

XXXVIII IAH Congress

Groundwater Quality Sustainability
Krakow, 12–17 September 2010

Extended Abstracts

Editors:
Andrzej Zuber
Jarosław Kania
Ewa Kmieciak



University
of Silesia
Press 2010

abstract id: **482**

topic: **4**
Mineral and thermal water

4.4
Social, ecological and economic implications

title: **Legal and financial barriers for development of geothermal energy in Poland on the background of GTR-H project results**

author(s): **Wiesław Bujakowski**
Mineral and Energy Economy Research Institute, Polish Academy of Sciences,
Poland, buwi@meeri.pl

Grażyna Hołojuch
Mineral and Energy Economy Research Institute, Polish Academy of Sciences,
Poland, grazia@meeri.pl

Beata Kępińska
Mineral and Energy Economy Research Institute, Polish Academy of Sciences,
Poland, labgeo_bk@interia.pl

Leszek Pająk
Mineral and Energy Economy Research Institute, Polish Academy of Sciences,
Poland, pajak@meeri.pl

Barbara Tomaszewska
Mineral and Energy Economy Research Institute, Polish Academy of Sciences,
Poland, tomaszewska@meeri.pl

keywords: geothermal regulation, heat, GTR-H framework

INTRODUCTION

In the period from December 2006 to October 2009, the Mineral and Energy Economy Research Institute Polish Academy of Sciences (PAS MEERI) was participated in the implementation of the EU Project: "GeoThermal Regulation — HEAT" (GTR-H, www.gtrh.eu), supported by Intelligent Energy Europe/Altener Programme. The GTR-H project was concerned with the regulation of geothermal energy for heat in the EU. It set out to review and establish the regulatory barriers and deficiencies in the geothermal sector through a process of discussion and consultation with key target actors and stakeholders at a national level in Hungary, Ireland, Northern Ireland and Poland. A review was carried out of best practice in geothermal regulatory frameworks in France, Germany and the Netherlands, to provide the necessary input to design a possible framework for the implementation of geothermal regulations (Goodman et al., 2007).

GEOHERMAL REGULATORY FRAMEWORK

An analysis of the existing regulatory framework for geothermal energy in Member States has confirmed that the effective regulation of geothermal energy needs a sound legislative basis. This may be achieved through new policies, the modification of existing legislation, the introduction of new legislation or planning may cover aspects of geothermal energy exploration or development, or legislation specifically for geothermal energy may be made. The choice will depend on the scope of existing legislation or may be a matter of national policy.

The reviews and consultations carried out in the GTR-H project have identified factors that should be addressed in any regulatory system for geothermal energy and these essential elements was describe in the template for a geothermal energy regulatory framework.

The issues identified as requiring inclusion in "Geothermal Regulation Framework" have been grouped into the following categories in the template: legal, financial and other supporting or flanking measures (including education, training, standards and promotion strategy) (Goodman (ed.), 2009).

Below are selected excerpts from the text of "Geothermal Regulation Framework":

A. LEGAL GUIDELINES

A.1. DEFINITION AND CLASSIFICATION OF GEOTHERMAL ENERGY

"Geothermal Energy" — the energy stored in the form of heat beneath the surface of the solid Earth' (as defined by RES Directive, 2009/28/EC).

A.3. GEOTHERMAL ENERGY LICENSING SYSTEM

A. 3.2. Geothermal resources definition and regulations under existing legislation (...) could be followed by a new Geothermal Act to address any shortfalls identified in the legislation once the licensing system has been in operation for several years.

A.3.9. There is an obvious potential for competition between onshore carbon storage and geothermal energy projects because they may target the same deep aquifer, or the same areas within sedimentary basins. Geothermal energy may also be produced from rocks below the depth range for potential carbon storage sites. Carbon capture and storage is essentially a bridging technology whereas geothermal energy is a sustainable energy resource. Areas of deep

geothermal energy resources should be identified and priority given to geothermal energy over carbon storage exploration licenses.

A.3.11. Appropriate exemptions from the national planning and environmental impact assessment regulations should be considered for the exploration stage of geothermal projects in order to assist in the development of the sector.

A.3.12. Specific guidelines on the application procedure for deep geothermal exploration and exploitation should be developed. These need (...) to identify the relevant licensing authorities and outline the application process and guidelines for technical inputs, work programmes and reporting requirements. These should help streamline application submissions.

A.3.20. The costs of geothermal exploration licenses should be set lower than the petroleum and mineral exploration licensing costs to reflect comparatively lower economic return potential and to promote geothermal development as part of national RES' action plans (NREAPs, RES-Directive, 2009/28/EC).

A.4 SIMPLIFY REGULATIONS AND ADMINISTRATIVE PROCEDURES

A.4.3. It is recommended that small sized closed loop domestic systems should be registered through a simple information submission form to a nominated government agency. These systems should require no exploration licences or planning permission.

