



Stakeholder Analysis on a National Level

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Executive summary

The objectives of the Work Package 5 – **cooperation with stakeholders** – have been defined in the terms of reference of the geothermal ERA-NET as follows:

- To gain a clear understanding of the principal stakeholders, including key industry players for a successful, Europe-wide coordination of publicly funded national research, development, deployment and innovation geothermal energy programmes.
- To engage and communicate with principal international stakeholders the need for, values and benefits of a Europe-wide coordination.
- To drive the ongoing EERA Joint Programme on Geothermal Energy (JPGE)
- To prepare the ground for the future formulation of a common European roadmap for geothermal energy technology research, development, deployment and innovation.
- The detailed scope of work comprises various tasks, the first task 5.1 being defined as follows:
 - Collecting data on principal stakeholders of the Research, Development, Deployment and Innovation (RDD&I) chain in national, regional and European arenas with a particular focus on stakeholders with a European and international dimension.
 - Classification of stakeholders and rank stakeholders according to their roles and responsibilities in strategy setting, implementation planning, execution, performance evaluation and review of networked, transnational geothermal energy RDD&I programs (output of WPs 2 and 4).

The present report - deliverable D5.1 - includes **the inventory of principal stakeholders and classification of stakeholder on a national level**. The data have been collected from the partners in a standardised manner with the aid of a spreadsheet template. The guiding principles in the identification of stakeholder groups include those groups who are central to the allocation of funds for publically sponsored research, development and deployment programs, groups that are directly affected by the availability of funds and research programs, other funding agencies and those stakeholders that are affected directly and indirectly from results obtained in publically sponsored research.

Despite the substantial differences between the national stakeholder listings, the main stakeholders can be represented in a common picture. Comparing the individual national stakeholder tables some general conclusions with respect to stakeholder groups can be drawn:

- Government Institutions are important stakeholders in all countries;
- Academic Institutions are important stakeholders in all countries;
- Power Industry is important in some countries, where high-enthalpy resources are already exploited or where a high potential is expected;

- Industry, private companies are of moderate importance, depending on partner country:
- Public stakeholders are not very prominently listed– this should be checked periodically as the importance of media on the deployment of geothermal energy is significant, but less so in terms of research and development.

Looking at the details of the national stakeholder lists and their analysis substantial differences between the partner countries arise. This is mostly related to the local availability of resources and energy demand. Depending on the local situation, the national RD&D landscapes have developed in different directions. Nevertheless there are many common interests who could be satisfied by coordinated actions and activities.

The main actions proposed can be summarised in the following statements:

- Information, dissemination of knowledge tailored to the needs of important stakeholders;
- To inform on how geothermal R&D can contribute to realize potentials and achieve cost reduction;
- To inform on how R&D is coordinated on both national and international levels;
- To increase or maintain funding of R&D and to increase funding for pilot and demonstration projects;
- To promote international cooperation and identify ways and means to do that;
- To follow up on national findings to identify actions that can or should be taken by funding agencies or program owners since some partners propose only few or no actions.

The next step within work package 5 will be to extend the stakeholder listing and analysis to regional and European level. The result of this work will be reported as deliverable D5.2.

1 Introduction

1.1 Background

The focus of the Geothermal ERA-NET is on the utilization of geothermal energy applications that involve **direct heating** and **higher enthalpy** resources and reserves, and the corresponding uses. To ensure an appropriate linkage to related R&D activities (renewable heating and cooling via ground source heat pumps, power distribution and transmission) the interface with related ERA-NETs such as ERACOBUILD or SmartGrids will be maintained to avoid any unnecessary overlap. The Geothermal ERA-NET covers technical and non-technical issues as long they can be considered to be exclusively applied to the support of geothermal energy utilization.

