

Country Update from Georgia

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ABSTRACT

Confirmed total reserves of geothermal waters in Georgia are more than 100,000 m³ per day as of 2002. For the main geothermal fields we have been prepared projects ready for implementation. Background of this works was the project "Modeling of Base Geothermal Fields" in which are clarifying ratio of technology of using thermal energy in Tbilisi (more detail see in our paper number 2305 in the session "District Heating") (East Georgia) and in West Georgia-Zugdidi and Tskhaltubo. In contrary to Tbilisi field where heat capacity (HC) is just 10.6 MWt (1 stage), Zugdidi-Tsaishi field has HC=100 MWt in order to supply district heating of the town and a big agricultural complex. Cost of this project is 24 million USD. Very original is the project concerning famous resort place Tskhaltubo. Here the use of balneological waters with temperature 35°C gives us the possibility of heating-condition purposes, utilizing energy with HC=40 MWt by means of absorption heat pumps.

1. INTRODUCTION

In recent years in Georgia, the problem of energy became worse if it is possible to imagine. With this background, using geothermal energy seems to be advantageous. Medium size of capital investments and short time of recoupment could make Georgia independent from the point of view of energy. In spite of progress in foreign investigation, the contemporary situation is changing very slowly.

2. RESOURCES

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Here are the newly prepared scheme (Fig.1) and detailed date of Georgian thermal waters (Tab. 1).

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3. UTILIZATION

The most real project is "District Heating in Tbilisi" sleeping area – "Saburtalo", the financial part of which is guaranteed by KfW Bank from Germany (around 4 million USD).

The first electrical geothermal station will be in 2005 in Zugdidi - the heat capacity - 3.0 MWt in a complex with city heating and big agricultural economy. In just 10.3 MWt (but one stage) Zugdidi - Tsaishi field has HC = 100 MWt

(finishing in 2008-2009). Cost of this project is 24 million. USD and time of recoupment will be no more than 5-6 years.

Very interesting seems to be the project concerning the famous resort place Tskhaltubo.

Here the use of balneological waters with temperature 35°C gives us the possibility of heating-condition purposes, utilizing energy with HC=40 MWt by means of absorption heat pumps.

4 CONCLUSION

As there have been very little change for the last 5 years, here we are giving just the alteration comparing with (Buachidze et al., 2000).

For 2010

Table 1.

<u>Geothermal</u>	Capacity, MWt=3.0 Gross Prod., GWh/yr=10.6
<u>Hydro.</u>	Capacity, MWt=2500 Gross Prod., GWh/yr=12.000
<u>Other.</u>	Capacity, MWt=121 Gross Prod., GWh/yr=2000
<u>Total.</u>	Capacity, MWt=2637 Gross Prod., GWh/yr=24.5000
<u>Table 4.</u>	Edition - 2 wells for Direct use, 4 wells - for Injection, Total Depth - 14 km.
<u>Table 5.</u>	Professional Persons (1)-23, (20)-5, (3)-8, (5)-3, (6)-14.
<u>Table 6.</u>	Total Investments in 2000-2005 Mil. USD. Research – 1.0 Field Development – 4.0 Utilization, Direct 0.5 Electrical – 3.5 Funding Type – 100% Private.

This energy is environmental – friendly of reducing CO₂ releasing into the air by more than 1 mil. tones per year.

