

GEOENVI project

project overview

29/11/2018



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No [818242 — GEOENVI]

Where it comes from...

- the advantages of using geothermal for power production and H&C are not widely known. Recently, deep geothermal energy production in some regions is confronted with a negative perception, and a special attention from some decision-makers, in terms of environmental performance, which could seriously hamper its market uptake.
- Media reports focus more on disadvantages than advantages. As a result, decision makers and potential investors have concerns about possible environmental impacts and risks involved in implementing geothermal projects, and social resistance often results in practical obstacles - such as significant slowdowns - to the deployment of the deep geothermal resources.

Where it comes from...

- In November 2018, the European Parliament, adopted in plenary session the recast of the directive on renewable energy sources, with the following recital:
- ***(45) Geothermal energy is an important local renewable energy source which usually has considerably lower emissions than fossil fuels and certain types of geothermal plants produce near-zero emission. However, depending on the geological characteristics of an area, geothermal energy production may release greenhouse gases and other substances from underground fluids and other subsoil geological formations, which are harmful for health and the environment. Therefore, the European Commission should only facilitate the deployment of geothermal energy with low environmental impact and resulting in greenhouse gas saving compared to conventional sources***

And:SET Plan - Declaration on Strategic Targets in the context of an Initiative for Global Leadership in Deep Geothermal Energy

Non-technical barriers/Enablers:

- A. Increasing awareness of local communities and involvement of stakeholders in sustainable geothermal solutions.
- B. Risk mitigation (financial/project)