Despite the fact that low-temperature geothermal concepts – such as ground-source heat pumps – are not in the focus of the ERA-NET the field of technologies is vast, including commercially proven as well as emerging technologies. The technology readiness of the different technologies is spread out over the full range of technology readiness levels (TRLs). Some applications are fully commercial (Power Plants in Italy and Iceland; aquifers in France) – others are in an early stage of development (EGS, use of magma resources). As a consequence, funding needs and requirements differ significantly from country to country, depending on the locally available geothermal resources, maturity of industry players and governmental approaches to supporting research, development and deployment.

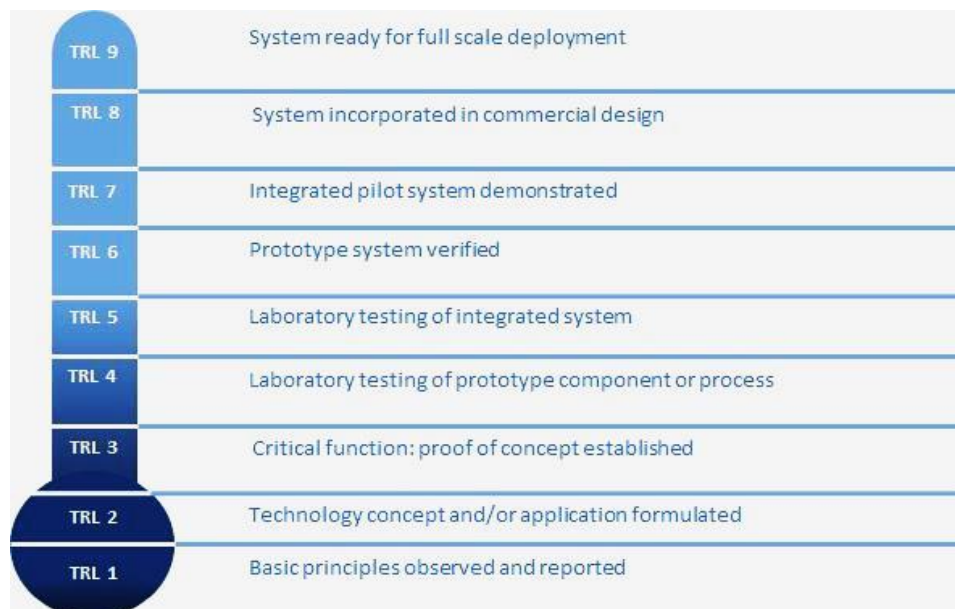


Figure 1 Definition of technology readiness levels TRL (Source: <http://www.innovationseeds.eu>)

Also, within the broader area of reservoir development there are relevant technology components such as drilling technologies where RD&D activities span many technology readiness levels (e.g. research dealing with minimization of drill string vibration may be at TRL 7 or 8, but research on hydrothermal spallation drilling is at TRL 2 or 3). All areas, technology components and their subsets comprise a technology development funnel which –

from the viewpoint of a funding agency, be it national or transnational – needs to be managed to ensure optimally deployed public support. An example is shown in the following figure 2 which refers to RD&D related to deep geothermal concepts.

