



REFLECT DELIVERABLE D6.2

## STAKEHOLDER MATRIX

*Summary:*

This document corresponds to Deliverable D6.2 of the ongoing Horizon 2020 project REFLECT and is part of the Work Package 6. The deliverable “Stakeholder matrix” aims to define the approach for engaging stakeholders and involving them into the project in the most efficient way in order to achieve quality final results and successful implementation of the project final product. The document defines the main groups of the potential stakeholders and provides general guidelines on how to categorise them, how to establish the first contact and how to engage them.

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## 1 EXECUTIVE SUMMARY

This document presents the composition and structure of the stakeholder matrix of the European project “REFLECT: Redefining geothermal fluid properties at extreme conditions to optimize future geothermal energy extraction” (hereinafter also referred to as “REFLECT”, project reference: 850626). The aim is to classify and identify relevant stakeholders such as international agencies, consultants, investors, service companies, policy makers, research centres, universities, training centres, SMEs, and not for profit organisations active in social and economic development, environmental protection and potential end-users for a future geothermal energy extraction, such as investors in technology, operators and market makers. The document is intended for both internal readers and the public and is under the responsibility of Work Package 6 (WP6).

## 2 INTRODUCTION

The project "REFLECT: Redefining geothermal fluid properties at extreme conditions to optimize future geothermal energy extraction" is developing and setting up an EU based platform of international experts and stakeholders that advances the recommendations on how to operate geothermal systems avoiding problems related to fluid chemistry.

These recommendations will require accurate predictions and thus a thorough knowledge of the physical and chemical properties of the fluids throughout the geothermal loop.

These properties are often only poorly defined, as *in situ* sampling as well as measurements at extreme conditions are hardly possible to date. As a consequence, large uncertainties in current model predictions prevail, which will be tackled in REFLECT by collecting new, high quality data in critical areas.

Over the past few years geothermal energy has expanded in many countries. It is well positioned as a clean, cost-efficient energy, and depending on the geological areas, more or less easy to develop and install. Those different characteristics on local and regional geology (and fluids) result in different behaviour when the geothermal facilities are exposed to natural fluids. Knowing in advance the chemical characteristics of the flowing fluid in the pipes, can determine the operational life-time of those facilities.

As REFLECT aims to solve this problem at a European Level, the appropriate stakeholders need to be reached to address the whole geothermal community.

The REFLECT consortium is composed of well-established and widely recognised institutions and associations from the EU. Each of the partners has experience with geothermal fluids in a certain field that is of relevance in achieving the REFLECT goals. The consortium as a whole consists of 14 partners from nine different EU countries including three research institutes and geological surveys, one European organisation, four universities, and three companies (one service company and two geothermal operators).

### 3 CREATING A NETWORK OF STAKEHOLDERS

The aim of this task is to classify and identify target audience such as international agencies, regulators and policy makers, research centres, universities, training centres, SMEs, large companies and not for profit organisations active in the geothermal industry and potential end-users for this industry, such as investors in technology and market makers.

At the beginning of the project, a dissemination and communication plan has been produced (Deliverable 6.1) defining in detail the objectives, tools, and measures for internal and external communication. Besides, it will serve as a basis to define the main groups of stakeholders and their needs in a stakeholder matrix.

#### 3.1 STAKEHOLDERS GROUPS

Previously in the communication guidelines, target audiences were identified within the following main groups:

- **Geothermal industry:** including actors who can have an active and technical role in the project as e.g. operators, consultants, investors, project developers, auditors, technology developers, start-ups, service companies, etc.
- **Other industries and markets:** including other industries that are not necessarily linked to geothermal issues but somehow provide support, solutions, or equipment. These are: mining, wastewater, equipment suppliers, banks, financiers, insurance companies.
- **Scientific community:** including scientific and technical researches and experts like geochemists, engineers, microbiologists, geologists, physicists, etc.
- **Public authorities:** EU policy makers, national governments, regional institutions, local communities, etc.
- **General public and lobby groups:** including NGOs, journalists, influencers and in general any citizens who could have an interest in the project.

The groups mentioned above, cover every single angle of the potential stakeholders the project could have.

