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## Questionnaire for authorities involved in management of geothermal energy and Database of authorities

**Title** Questionnaire for authorities involved in management of geothermal energy and Database of authorities

**Creator** Joerg Prestor and Andrej Lapanje in cooperation with GeoZS, ŠGÚDŠ, GBA, MÁFI

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3.1.1 Questionnaire for authorities involved in management of geothermal energy and

3.1.2 Database of authorities





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# 1 Introduction

In order to gain an insight in regulation and legislation concerning geothermal energy in four partner countries (Austria, Hungary, Slovakia and Slovenia) the questionnaire for authorities involved in management of geothermal energy is prepared. The analysis of the incoming data has a goal to show how the geothermal field is regulated in all partner countries, to allow the comparison of differences between countries and to identify legislative and legal problems with geothermal utilisation.

A the first step Questionnaire »*GEOTHERMAL REGULATION*« was prepared using draft Amended Version *GEOTHERMAL REGULATION FRAMEWORK* - Deliverable D 15 GTR-H (September 2009) of the Project *GeoThermal Regulation - Heat (GTR-H)* (<http://www.gtrh.eu/>). Questionnaire was distributed among project partners to serve as a foundation for authorities' data gathering, which are now being compiled in the Authorities database.

The main aim of the questionnaire was to obtain the overview of actual approaches towards the given recommendations and framework regarding geothermal resources management in participating countries in the Transenergy project.

This overview should reveal the actual shortfalls and stimulate the key steps to resolve these shortfalls.

The second aim was to engage competent sectors and identified stakeholders to common understanding of the objectives of the geothermal regulation.

The management of geothermal resources is complex task distributed between sectors of energy, mineral resources and water resources. Action plans of these sectors have to reach the common reconciliation for the sustainable and effective geothermal resources development. Thus it is very essential that each sector has complete overview of objectives and approaches of all other sectors.

Each Geological Survey held the inquiry in its own state by gathering the answers from different responsible institutions and prepared the summary answers in one questionnaire form. In this manner transparent and plain comparison is achieved. Thus in the results we compare only four harmonized national questionnaires instead of 40 authorities responses. National questionnaires are attached to the report.

## 2 Structure of the Questionnaire

Following the mentioned draft Amended Version of GEOTHERMAL REGULATION FRAMEWORK also the questionnaire consists of three main parts A, B and C:

- A. Legislation and definitions
- B. Financial incentives
- C. Flanking/supporting measures

### A. Legislation and definitions

- A.1 Definitions of geothermal energy / geothermal water
- A.2 Geothermal resource ownership and competent sectors
- A.3 Regulation and licensing / licence holder protection
- A.4 WFD compliance
- A.5 Nominate administrative body
- A.6 Reporting for geothermal resources inventory & statistics

### B. Financial incentives

- B.1 Financial burden
- B.2 Financial incentive schemes
- B.3 Notes on financial incentive parameters

### C. Flanking/supporting measures

- C.1 Training
- C.2 Information
- C.3 Standards & codes
- C.4 Research & development