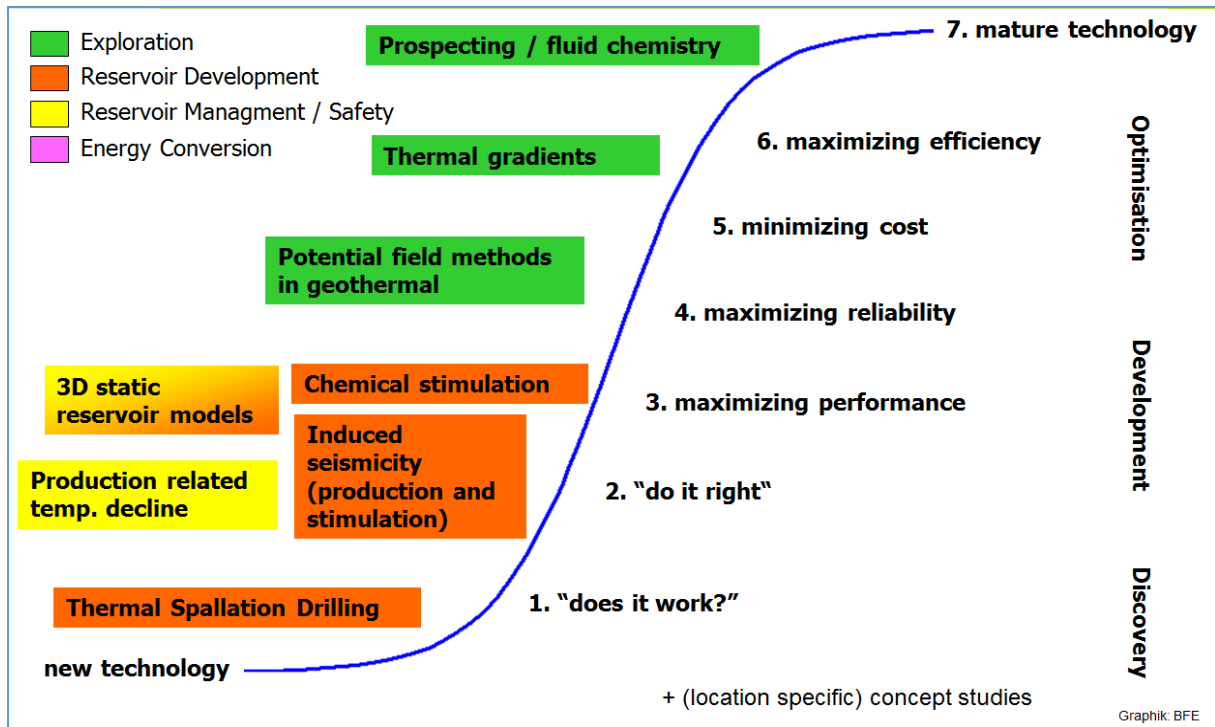


Figure 2 RD&D activities related to deep geothermal concepts presented as a “technology development funnel” (Source: Swiss Federal Office of Energy)

The interest of the different stakeholder groups for particular RD&D themes strongly depends on their core business. As an example academic research institutions by nature are mostly interested in the lower TRLs whereas power industry is interested in activities that lead to improved commercial viability. These facts have to be taken into account when analyzing the stakeholder data sets.

Finally, the report on the analysis of national stakeholders is biased towards the view of funding agencies and geothermal research program owners.

1.2 Scope of Work Package 5 (WP5)

The objectives of the work package 5 have been defined in the terms of reference as follows:

1. To gain a clear understanding of the principal stakeholders including key industry players for a successful, Europe-wide coordination of publicly funded, national research, development, deployment and innovation programs.
2. To engage and communicate with principal international stakeholders the need for, values and benefits of a Europe-wide coordination.
3. To prepare the ground for the future formulation of a common European roadmap for geothermal energy technology research, development, deployment and innovation program.
4. To communicate and compliment the ongoing work of platforms in geothermal energy e.g. ETP-RHC, TP-GEOELEC, EERA JPGE and others.

The detailed scope of work - comprises four tasks:

Task 5.1

Collecting data on principal stakeholders of the Research, Development, Deployment and Innovation (RDD&I) chain in national, regional and European arenas with a particular focus on stakeholders with a European and international dimension.

Classification of stakeholders and rank stakeholders according to their roles and responsibilities in strategy setting, implementation planning, execution, performance evaluation and review of networked, transnational geothermal energy RDD&I programs (output of WPs 2 and 4).

Task 5.2

Furnish national program/owners with messages on strengths and benefits of a coordinated European geothermal energy research agenda vis-à-vis the voting public, national parliaments, the European Commission and administration (output of WP 1).