Due to the low TRL level of the project and the further categorisation according to an influence/importance matrix, these above groups will be merged in four principal categories:

- **Geothermal Industry:** this category will include all the stakeholders related with the geothermal business.
- **Other accessories industries:** all the industries not linked with geothermal industry, but which could participate in the whole geothermal loop (e.g. mining, different kind of suppliers, water management companies, etc.).
- **Scientific community:** this category fits with the previously defined, including all researchers and experts like physicists, geologists, biologists, microbiologists, chemists, etc.
- **Public authorities and lobby groups:** here are included the two last groups mentioned above, covering policy makers, regional institutions, journalists, influencers, etc.

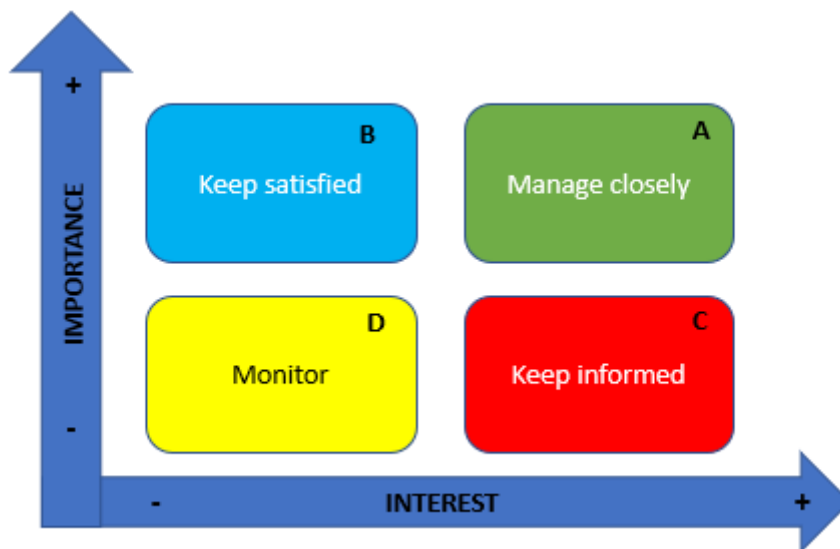
Different approaches and features are considered taking into account all the European countries involved in the project. Within these four groups any potential stakeholder should be covered.

### 3.2 STAKEHOLDERS MATRIX

A stakeholder matrix is a project management tool used to analyse a project stakeholder to determine the actions which are necessary to align their goals with the project. Besides, it gives a rate or a “label” to each of the identified stakeholders and shapes actions that can be taken for each of the categories<sup>1</sup>.

In a stakeholder analysis there are two variables which affect the project more than any other, the power or importance and the interest. The power is the ability of the stakeholder to stop or change the project. For example, a government regulatory approval authority has a very high level of power. On the other hand, the interest is the size of the overlap between the stakeholder’s and the project’s goals. For example, a landowner whose house has to be removed for the implementation of a project has a very high interest.

The point is to plot those two central variables on a chart with the x-axis being interest and the y-axis being importance. The resulting chart is an easy but solid analysis of the stakeholder’s potential position in the project.



**Figure 1:** Importance/interest matrix to categorise the potential stakeholders participating in REFLECT project.

A letter has been associated to each of the four categories in order to quickly match the proposed stakeholders with the most suitable option.

<sup>1</sup> See chapter 5 REFERENCES

A: stakeholders with high power and high interest are major stakeholders that are heavily invested in the project. They must be actively managed.

B: Stakeholders with high power but low interest must be kept satisfied. They can derail the project over seemingly minor issues.

C: Stakeholders with low power but high interest, must be kept informed. They can create high influence if they do not get what they want.

D: Stakeholders with low power and low interest must be monitored in case they become more powerful and affect the project in the future.

When using a matrix like this, the following steps must be taken into account:

1. List all the stakeholders relevant to the project, no matter how little their power or interest is.
2. Categorise them based on their interest in REFLECT and their decision-making power.
3. Place them in the appropriate quadrant.
4. Monitor them continuously and move them round the quadrant as their interest/power evolves.