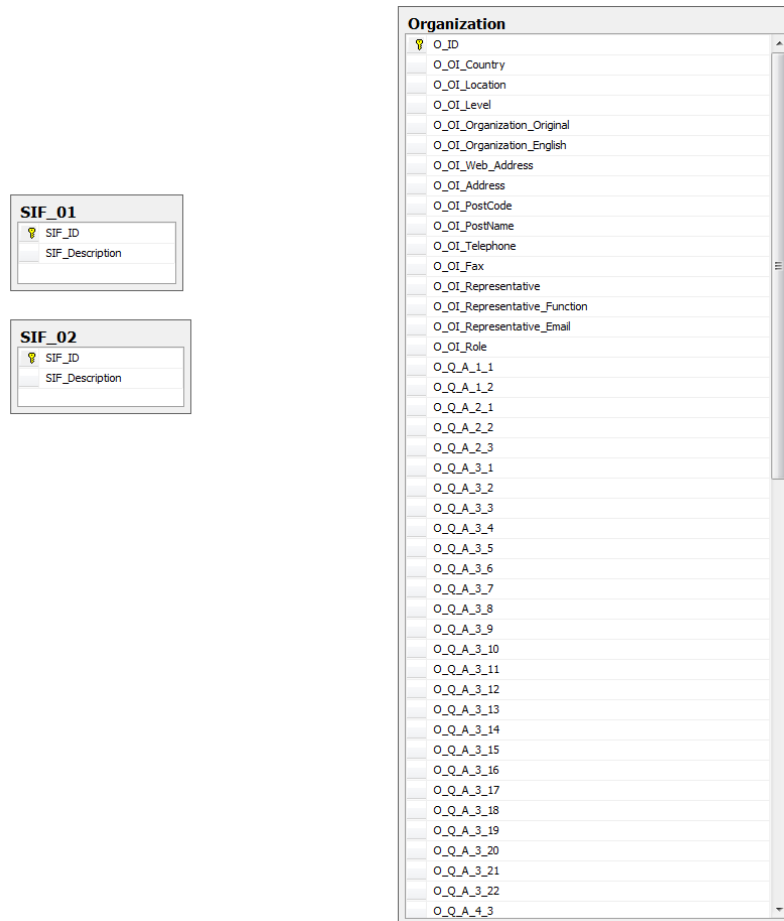
The questionnaire comprehends 144 yes and no questions. Yes answer represents positive compliance of the proposed recommendation.

Where different sectors had different opinion on certain question and answer, the answer was either not defined either defined by the agreement or by the majority of given answers.

In Austria 10 authorities were involved in the Survey, In Hungary 15, in Slovakia 7 and in Slovenia 8, altogether 40 authorities were questioned for answer.

### 3 Structure of the Authorities database.

The conceptual model of the Authorities database defines only one interpretation level (Figure 1).



**Figure 1: Conceptual model of the Authorities database**

Organisation level consists of a geothermal authorities contact details, such as company name, contact person, web page, role of the company in the geothermal energy field, etc. In addition, the questionnaire box form is presented, in which the answered questions by the authorities are marked.

Authorities' database is developed in the SQL computer program. Field names and its description are given in the following table (table 1).

**Table 1: Database of users fields with their types and necessity description**

Group name	Field name	Field type	Field data
	Country	text	mandatory
	Location	text	mandatory
	Level	text	mandatory
Organization information	Organization (original)	text	mandatory
	Organization (english)	text	mandatory
	Web address	text	optional
	Address	text	optional
	Postcode	number	optional
	Post name	text	optional
	Telephone	number	optional
	Fax	number	optional
	Representative	text	optional
	Representative function	text	optional
Questionnaire	Question check box	bit	optional

All four answered national questionnaire as a September 2010 state are attached to the Authorities database (Fig. 2).

**Figure 2: Input mask for Authorities' database**

## 4 Evaluation of Questionnaire »*Geothermal Regulation*«

### Overall results

91 % of all questions have got defined answer, 9 % of the questions rest not clearly answered.

Not clearly answered questions	
16,0%	Slovenia
1,4%	Austria
13,2%	Slovakia
5,6%	Hungary

47,2 % of the questions have positive answer, and 45,2 % negative answer.

9 % of question were positively answered by all countries, and 13,2 % negatively answered by all countries.

Portion of questions	Unanimity of positive answer on certain question
9,0%	All countries
22,9%	3 countries
29,2%	2 countries
25,7%	1 country
13,2%	No country

22,2 % of questions were responded unanimously with yes or no by all countries.