Task 5.3

Utilize output of WPs 2 and 4 to engage with principal stakeholders with the ultimate purpose of mobilizing national and transnational funding agencies (public and private) for the RDD&I lifecycle.

Task 5.4

Utilize output of WP7 to engage with principal stakeholders in the run-up to the development of a strategic roadmap for geothermal energy technology RDD&I. Communicating and mobilizing the ongoing platforms in geothermal energy with the aim to mitigate fragmentation of research efforts.

The deliverables are defined:

- D 5.1 Report with the inventory of principal stakeholders and classification of stakeholder on a national level, (M12)
- D 5.2 Classification of stakeholders on European level, (M18)
- D 5.3 Communication plan with key messages to principal European and national stakeholders, (M30)
- D 5.4 Comprehensive plan and its implementation to successfully engage stakeholders for the development of a strategic roadmap for geothermal energy RDD&I in Europe, and of ERA-NET (M42)

The present report represents deliverable D 5.1 and includes results obtained from task 5.1.

2 Stakeholder Analysis

2.1 Definition

The term stakeholder in the following is defined as **any person, group or organization that can be positively or negatively impacted by, or cause an impact on, the actions or activities proposed.**

The **Stakeholder Analysis** aims at identifying and listing the main stakeholders and assessing their interest and attitude and how they are likely to impact / be impacted by the work of funding agencies and geothermal program owners.

It is important to be aware of the fact that the partners of the ERA-NET project (funding agencies, program owners and managers) also belong to the stakeholders, are affected by other national stakeholders and their international counterparts!

2.2 Procedure

The first step of WP5 encompasses the acquisition of data on national stakeholders. In view of national idiosyncrasies the data have been collected from the partners in a standardized manner with the aid of a spreadsheet template. The guiding principles in the identification of stakeholder groups include those groups who are central to the allocation of funds for publically sponsored research, development and deployment programs, groups that are directly affected by the availability of funds and research programs, other funding agencies and those stakeholders that are affected directly and indirectly from results obtained in publically sponsored research. Each stakeholder group has various characteristics and features that require a broad range of possible modes of interaction.

Table 1 Stakeholders data collection template

Stakeholder Groups	Stakeholder name	Interest or role in geothermal R&D	Characterisation of stakeholder	Attitude	Importance/Influence on geothermal RD&D	Extent of activity in geothermal R&D	Actions required
Political Stakeholders							
Gov't appointed advisory committees							
Academia							
Public Funding Agencies							
Private grant giving institutions / funding agencies							
Other federal administrative units							
Power Industry							
Industry							
Public Stakeholders							

The templates have been completed by all participating partners and returned to the WP leader. A first review of the obtained data revealed significant inhomogeneity with respect to the role of funding agencies and program owners, assessments of stakeholders and country-specific modes of discourse among national stakeholders (e.g. the implementation of an agreed national research agenda versus highly competitive project-specific funding schemes).

Sensitivities around stakeholder interactions and impartiality were managed by agreeing on broad stakeholder groups and describing their characteristics and features in a generalized manner. The detailed national stakeholder tables are shown in the annex to this report.

3 Results

3.1 Results of group analysis

3.1.1 Overview

Despite the substantial differences between the national stakeholder listings, the main stakeholders can be represented in a common picture, as shown graphically in figure 3. This figure shows the hierarchy of the various SH groups but not the interactions between the different stakeholders.