A.4.5. Deep geothermal energy production should comply with the Groundwater Framework Directive and national groundwater abstraction/exploitation legislation where implemented for the use of re-injection or closed circuit systems.

B. FINANCIAL INCENTIVES GUIDELINES

Financial Incentives Schemes (FIS) play an essential role in promoting the development of national shallow and deep geothermal energy sectors for heating and cooling (...) It is important that the FIS are adequately designed and implemented in the medium and long term.

Key positive effects of well designed and managed FIS:

- Reduction of the upfront investment costs,
- Changed perception of geothermal systems by consumers and local authorities and a resultant shift to increased uptake of these systems.

B.1 REGULATORY COSTS/LICENCE FEES/ROYALTIES

B.1.2. Fees or charges should not be applied on the production of energy by geothermal systems (shallow or deep) as the geothermal heat resource is continuously replenished (renewable) and therefore not "mined" in the conventional sense if used sustainably.

B.1.3. Royalty fees should not be applied to deep geothermal energy production plants especially where national legislation promotes the use of reinjection systems on the basis that geothermal system is renewable and contributes to fulfilling the RES targets set out in the national renewable energy action plans (NREAPs) to be defined in every EU state.

B.1.4. Groundwater abstraction/exploitation fees should be based only on the net water abstraction rate from shallow and deep systems and these should be waived where this is below a

specified threshold. Where the re-injection of produced geothermal waters does not occur, national groundwater abstraction/exploitation and surface water regulations should apply.

B.2 DEVELOP FINANCIAL INCENTIVE SCHEMES

B.2.1. A Geothermal Risk Insurance Guarantee and Risk Fund for deep geothermal exploration and/or development drilling should be made available (...)

B.2.2. (...) Incentives for delivering heat from RES such as geothermal energy should be encouraged through low VAT rates and/or "Green Certificates" to geothermal and RES system heat producers (such as feed-in-tariffs) based on each unit of RES heat produced and installed geothermal capacity.

B.2.7. Administrative procedures for FIS should be as simple as possible.

B.2.8. National, regional, local government authorities should promote deep geothermal energy project development using financial incentives to reduce financial burden of such projects.

B.2.9. National research and development funding schemes should target geothermal energy research, with demonstration projects and spin-off activities amongst the priority fields.

B.3 NOTES ON FINANCIAL INCENTIVE PARAMETERS

B.3.2. Incentives could be based on the CO₂ emissions avoidance from operating geothermal plants and/or a set of agreed heat feed-in tariffs based on a national feed-in tariff strategy.

B.3.3. The development of CO₂ emissions credit system („green certificates") for the operation of geothermal energy projects should be encouraged at national level to incentivise sector investment. For small installations a simplified procedure should be established.

B.3.4. Geothermal energy should receive incentives similar to the support received by other RES in the form of financial assistance for initial feasibility studies, grants, low interest rate loans, risk insurance, preferential VAT rate, feed-in tariffs or certificates for geothermal heat units produced/installed.

B.3.5. Preferential VAT rates for heat sales from operating geothermal power plants should be below the higher rates of 19–21%. These should be designed to encourage fossil fuels substitution and provide a competitive price for geothermal based on national domestic and commercial energy rates.

B.3.6. A Geothermal Insurance and Risk Fund (particularly for deep exploratory and/or development drilling) is encouraged to be made available based on the substitution for fossil fuel use and on the potential for national CO₂ emission savings that can be achieved through the development of geothermal energy projects.

This type of Risk Fund typically covers the risk associated with the drilling for the exploration and assessment of the resource.

B.3.9. The cost of drilling permits for completion of geothermal energy boreholes should be waived or reduced. This should be considered for a period of 15–20 years until the sector is established.

B.3.10. Where applicable there should be a waiver/reduction on natural resource data acquisition costs to a licence applicant for review of geothermal energy data prior to application submission.

C. GENERAL GUIDELINES FOR FLANKING/SUPPORTING MEASURES

A number of indirect accompanying measures are important for the development of geothermal energy sector (in order to): provide comprehensive information, introduce the appropriate technologies to professional groups, meet existing national market demands, ensure the implementation of appropriate quality standards.

C.1. TRAINING

C.1.1. Educational strategies about geothermal energy for students, academia, professional bodies and institutions involved in the implementation of projects should be devised by a national geothermal experts in consultation with NGOs and private sector companies (...)

C.1.3. A certification scheme must be proposed for shallow geothermal system installers and drillers (...)

C.2. PROMOTION OF GEOTHERMAL ENERGY

C.2.1. A national geothermal strategy (based on NREAPs) defining the goals and targets for geothermal as a contribution to the national RES mix is required to meet the EU-targets of 20% RES by 2020. (...)