Portion of positive answers	
31,3%	Slovenia
63,9%	Austria
50,7%	Slovakia
43,1%	Hungary

### Results by main issues

	Positive answers (%)
A. Legislation and definitions	53,1
B. Financial incentives	35,9
C. Flanking/supporting measures	40,2

## A. Legislation and definitions

	Positive answers (%)
A.1 Definitions of geothermal energy / geothermal water	60,7
A.2 Geothermal resource ownership and competent sectors	46,9
A.3 Regulation and licensing / licence holder protection	56,9
A.4 WFD compliance	75
A.5 Nominate administrative body	45,8
A.6 Reporting for geothermal resources inventory & statistics	44,6

## B. Financial incentives

	Positive answers (%)
B.1 Financial burden	29,2
B.2 Financial incentive schemes	47,9
B.3 Notes on financial incentive parameters	28,6

## C. Flanking/supporting measures

	Positive answers (%)
C.1 Training	62,5
C.2 Information	50
C.3 Standards & codes	25
C.4 Research & development	29,6

# 5 Conclusions

At least apparent unanimity between countries was reached at following responses:

Each country:

- defines the resource and mode of extraction and to guide the permitting process by the depth,
- defines clearly the ownership of geothermal resource,
- defines that thermal water licensing is always adopted through groundwater regulation,
- identifies shortfalls in the legislation for the licenses in actual operation,
- has duration of deep Geothermal Energy exploitation permits more than 30 years,



- defines temperature of the carrier fluid at surface and flow rates of the carrier fluid and chemistry of the injected/rejected waters as requirements for submission of monitoring and production data for exploitation licenses,
  - has the groundwater abstraction/exploitation permits for geothermal energy production based on the national groundwater abstraction/exploitation and pollution control regulations,
  - has a target of zero (or near zero) net water abstraction/exploitation from an aquifer or geothermal reservoir of the large-scale commercial shallow geothermal exploitation systems,
  - has the obligation that the minimal environmental impact of the proposed system and sustainability of the resource have to be demonstrated,
  - has the same authority responsible for granting the license for exploration and development of geothermal resources as that responsible for monitoring license holder's project data during exploration and exploitation,
  - recommends the professional qualification of technical personnel reporting to the national licensing authority,
- 
- considers that geothermal energy is not regulated effectively either through existing or new legislation,
  - states that regulation of the right to use of the resource and granting a licence to an applicant to explore and exploit thermal water and geothermal energy is not adopted through hydrocarbons regulation or separate geothermal act,
  - finds out that the system of licensing for exploration and exploitation of geothermal resources does not efficiently regulate and help to develop the national geothermal sector,
  - states that there are not appropriate exemptions from the national planning regulation and environmental impact assessment regulations considered for the exploration stage of geothermal energy projects in order to assist in the development of the sector,
  - states that the confidentiality of all submitted data associated with licensed geothermal exploitation operations is not considered:
    - o in the geothermal license confidentiality clause for the licence period,
    - o in the geothermal license for the defined confidentiality period,
    - o in the confidentiality period set by the licensing authority after surrender of the license.
  - doesn't have the independent expert body (competent professional body) responsible for promotion and development of the geothermal energy sector,
  - doesn't have templates developed to ensure full reporting monitored data included also from surface production facilities such as the heat or power plant efficiencies, heat output, electrical power output and fouling of heat exchangers,
  - has no additional fee applied to specific works carried out as part of an exploration programme during the licence period for the licence area,
  - has the procedure for the project assessments for financial incentives that is not based on long term geothermal energy production data,
  - doesn't base financial incentives on the set of agreed heat feed-in tariffs based on a national feed-in tariff strategy,
  - states that geothermal energy does not receive incentives similar to the support received by other renewable energy sources in the form of preferential VAT rate,

- doesn't have preferential VAT rates for heat sales from operating geothermal power plants below the higher rates of 19-22.5%,
- doesn't have waived or reduced cost of national drilling permits for the completion of geothermal energy boreholes for the geothermal sector,
- doesn't undertake awareness campaigns for Renewable Heating and Cooling (RES-H) technologies and in particular for geothermal energy which proactively target professionals (engineers, architects, installers),
- doesn't have research and development support in the form of funding for the cost of site characterisation.

