potential Exploration Areas in Valjevo (3)



LEGENDA:

- al — Aluvijum
- t_1 — Niži terasni sedimenti: peskovi i šljunkovi
- t_2 — Viši terasni sedimenti: peskovi i šljunkovi
- Tß — Feldspatoidske stene
- M_{1-3} — Laporci, gline, peščari i glinci
- T_2^2 — Krečnjaci i krečnjačke breče (ladinski kat)
- T_2^1 — Dolomiti i dolomitični krečnjaci (anizijski kat)
- T_1 — Krečnjaci, glinci i peščari
- P_3 — Krečnjaci sa glincima
- P_2 — Glineni škriljci i peščari
- D,C — Peščari i glineni škriljci



Potential Results (Heat)

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Potential Groundwater Resource per Each Identified Zone

Zone	Potential well depth (m)	Drawdown in well (m)	Temperature in reservoir (°C)	Potential yield per well (l/s)	Potential yield per zone (l/s)
P1-1	700-950	300	44-47	15-25	50-70
P1-2	1000-1150	370	55-59	30-50	120-180
P2-1	1000-1100	350	49-53	30-45	110-160
P2-2	1100-1350	400	58-62	35-55	150-200
P2-3	800-950	300	54-58	15-25	50-70

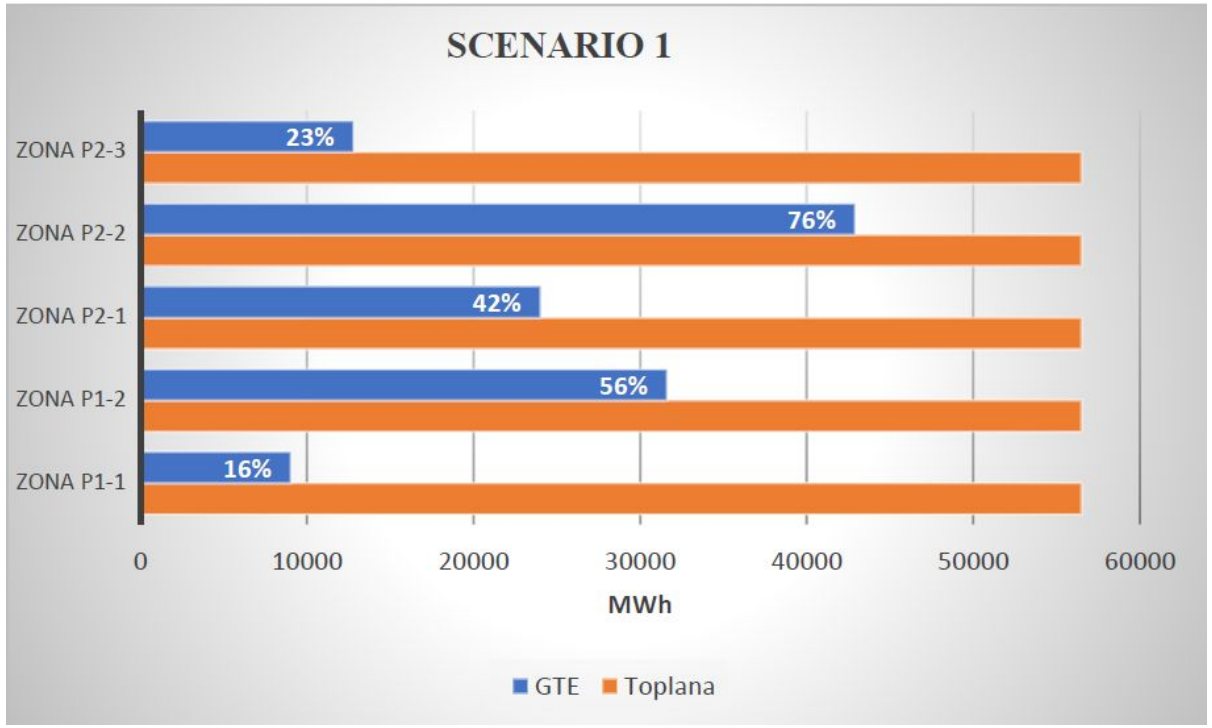
Estimated available heat energy from the geothermal resources within the particular zones (MWh)