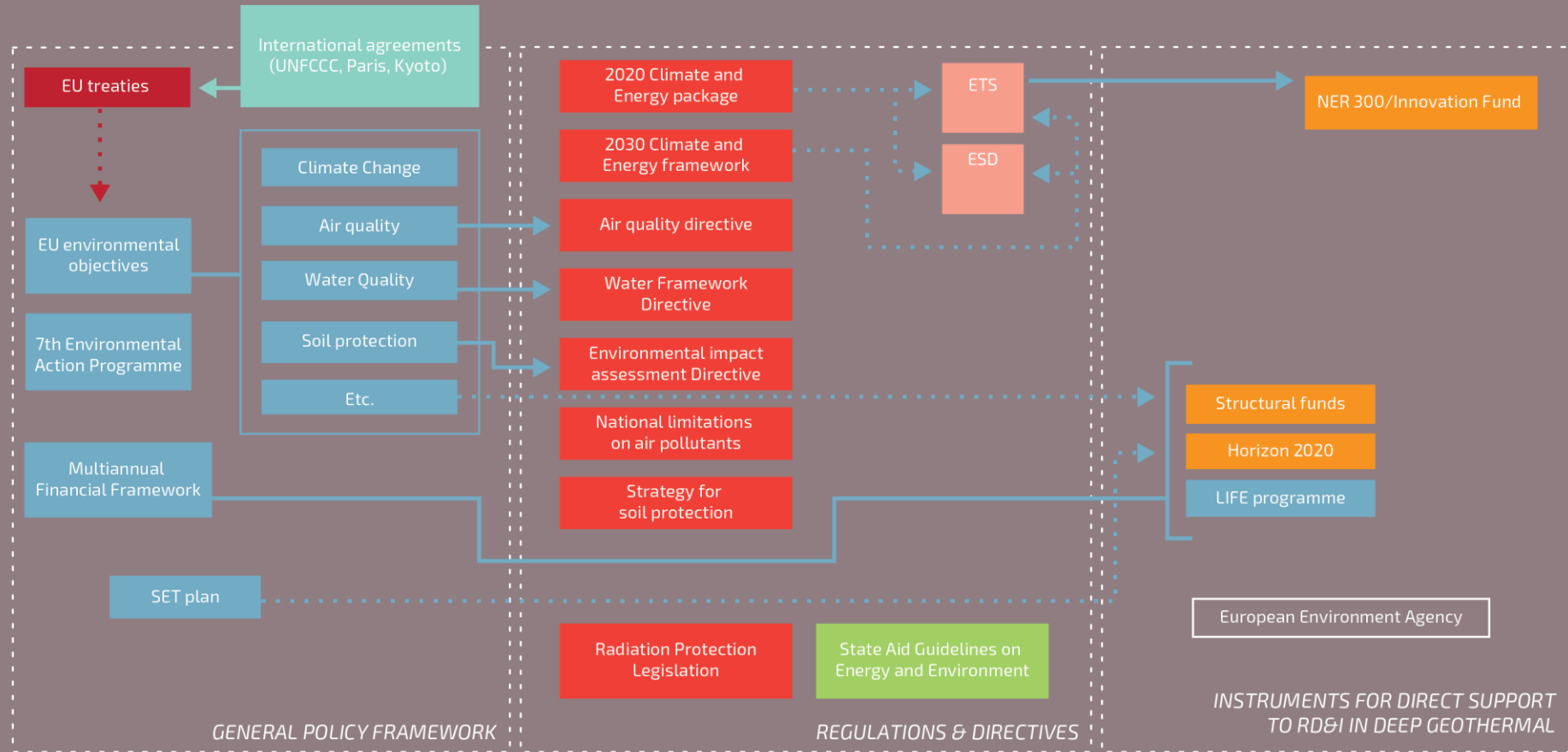
Relation to the work programme

The work programme 2018-2020 part 10 on “Secure, clean and efficient energy” is aiming at “Accelerating Clean Energy Innovation” by notably making Europe the world leader in renewables. One crucial aspect for the future energy system is the extensive use of renewable such as deep geothermal technologies. GEOENVI fully addresses the specific challenge and three scopes of the H2020-LC-SC3-RES-28-2018 topic “Market uptake support”.

The GEOENVI project answers three important market-uptake challenges :

- Recommendation for harmonisation of regulations, life cycle assessment approaches, environmental impact methodologies of renewable energy solutions;
- Development of tools (methods and models) for environmental impact assessments of renewable energy projects;
- Development of tools or services using global earth observation data, (such as those available through COPERNICUS), to support development and deployment of renewable energy sources;

OVERVIEW OF THE EUROPEAN REGULATORY AND SUPPORT FRAMEWORK ON ENVIRONMENT RELEVANT TO DEEP GEOTHERMAL PROJECTS



LEGEND

→ Primary driver ... → Partial driver

European Commission as primary actor and enforcer

EU laws

EU Directives

EU Regulations: binding on Member States, although enforcement comes from the European Commission

Guidelines: technical interpretation of Directives and Regulations by the EU Commission that shapes Member States application

EIB managed financing

International agreements

LIST OF ABBREVIATIONS

ESD: Effort Sharing Decision

ETS: Emission Trading Scheme

SET Plan: Strategic Energy technology Plan

UNFCCC: United Nations Framework Convention on Climate Change



ETIP-DG

European Technology & Innovation Platform on Deep Geothermal

Key environmental policies and regulations for the geothermal sector

- Water Framework Directive
- Environmental Impact Assessment
- F-Gas regulation

Partnership

Consortium

Participant No *	Participant organisation name	Country
1 (Coordinator)	EGEC	BELGIUM
2	RETE GEOTERMICA	ITALY
3	ENEL GP	ITALY
4	COSVIG	ITALY
5	CSGI (Italian consortium of research group)	ITALY
6	CNR-IGG	ITALY
7	BRGM	FRANCE
8	ES-géothermie	FRANCE
9	Paris Minetech	FRANCE
10	MBFSZ	HUNGARY
11	ISOR	ICELAND
12	GEORG	ICELAND
13	Orkustofnun - OS	ICELAND
14	VITO	BELGIUM
15	JESDER	TURKEY
16	Dokuz Eylul Univ.	TURKEY