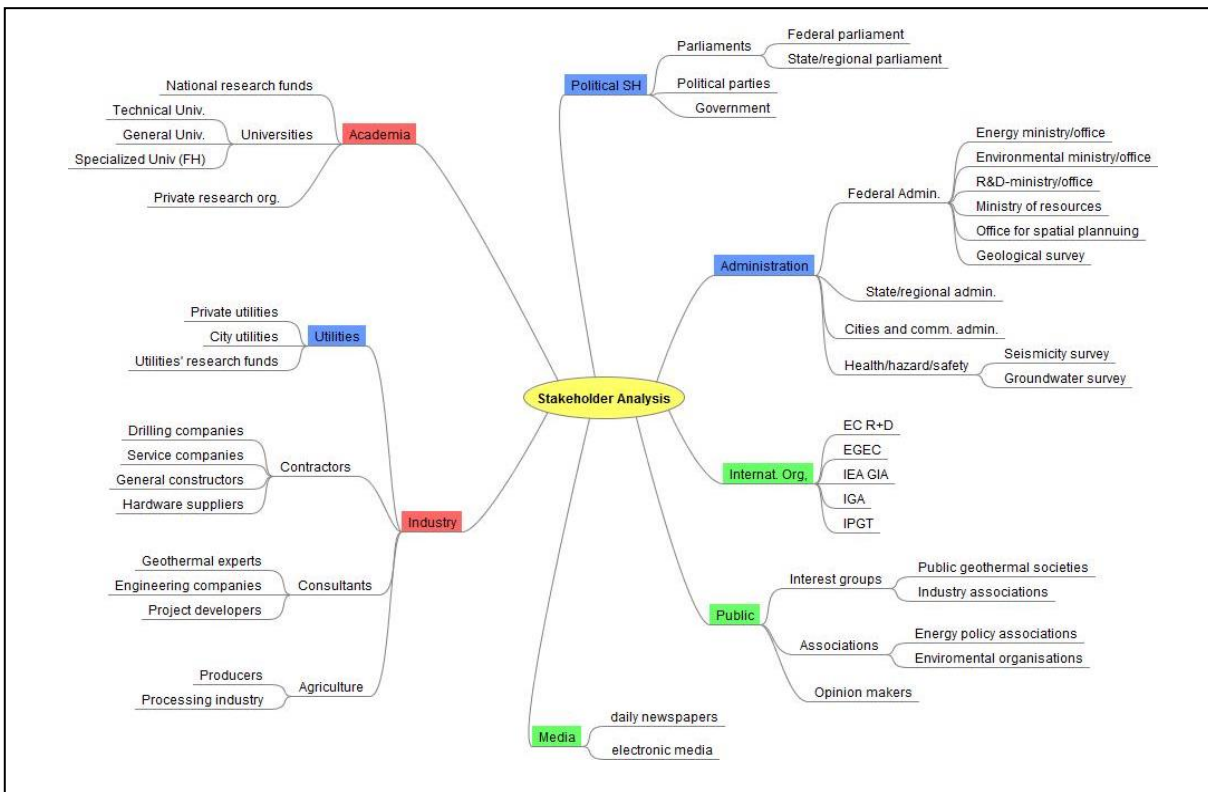


Figure 3 General structure of principal stakeholders

3.1.2 Stakeholder group characteristics

Comparing the individual national stakeholder tables some common and unsurprising conclusions with respect to stakeholder (SH) groups can be drawn:

- Government Institutions are important SH in all countries;
- Academic Institutions are important SH in all countries;
- Power Industry is important in some countries, where high-enthalpy resources are already exploited or where a high potential is expected;
- Industry, private companies are of moderate importance, depending on partner country:
- Public SH are not very prominently listed – this should be checked periodically as the importance of media on the deployment of geothermal energy is significant, but less so in terms of research and development.

In the following, some specific findings for the individual stakeholder groups are presented.

3.1.3 Political Stakeholders

- The level of interest by political stakeholders varies according to country and political system, but at least one of federal, regional or local government has keen interest.
- Unsurprisingly, political stakeholders feature high because they approve and allocate RD&D budgets
- Geothermal energy is on the agenda because of its long term potential and/or due to current project development and operations.
- Geothermal energy has “champions” (e.g. members of parliament) who put geothermal energy on the agenda.
- The more geothermal energy projects are deployed, the more interest there is in project specific features, particularly if project’s visibility or impact is high.
- In some countries, national committees exist and feature importantly (e.g. IT, FR, CH, NL, and TR).
- In general, there is need for high quality information regarding geothermal energy (status, development potential, achievements, strengths, weaknesses, opportunities and threats, in cases also highly specific information on individual projects).