Recommendations for financial incentives are apparently the most unexploited or unknown lever for the stimulation of geothermal resource development (only 36 % confirmative answers). This is especially noted at financial burden (fees regulation) and definition of financial incentive parameters. These issues seem to be significantly weaker than the existing financial incentive schemes.

Recommendations for supporting measures seem to be more exploited than financial incentives, at least training and information fields, while the standardization and research & development support measures seem to be rather unexploited.

It seems that there is also the reason for lack of reliable (low risk / highly advanced) geothermal resources development projects which could be able to use up existing funds.

## **6 Final Remarks**

The actual questionnaire result represents present state as reported in September 2010 and is cross section of the initial reconciliation between sectors that were engaged in this questionnaire survey. This result should stimulate the sectors to reconsider some questions and answers and to make the improved survey in the next step.

After improved survey the best practise could be revealed and key indicators of the status of geothermal resources regulation and management.

We purpose that the questionnaire is updated regularly. Next reporting is foreseen for September 2011.



Table 2: List of reply to questionnaire (part B)

Country	Organization title (English)	B																	
		1			2				3			10							
		1	2	3	4	1	3	5	6	7	8	1	2	3	4	5	6	9	10
Austria	Geological Survey of Austria					x						x	x	x					x
Austria	Kommunalcredit Public Consulting					x	x	x	x	x		x	x	x	x				
Austria	Austrian Research Promotion Agency (FFG)										x								
Austria	EVN AG										x					x			
Austria	Lower Austria local government																		
Austria	Wien Energie Fernwärme																	x	
Austria	Geological Survey of Austria																		
Austria	Federal Ministry of Agriculture,																		
Austria	Federal Ministry of Economy, Family and Youth	x	x																x
Austria	Alpine Bau GmbH															x			
Slovenia	Environmental Agency of the Republic of Slovenia, Water management office	x	x	x	x														
Slovenia	Ministry of the Economy- Mineral resources	x	x	x	x											x	x		x
Slovenia	Ministry of the Economy – Directorate for Energy, Division for operations efficiency and renewable energy sources	x										x	x	x	x	x	x	x	x
Slovenia	Ministry of the Economy – Directorate for Energy, Division for operations efficiency and renewable energy sources, Department for sustainable energy use											x	x	x					
Slovenia	Ministry of the Economy – Directorate for Energy, Division for energy supply and energetic statistics																		
Slovenia	Ministry for Environment and Spatial planning, Environment Directorate, Department of Waters																		
Slovenia	Geological Survey of Slovenia																		
Slovenia	Eco Fund, Slovenian environmental public fund																		
Hungary	Ministry of Rural Development	x	x	x	x	x	x	x	x		x					x			x
Hungary	Hungarian Bureau of Mining and Geology	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
Hungary	National Inspectorate for Environment, Nature and Water																		
Hungary	Hungarian Geothermal Cluster																		
Hungary	Middle-Danubian Inspectorate for Environmental Protection, Natural Protection and Water Management																		
Hungary	Middle-Danube-Valley Environmental Protection and Water Management Directorate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Hungary	Geological Institute of Hungary																		
Hungary	Regional Office of Mining Bureau, Budapest																		
Hungary	North-Transdanubian Inspectorate for Environmental Protection, Natural Protection and Water Management	x	x		x	x	x				x								x
Hungary	North-Transdanubian I Environmental Protection and Water Management Directorate	x			x	x													x
Hungary	Middle Transdanubian Inspectorate for Environmental Protection, Natural Protection and Water Management																		
Hungary	Middle-Transdanubian Environmental Protection and Water Management Directorates																		
Hungary	West Transdanubian Inspectorate for Environmental Protection, Natural Protection and Water Management	x									x								x
Hungary	West-Transdanubian Environmental Protection and Water Management Directorates	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Hungary	Regional Office of Mining Bureau, Veszprém																		
Slovakia	State geological institute of Dionyz Stur	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Slovakia	The Ministry of Environment of the Slovak Republic, Department of Geological Law and Contractual Relation	x																	
Slovakia	The Ministry of Environment of the Slovak Republic, Department of Geology and Natural Resources																		x
Slovakia	The Ministry of Environment of the Slovak Republic, Section of Waters				x														
Slovakia	Ministry of Health of Slovak Republic, Inspectorate of Spas and Springs	x	x	x							x	x			x	x	x	x	x
Slovakia	Regional environmental office in Nitra	x										x							
Slovakia	Regional environmental office in Bratislava																		