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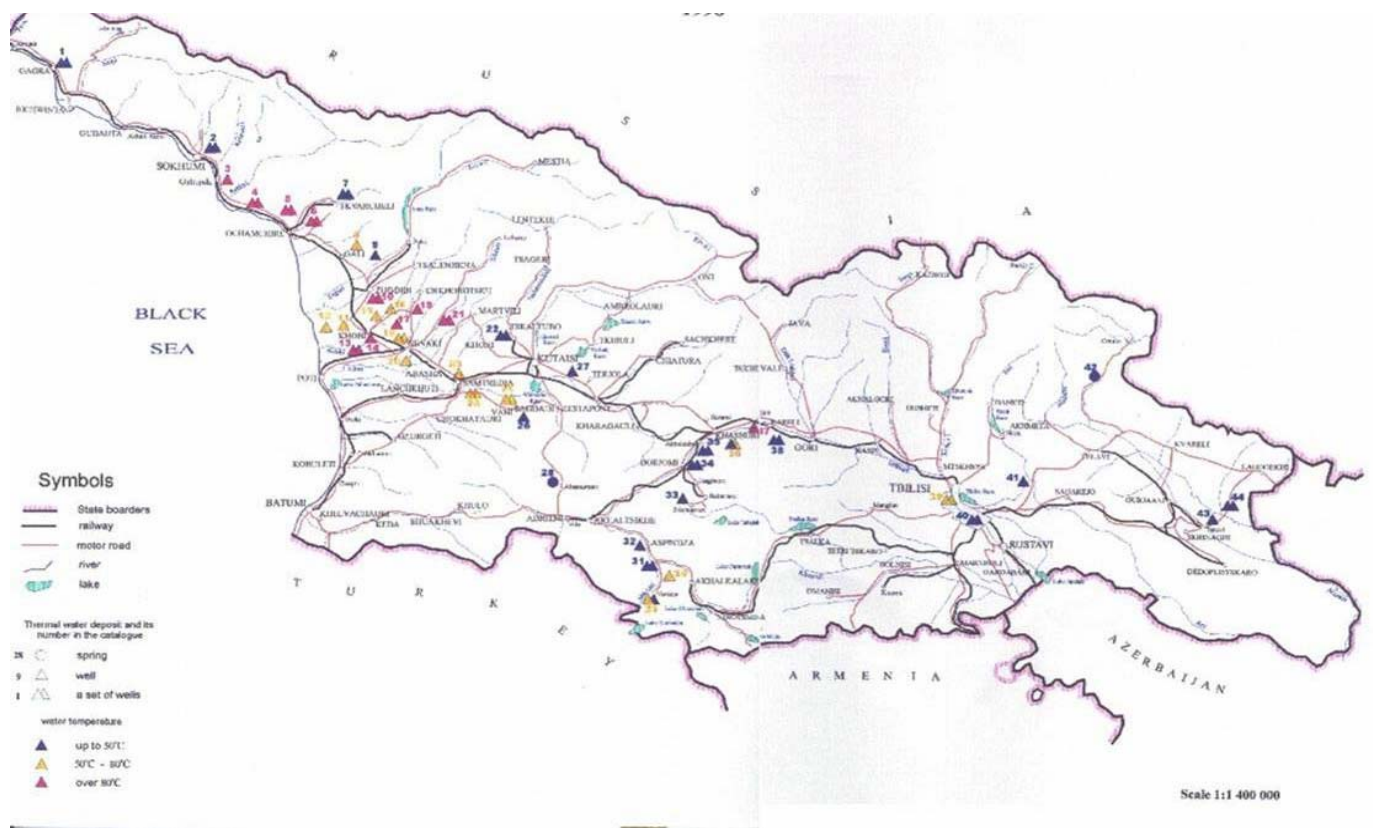


Figure 1: Thermal waters of Georgia.

Table 1: Basic indexes of thermal water deposits of Georgia.

Deposit No	Name of the deposit	Well No	Temperature t °C	Dis-charge m ³ /day	Thermal capacity $\Delta t = t - 25^{\circ}\text{C}$	The amount of saved equivalent fuel thousand t/year
1	Gagra	3	38-43	920	0,8	1,14
2	Besleti	2	39-41	370	0,25	0,34
3	Dranda	1	93	1500	4,8	7,0
4	Kindgi	11	75-108	26600	95	141,2
5	Mokvi	8	100-105	13470	48,9	73,5
6	Okhurei	2	104	3500	12,8	19,1
7	Tkvarcheli	2	35-38	690	0,35	0,53
8	Rechkhi	1	77	1080	2,6	4,5
9	Saberio	1	34	1230	0,5	0,8
10	Zugdidi-Tsaishi	15	78-98	24564	69,8	103,8
11	Torsa	1	63	108	0,2	0,3
12	Okros Satsmisi	1	63	104	0,2	0,3
13	Kvaloni	2	78-98	4300	11,6	17,2
14	Khobi	1	82	450	1,1	1,7
15	Bia	1	65	2600	4,8	7,2
16	Japshakari	1	64	120	0,2	0,3
17	Zeni	1	80	372	0,9	1,4
18	Zana	1	101	400	1,4	2,1
19	Menji	3	57-65	5750	9,2	13,6
20	Isula	1	75	370	0,9	1,3
21	Nokalakevi	2	80-82	700	1,8	2,6
22	Tskaltubo	75+4spr.	31-35	20000	7,7	11,5
23	Samtredia	1	61	3000	4,9	7,2
24	Vani region	3	52-60	2152	3,2	4,8
25	Vani	2	60	2780	4,5	6,8
26	Amagleba	1	41	346	0,3	0,5
27	Simoneti	1	42	520	0,4	0,6
28	Abastumani	3 spr.	48	1040	1,1	1,7
29	Vardzia	3	45-58	1330	1,75	2,7
30	Tmogvi	1	62	520	0,9	1,3
31	Nakalakevi	3	34-58	795	0,64	1,05
32	Aspindza	1	42	864	0,7	1,0
33	Tsikhisjvari	1	32	1000	0,34	0,5
34	Borjomi	25	30-41	537	0,4	0,6
35	Akhaldaba	4	33-42	500	0,26	0,43
36	Tsromi	5	39-55	732	1,03	1,64
37	Agara	1	82	260	0,7	1,1
38	Khvedureti	2	45-49	140	0,15	0,2
39	Tbilisi I	7	56-70	3760	6,5	9,9
40	Tbilisi II	5	38-48	1111	0,82	1,16
41	Ujarma	1	42	50	0,04	0,06
42	Torgvas-Abano	1 spr.	35	800	0,4	0,6
43	Tsnori	1	37	864	0,5	0,75
44	Heretiskari	2	34-37	3300	1,65	2,6
all		206 wells 8 springs		135599	307,1	458,4