3.1.4 Governmentally appointed advisory committees

This group is only present in some countries (NL, IT, FR, CH, TR, SK). In these countries the importance of this group is mostly considered as to be high as they comprise influential stakeholders – often with strong personal interest in geothermal energy research, development and deployment. National committees are highly integrative (R&D, industry and policy makers) and thus can move rapidly to adjust boundary conditions for geothermal RD&D. Unless very large, these committees appear to be highly effective.

3.1.5 Academia (including National Centers of Geothermal Competence, e.g. geological surveys)

- Level of interest is very high in established areas of geothermal energy research.
- Some overlap with other public stakeholders such as geological surveys.
- Each country has both, state agencies and academia pursuing RD&D.
- Cover the entire value chain and Technology Readiness Levels (countries such as e.g. TR, SV have bias towards industrial application oriented RD&D).
- Highly vigorous programs, groups and entities across Europe.
- Trend: academia is “staffing up” to be able to deal with RD&D needs (FR, NL, CH, IT).

3.1.6 Public Funding Agencies (including the organizations of the ERA-NET partners!)

- Very keen interest in most cases, in some cases expressedly neutral.
- Most funding agencies need information on R&D needs from fundamental research to industrial, market-driven applications (across all TRLs) to identify path to commerciality without subsidies.
- User-driven needs for setting the R&D agenda can be strong.
- Overview of national geothermal (particularly strong need in federally organized countries) and EU geothermal R&D activities.
- Interestingly, hardly any undifferentiated claim/need for “higher” budgets. It is not clear whether this means “we have enough” or “we don’t know how much we need”.

3.1.7 Private grant giving institutions / funding agencies

- Information is limited to only a few countries, but the stakeholder group “Power Industry” is in general very active with a very high interest.
- Especially stakeholder group “Power Industry” seems to be spending on R&D or is interested in doing so.
- Focus on project-specific and very much applied R&D questions.
- In some cases the stakeholder group would like to see the link to technology roadmaps.
- Geothermal R&D appears to be detached from or independent to publically funded R&D even for technologies where technology readiness levels (TRLs) are high.

3.1.8 Other federal administrative units

This stakeholder group is only present in some countries. Depending on the organizational structure of the government, important stakeholders can be present in various ministries or governmental agencies, particularly on topics such as the environment, geology, seismology, and spatial planning.

3.1.9 Power Industry

This stakeholder group is important in countries with existing geothermal power plants or with attractive resources.

3.1.10 Industry

This stakeholder group includes industrial firms involved in realizing geothermal projects (drilling, service and consulting companies) as well as industry related to the use of the energy (district heating, agriculture, utilities). The interest in most cases is modest but growing.

3.1.11 Public Stakeholders

- This stakeholder group comprises non-governmental organizations, the service industry, and the public at large. NGOs need to know about the status of geothermal energy utilization the R&D situation -- but in general terms.
- Some interest in R&D that has high-impact and is relevant to public sentiment (hydraulic stimulation, induced seismicity, GHG emissions, high/low funding levels).
- Specific user groups (agriculture) have a very keen interest in R&D particularly rehabilitation of existing facilities.
- Service Industry has an active interest.

3.2 Proposed and required actions

3.2.1 Main actions proposed – all stakeholder groups

- Information, dissemination of knowledge (on various levels).
- In need of explanation: “how does geothermal R&D help realize potentials and cost reduction”.
- In need of explanation: “how is R&D coordinated on both national and international levels”.
- Increase or maintain funding level of R&D. However, more funding required for pilot and demonstration projects.
- Promote international cooperation.

Some partners propose only few or no actions – need to follow up on national findings to identify actions that can or should be taken by funding agencies or program owners.