Table 2: List of reply to questionnaire (part C)

Country	Organization title (English)	C													
		1			2						3			4	
		1	2	3	1	2	3	5	6	7	2	3	1	2	
Austria	Geological Survey of Austria	x								x			x	x	
Austria	Kommunalcredit Public Consulting				x	x									
Austria	Austrian Research Promotion Agency (FFG)														
Austria	EVN AG						x								
Austria	Lower Austria local government														
Austria	Wien Energie Fernwärme									x	x				
Austria	Geological Survey of Austria														
Austria	Federal Ministry of Agriculture,														
Austria	Federal Ministry of Economy, Family and Youth		x	x											
Austria	Alpine Bau GmbH														
Slovenia	Environmental Agency of the Republic of Slovenia, Water management office	x	x	x	x	x	x	x	x				x	x	
Slovenia	Ministry of the Economy- Mineral resources														
Slovenia	Ministry of the Economy – Directorate for Energy, Division for operations efficiency and renewable energy sources						x			x		x	x	x	
Slovenia	Ministry of the Economy – Directorate for Energy, Division for operations efficiency and renewable energy sources, Department for sustainable energy use					x					x		x	x	
Slovenia	Ministry of the Economy – Directorate for Energy, Division for energy supply and energetic statistics														
Slovenia	Ministry for Environment and Spatial planning, Environment Directorate, Department of Waters														
Slovenia	Geological Survey of Slovenia														
Slovenia	Eco Fund, Slovenian environmental public fund														
Hungary	Ministry of Rural Development	x					x						x	x	
Hungary	Hungarian Bureau of Mining and Geology	x	x	x	x	x	x	x	x	x	x	x	x	x	
Hungary	National Inspectorate for Environment, Nature and Water														
Hungary	Hungarian Geothermal Cluster														
Hungary	Middle-Danubian Inspectorate for Environmental Protection, Natural Protection and Water Management														
Hungary	Middle-Danube-Valley Environmental Protection and Water Management Directorate	x	x	x	x	x	x	x	x	x	x	x	x	x	
Hungary	Geological Institute of Hungary														
Hungary	Regional Office of Mining Bureau, Budapest														
Hungary	North-Transdanubian Inspectorate for Environmental Protection, Natural Protection and Water Management														
Hungary	North-Transdanubian I Environmental Protection and Water Management Directorate														
Hungary	Middle Transdanubian Inspectorate for Environmental Protection, Natural Protection and Water Management														
Hungary	Middle-Transdanubian Environmental Protection and Water Management Directorates														
Hungary	West Transdanubian Inspectorate for Environmental Protection, Natural Protection and Water Management		x	x											
Hungary	West-Transdanubian Environmental Protection and Water Management Directorates	x	x	x	x	x	x	x	x	x	x	x	x	x	
Hungary	Regional Office of Mining Bureau, Veszprém														
Slovakia	State geological institute of Dionyz Stur	x	x			x	x	x	x	x	x	x	x	x	
Slovakia	The Ministry of Environment of the Slovak Republic, Department of Geological Law and Contractual Relation						x								
Slovakia	The Ministry of Environment of the Slovak Republic, Department of Geology and Natural Resources	x	x	x	x		x	x	x						
Slovakia	The Ministry of Environment of the Slovak Republic, Section of Waters														
Slovakia	Ministry of Health of Slovak Republic, Inspectorate of Spas and Springs	x	x	x			x	x	x	x				x	
Slovakia	Regional environmental office in Nitra														
Slovakia	Regional environmental office in Bratislava						x		x						