### 3.3 STEPS TO CONTACT STAKEHOLDERS

Based on this document a database of stakeholders will be compiled with the support of the project partners and the EFG Linked Third Parties (LTPs). Main steps in the process of SH classification will be the following:

1. WP 6 leader will contact project partners and LTPs in order to ask for active support in the identification of stakeholders.
2. Project partners will approach at least 3 to 5 potential stakeholders from different backgrounds, especially from category A, using the standard e-mail prepared by the WP Leader (annex 1). Besides, the project brochure created in D6.9 can be attached to the outgoing mails.
3. Data collected from the partners will be incorporated in the stakeholder database (annex 2) and sent periodically to EFG WP6 officers for update.

The objective is to:

- a) Ensure that potential stakeholders understand the nature and scope of the project.
- b) Ensure that relevant regular updates are provided to stakeholders in different phases of the project.
- c) Engage stakeholders to transfer further the project outcomes.



## 4 CONCLUSION

Stakeholder analysis is a technique that can help the project team to understand the variety of stakeholders that have a potential interest in the project. The matrix gives an at a glance view of the interest, relevance and importance every of the stakeholders can have to the project; letting project officers to understand their respective needs and levels of influence and aligning the project accordingly.

This document defines the main groups of potential stakeholders and provides general guidelines on how to establish the first contact and how to engage them. It contains guidelines in how to classify them and group them according to an importance/relevance matrix. The implementation and the further definition of this list will be maintained by the WP leader and will be completed along the life-time of the project. Further guidelines on the stakeholder engagement procedure are also provided in Deliverable 6.1 Dissemination and communication plan.

## 5 REFERENCES

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## 6 ANNEXES

### 6.1 ANNEX 1

Email template for the REFLECT initial contact with future stakeholders from industry, academia, policy makers and the general public.

#### **Industry – (categories 1 and 2)**

Subject: From react to REFLECT: preventing problems relating to geothermal fluids rather than treating them

Dear [\_\_\_\_\_],

You receive this mail since we think you would have interest in the results and aim of our new H2020 consortium [REFLECT](#), “Redefining geothermal fluid properties at extreme conditions to optimize future geothermal energy extraction (REFLECT)”.

The efficiency of geothermal utilisation depends on the behaviour of fluids that transfer heat between the geosphere and the engineered components of a power plant. The Horizon 2020 funded REFLECT project aims to prevent problems related to fluid chemistry rather than treat them. The physical and chemical fluid properties are often poorly defined, as in situ sampling and measurements at extreme conditions are difficult to date. Therefore, large uncertainties in current model predictions prevail, which will be tackled in REFLECT by collecting new, high-quality data in critical areas. These data will be implemented in a **European geothermal fluid atlas** and in **predictive models** allowing to provide recommendations on how to best operate geothermal systems for sustainable use.

Considering your background, we believe that the above-mentioned outputs which will be developed during the course of the project will be particularly relevant for you/your company. The European fluid atlas will provide easy access to information on the occurrence of geothermal fluids in different environments and potential geochemical risks prior to drilling. It will also facilitate risk assessment and planning borehole and plant layout to suit fluid properties. Addressing thus the key problem of almost all geothermal operations, REFLECT aims to have a major impact on the operational efficiency, project economics and viability as well as on the environmental footprint. Our improved databases and modelling tools will be available to geoscientists and engineers to help operators optimise power plant layout and reduce maintenance costs, caused by clogging or insufficient production/injection rates. You can find further information on how the REFLECT approach aims to support geothermal operators at the following link: <https://www.reflect-h2020.eu/about-the-project/>

We would be pleased to keep you informed about the project implementation. To do so, we propose different options. You may:



- Subscribe to our [newsletter](#) which will be issued not more than once or twice per year;
- Pre-register for the webinars that we will organise for our stakeholders by answering this email;
- Follow our social media channels: [LinkedIn](#) & [Twitter](#)

Thank you very much for your time and your interest in the REFLECT approach.