Key actors

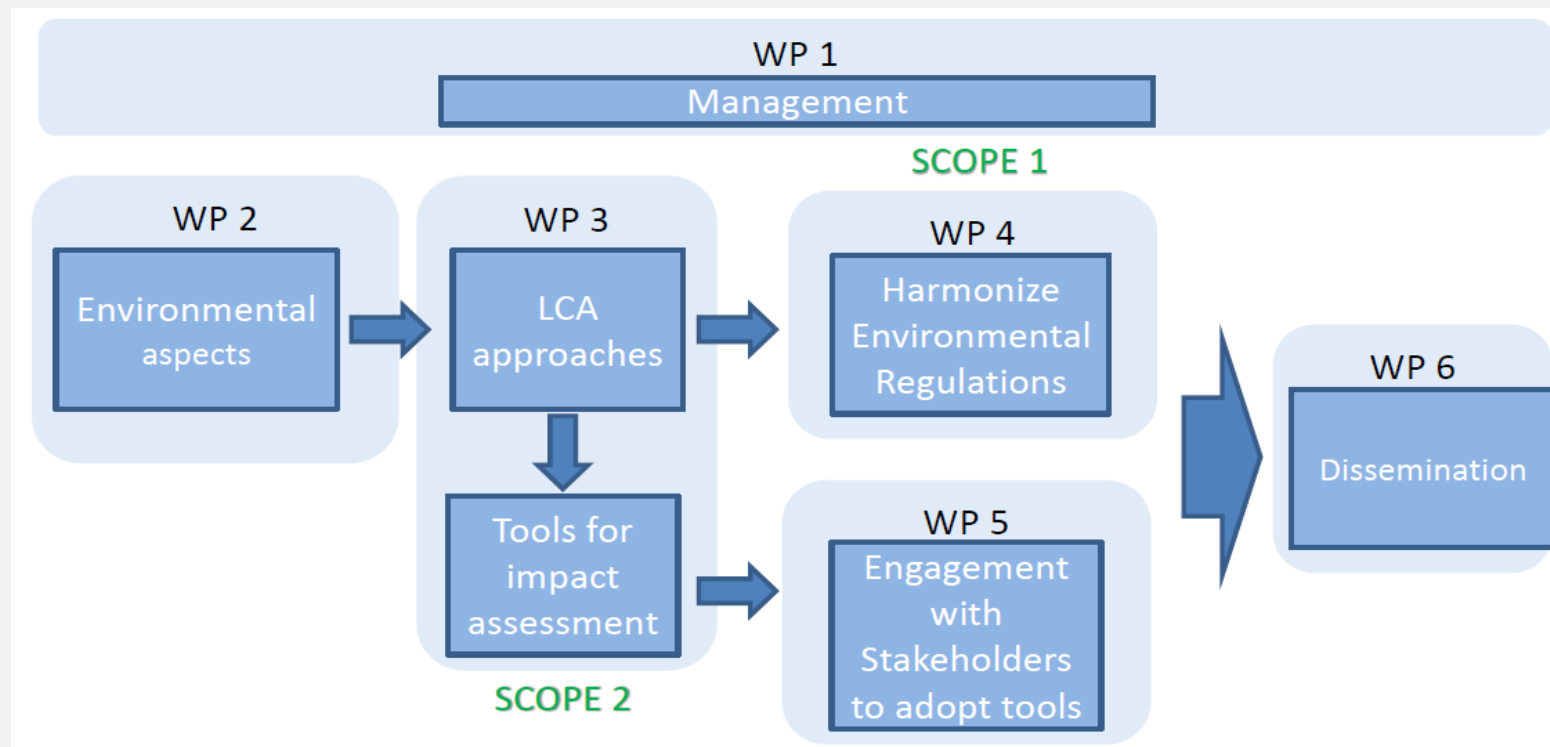
- Public environmental institutions and regulatory authorities > implement and/or make the environmental regulations: they will exchange on best practices, tend to adopt the GEOENVI recommendations and methodologies, and envisage the harmonisation of their environmental regulations
- Industry & project developers > develop geothermal projects: they will be consulted on environmental impact and LCA, and be asked to implement methodologies and tools. GEOENVI aims especially at representing a variety of power and DH project developers in Europe. These geothermal project developers and operators (more than 70 companies) are represented directly and indirectly by geothermal associations in GEOENVI
- Scientific experts > guarantee sustainability: they will support drafting of environmental regulations for the legislators and design methodologies and tools on environmental impact and LCA for industry.

Target areas:

GEOENVI is then targeting six countries in a first time: Iceland, France, Belgium, Italy, Hungary and Turkey. During the project results dissemination phase, the objective is to cover the rest of Europe.



Work Package





Technical proposal

WP 2: ENVIRONMENTAL MATTERS, Months 1-12, BRGM

- 1) Overall state of the art on deep geothermal environmental data (ISOR, Months 1-8)

List of environmental issues: risk, impact and incidents

- 2) Analysis of mitigation measures (CNR, Months 2-10)

Adopted solutions and recommendations to circumvent environmental concerns:
Webinar on month 10

- 3) Stepping back considering other kinds of geothermal applications, renewable energy sources and beyond (BRGM, Months 6-10)

- 4) Data organization and reporting (BRGM, Months 1-12)

Database on environmental matters

WP 3: LCA METHODOLOGY, Months 1-20, Orkustofnun

- 1) comprehensive analysis of the panorama of studies reporting environmental assessment & sustainability assessment for geothermal systems (Orkustofnun) (Months 1-12)
- 2) Elaboration of the environmental impact and LCA guidelines for geothermal energy and application to the case studies (CSGI Task leader with main contribution from ARMINES for the LCA guidelines) (Months 3-20)
- 3) Development of a protocol for the generation of simplified LCA models to assess environmental impacts (ARMINES) (months 12-20)
- 4) Testing the applicability of the guidelines and the protocol for simplified models with the stakeholders (COSVIG) (Months 12-20)

WP 4: Engage decision-makers, Months 6 to 25, VITO

- 1) Decision-making process mapping (VITO) (Months 6-25)
- 2) Formulation of recommendations on environmental regulations (CNR) (Months 10-25)
- 3) Strategy for engagement and adoption of the recommendations (VITO) (Months 6-25)

WP 5: Engage market actors, Months 6-30, COSVIG

- 1) Geothermal market actors mapping (GEORG) (months 6-15)
- 2) Towards the adoption of the recommendation for European life cycle assessment approaches, and environmental impact methodologies of geothermal (OS) (months 16-30)
training seminar
- 3) Stakeholder involvement: adopt the tools (COSVIG) (months 20-30)
web-based platform for stakeholders