The strategy will provide a stable implementation platform for geothermal regulation over a defined period of time.

C.2.4. The development of National Heat Markets and national strategies for future heating and cooling demand need to be addressed. (...) the heating and cooling markets in Europe are poorly defined. Geothermal energy deployment has potential to significantly contribute to the current status of the European Heat Market. In order for this to be achieved coherent European and national strategies for heat markets are required.

C.2.6. Information and economic benefits of RES-H need to be further disseminated to encourage changed investment behaviour of energy consumers.

C.3. STANDARDS AND CODES

Standards on the deployment of geothermal technologies need to be prioritised and implemented. Development and implementation of „Best Practice Guidelines” should be based on or linked to existing construction best practise guidelines and regulations in the different member states.

C.4. RESEARCH AND DEVELOPMENT

C.4.1. The general technological objectives of the sector are:

- increasing the knowledge about the usable geothermal potential amongs the various stake holders: end-users, advisers, authorities, etc.,
- for direct-uses: improving plant efficiency and decreasing installations and operational costs,
- for Geothermal Heat pumps: decreasing installation costs and increasing seasonal performance factor (SPF), optimization of the system (ground heat source/heat pumps/distribution),

C.4.2. The main research & development priorities for geothermal heating and cooling (several topics and issues) — several topics and areas of particular research interest (...)

LEGISLATION AND REGULATORY FRAMEWORK RELATED TO GEOTHERMAL HEATING SECTOR IN POLAND

In Poland, the activities related to geothermal energy sector are regulated by several legal acts (with Geological and Mining Act, Environmental Act, Energy Act as the basic ones):

Geological and Mining Law (new proposal under consultation and Parliamentary proceedings in 2009 and 2010); Energy Law; Building Law; Act on Spatial Planning and Land Development; Environmental Act; Act on Freedom of Business Activity; Water Law; Act on Proceedings in State Aid Cases; Act on the Amendment to the Act on the Conditions of Admissibility and Supervision over Public Aid. Taking into account management of geothermal energy, the above acts can be assigned to the following issues: 1) prospecting for, documentation and exploitation of geothermal energy, 2) production and distribution of energy by geothermal plants, 3) economical support for production of clean energy (Bujakowski et al., 2009).

THE ISSUES NEEDED TO BE CORRECTED IN POLAND, BY THE NEW/AMENDED LEGISLATION OR BY THE INTRODUCTION OF THE FRAMEWORK ELABORATED BY GTR-H

Several recommendations and proposals were suggested to be introduced in the new/amended legislation (if any) or by the introduction of the framework elaborated by the GTR-H works, following, among others, the GTR-best practice cases. i.e.: 1) transfer some procedures to lower administration level, 2) simplify and shorten the procedures concerning all stages of geothermal projects and investments, 3) cancel or limit several fees and royalties, 4) lower VAT for geothermal heat price (now 22% comparing with 5.5% in case of France), 5) introduction of the „green certificates” for geothermal heat, 6) establish a Risk Guarantee Fund (example of France), 7) establish a system /body to coordinate public support for geothermal on a basis of professional selection the best feasible projects (Kępińska, Tomaszewska, 2009).

Among import flanking measures one should listen the following: 1) comprehensive support and assistance for investors to gain the financing (state, international) and to create a quick and streamline path, 2) introducing geothermal research, R&D works in the area of financing by the Ministry of Science and Education; so far the financing by the Ministry of Science and Education is very limited (being mostly provided by the Ministry of Environment, National Fund for Environmental Protection and Water Management).

REFERENCES

Bujakowski W., Kępińska B., Hołojuch G., Pająk L., Tomaszewska B., 2009: *The Summary of the “Deficient Regulation — Poland’s Country Report”*. www.gtrh.eu – official web side of GTR-H project.

Kępińska B., Tomaszewska B., 2009: *The barriers for geothermal energy development in Poland. Proposal of changes*. Geological Exploration Technology. Geothermics, Sustainable Development, 2 (2009), pp. 3-12.

Goodman R., (ed.), 2009: *Geothermal Regulatory Framework*. www.gtrh.eu – official web side of GTR-H project.

Goodman R., Pasquali R., Jones G. LL., O'Neil N., 2007: *GTR-H — Geothermal Regulations in Europe, the Kistelek Process*. Proceedings of the European Geothermal Congress, Germany, CD.

Directive, 2009: *Directive 1009/28/EC of the European Parliament and of the council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC*. Official Journal of the European Union (L 140/16) 5.6.2009

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>



International Association of Hydrogeologists



AGH University of Science and Technology

2-vol. set + CD
ISSN 0208-6336
ISBN 978-83-226-1979-0