Sincerely,

[\_\_\_\_\_]

**Scientific community – (category 3)**

Subject: From react to REFLECT: preventing problems relating to geothermal fluids rather than treating them

Dear [\_\_\_\_\_],

You receive this mail since we think you would have interest in the results and aim of our new H2020 consortium [REFLECT](#), “Redefining geothermal fluid properties at extreme conditions to optimize future geothermal energy extraction (REFLECT)”.

The efficiency of geothermal utilisation depends on the behaviour of fluids that transfer heat between the geosphere and the engineered components of a power plant. The Horizon 2020 funded REFLECT project aims to prevent problems related to fluid chemistry rather than treat them. The physical and chemical fluid properties are often poorly defined, as in situ sampling and measurements at extreme conditions are difficult to date. Therefore, large uncertainties in current model predictions prevail, which will be tackled in REFLECT by collecting new, high-quality data in critical areas. These data will be implemented in a **European geothermal fluid atlas** and in **predictive models** allowing to provide recommendations on how to best operate geothermal systems for sustainable use.

Considering your background, we believe that especially our extended databases (solubility, activity, reaction kinetics) covering higher temperatures and higher salinities, together with the European fluid atlas will be particularly relevant for you/your institution. Thanks to our lab experiments and modelling approaches, we aim at closing a currently huge knowledge gap in order to achieve more reliable predictions of geothermal performance in the future. You can find further information on the REFLECT approach at the following link: <https://www.reflect-h2020.eu/about-the-project/>

We would be pleased to keep you informed about the project implementation. To do so, we propose different options. You may:

- Subscribe to our [newsletter](#) which will be issued not more than once or twice per year;
- Pre-register for the webinars that we will organise for our stakeholders by answering this email;
- Follow our social media channels: [LinkedIn](#) & [Twitter](#)

Thank you very much for your time and your interest in the REFLECT approach.

Sincerely,

[\_\_\_\_\_]

**Policy makers/NGOs/general public – (category 4)**

Subject: From react to REFLECT: preventing problems relating to geothermal fluids rather than treating them

Dear [\_\_\_\_\_],

You receive this mail since we think you would have interest in the results and aim of our new H2020 consortium [REFLECT](#), “Redefining geothermal fluid properties at extreme conditions to optimize future geothermal energy extraction (REFLECT)”.

The efficiency of geothermal utilisation depends on the behaviour of fluids that transfer heat between the geosphere and the engineered components of a power plant. The Horizon 2020 funded REFLECT project aims to prevent problems related to fluid chemistry rather than treat them. The physical and chemical fluid properties are often poorly defined, as in situ sampling and measurements at extreme conditions are difficult to date. Therefore, large uncertainties in current model predictions prevail, which will be tackled in REFLECT by collecting new, high-quality data in critical areas. These data will be implemented in a **European geothermal fluid atlas** and in **predictive models** allowing to provide recommendations on how to best operate geothermal systems for sustainable use.

Addressing the key problem of almost all geothermal operations, REFLECT will have a major impact on the operational efficiency, project economics and viability as well as on the environmental footprint. In the long term, REFLECT aims to:

- **Improve EU energy security** by increasing the number of economically viable geothermal sites and reducing the consumption of fossil fuels.
- **Increase the attractiveness of renewable energy technologies** by improving cost-competitiveness, reducing complexity and increasing reliability, being thus in line with the EU Strategic Energy Technology (EU-SET) plan and the EU Green Deal.
- **Reduce the environmental impact of geothermal energy production** by improving knowledge of the formation of free gas from geothermal fluids during production and reducing the degassing of greenhouse gases such as methane and CO<sub>2</sub>.

You can find further information on the REFLECT approach and expected impacts at the following link: <https://www.reflect-h2020.eu/about-the-project/>

We would be pleased to keep you informed about the project implementation. To do so, we propose different options. You may:

- Subscribe to our [newsletter](#) which will be issued not more than once or twice per year;
- Pre-register for the webinars that we will organise for our stakeholders by answering this email;
- Follow our social media channels: [LinkedIn](#) & [Twitter](#)



Thank you very much for your time and your interest in the REFLECT approach.

Sincerely,

[\_\_\_\_\_]

## 6.2 ANNEX 2

The template can be found in the following [link](#).