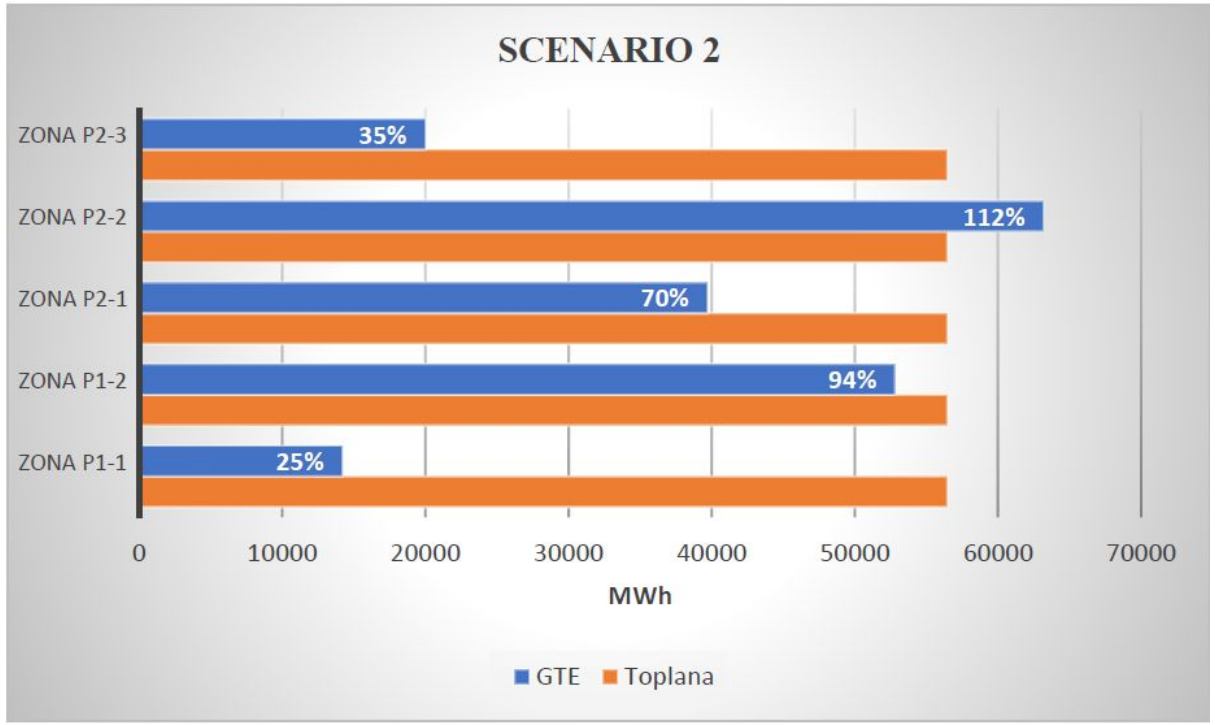
Zone	Scenario 1 (Base Case)	Scenario 2 (Upside Case)
P1-1	≈ 9.030	≈ 14.220
P1-2	≈ 31.600	≈ 52.820
P2-1	≈ 34.000	≈ 39.730
P2-2	≈ 42.880	≈ 63.200
P2-3	≈ 12.790	≈ 60.020

- The calculations are divided into two scenarios. Scenario 1 implies moderate estimates of the amount and temperature of geothermal resources and is followed by a lower degree of risk, while Scenario 2 implies the maximum expected amount and temperature of geothermal waters. Scenario 2 is actually a "best case scenario" and is accompanied by a slightly higher degree of "research risk".

Expected Results (Relative To Current System)

Geothermal resources potential according to the production of thermal energy in the local district heating system (‘Toplana’)





Zones P1-1 & P1-2, the potential geothermal zones directly below the ***Heatplant****. Furthermore, if all potential geothermal zones were proven and developed,* ***local heat production capacity could be increased by 2.4 - 4.1x***

<u>…AND BE 100% RENEWABLE</u>

Potential Results (CO_2 Avoidance)

In the year 2020. heat plant "Valjevo" produced 56.447MWh → 11.500t CO_2

Potential avoidance of local CO_2 emissions and air pollution (Tonnes CO_2)

Zone	Scenario 1 (Base Case)	Scenario 2 (Upside Case)
P1-1	1.840 t	2.875 t
P1-2	6.440 t	10.810 t
P2-1	4.830 t	8.050 t
P2-2	8.740 t	11.500 t
P2-3	2.645 t	4.025 t

Thank you

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www.eurolithium.com
www.eurolithium.rs
info@eurolithium.com