3.2.2 Political Stakeholders require

- Information systems that enable digging deep (access to project specifics).
- Ability to compare country-to-country systems and extract learning on what works best in terms of R&D.
- Consistent “global” messages, yet understanding when “local” messages differ from one country to next (e.g. importance of geothermal heat in one country vis-à-vis next).
- Ability to demonstrate that local R&D budgets are spent well and leveraged across Europe (in some cases provincial/local governments are very important and may not be aware of the European dimension).
- A clear theme: Ensure that R&D learnings flow in to the regulatory oversight activities of governments (regulators are listed as “governmental committees”).

3.2.3 Government appointed advisory committees

This group is only present in some countries (NL, IT, FR, CH, TR, SK). In these countries the importance of this group is mostly considered as to be high. Proposed actions are essentially congruent with the group political stakeholders.

3.2.4 Academia (including National Centers of Geothermal Competence, e.g. geological surveys)

- Provide a good overview of R&D activities at various TRLs.
- Improve communication and integration with industry and to some degree with public agencies to identify R&D needs (e.g. technology roadmaps).
- Need for “Formulation and coordination of geothermal programs, good understanding of application driven research, communication on economic and commercial realities” (as summed up by Germany).
- Increase project funding.

3.2.5 Public Funding Agencies (yes, this is us and our colleagues)

- Need to know where R&D funds go in terms of TRLs and path to commerciality.
- Provide technology roadmaps to manage/evaluate R&D funds.
- Coordinated R&D programs to gain overview, leverage funds and encompass the long term.
- Coordination of national programs with European programs.

3.2.6 Private grant giving institutions / funding agencies

- Need to know where R&D funds go in terms of TRLs and path to commerciality.
- Improve level of information between public and private R&D grant-giving organizations.
- Provide technology roadmaps to manage R&D funds.
- Identify where opportunities exist to match more fundamental R&D with industry needs.
- Opportunity to leverage public funds.

3.2.7 Other federal administrative units

Key issues are dissemination of information and cooperation with other units (in order to avoid conflicts of interest (which as an example could arise between a governmental agency for environmental protection and a governmental agency for energy)).

3.2.8 Power Industry

Important issues for this group are favorable and consistent regulations, incentives (e.g. Feed-In-Tariffs) and international cooperation.

3.2.9 Industry

- Exchange of information.
- Improve international cooperation.
- Improve cooperation between industry and academia.

3.2.10 Public Stakeholders

- Need to know about R&D activities in a general manner.
- Need to know how to gain access to specialist knowledge.
- Sensitive R&D topics (budgets, “hot topics” such as seismicity, fracking) need a more detailed picture.
- In general reactive responses on R&D appear as the preferred method of messaging, less proactive messaging.

4 Conclusions and next steps

The collection of data of national stakeholders and the related analysis can be summarized as follows:

- The stakeholder lists and analysis differ strongly between countries. This is mostly related to the local availability of resources and energy demand.
- Depending on the local situation, the national RD&D landscape has developed in different directions (e.g. NL focuses on heat use, CH on electric power).
- Concerning the proposed actions there are some general findings which are valid for all partner countries:

- *Information, dissemination of knowledge (on various levels)*
- *Inform on how geothermal R&D can help to realize potentials and cost reduction*
- *Inform on how R&D is coordinated on both national and international levels*
- *Increase funding of R&D and pilot projects*
- *Promote international cooperation.*

The next step will be to extend the stakeholder listing and analysis to regional and European level. A similar approach will be used and the results will be compiled in the deliverable D5.2 report.

5 Annex: Stakeholder maps on a national level

The stakeholder data collection of the individual countries is listed in this annex in the following order:

5.1 Iceland

5.2 The Netherlands

5.3 Switzerland

5.4 Italy

5.5 Germany

5.6 France

5.7 Turkey

5.8 Slovakia

5.9 Hungary



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