

## ○ GEOENVI project

Project overview and harmonized methodology for environmental impact assessment with a life-cycle perspective for geothermal systems

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## ○ Where it comes from...

1. 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.
2. 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.

## ○ GEOENVI ANSWERS....

The GEOENVI project answers three important market-uptake challenges :

- Recommendation for harmonization 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;

## ○ 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

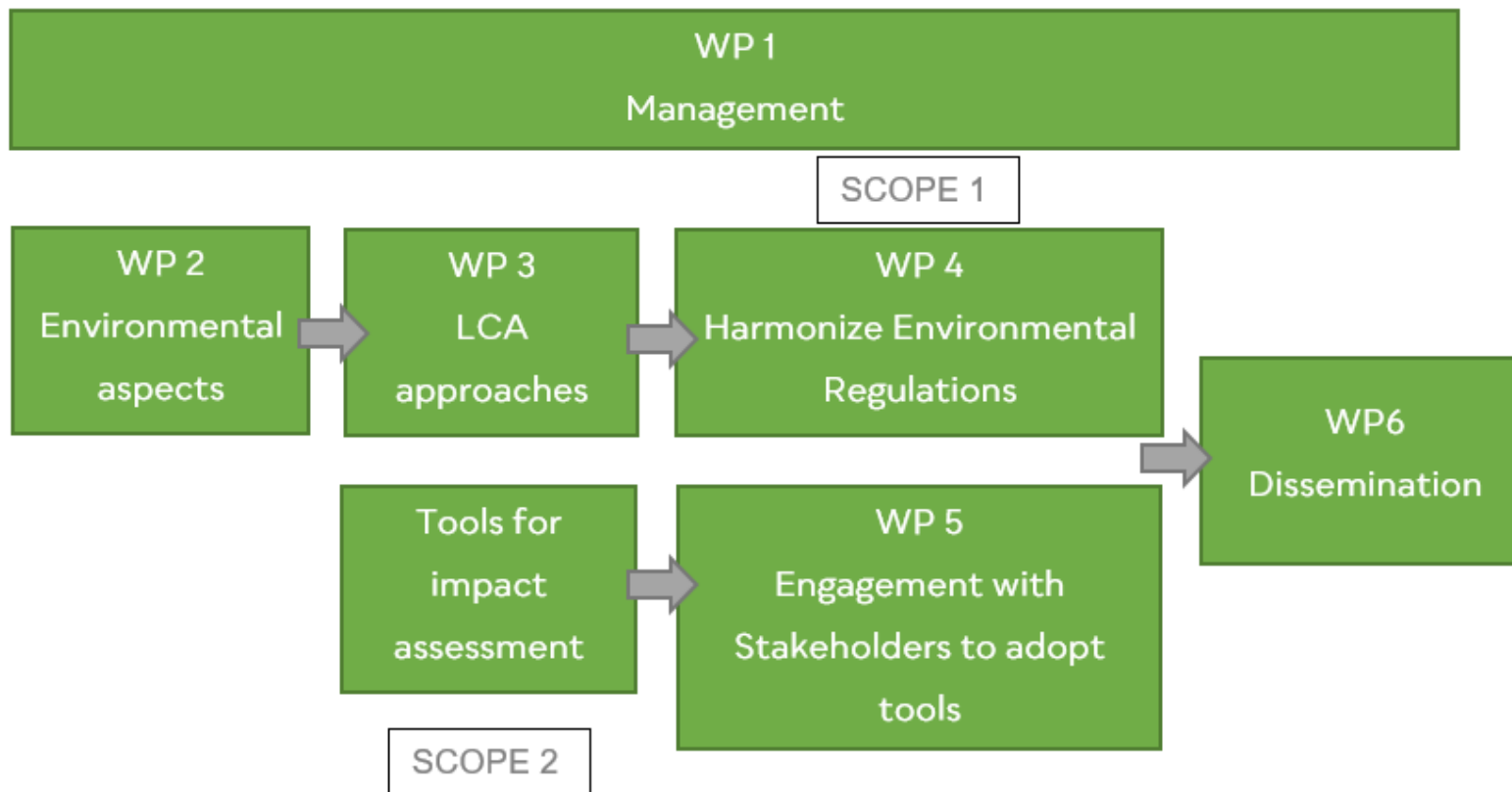
- Public environmental institutions and regulatory authorities, that implement and/or make the environmental regulations: they will exchange on best practices, tend to adopt the GEOENVI recommendations and methodologies, and envisage the harmonisation of their environmental regulations
- Industry & project developers, which develop geothermal projects: they will be consulted on environmental impact and LCA, and be asked to implement methodologies and tools.
- Scientific experts, to 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 Packages



## ○ WP3 overview

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

1. A 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 3-23)
3. Development of a protocol for the generation of simplified LCA models to assess environmental impacts (ARMINES) (months 12-22)
4. Testing the applicability of the guidelines and the protocol for simplified models with the stakeholders (COSVIG) (Months 12-22)



## ○ HARMONIZED METHODOLOGY: LCA GUIDELINES

- Target: LCA experts
- LCA guidelines: a key milestone of the work package.
- Aim: 1) to offer methodological indications and assistance on how to perform LCA of geothermal systems with a common and accepted base allowing for comparison of results for different geothermal settings and energy conversion technologies. 2) To reduce LCA results variability, aligning methodological inconsistencies in published LCAs
- Methodological guidelines cover goal and scope definition, Life cycle inventory (LCI) and Life cycle impact assessment (LCIA), interpretation and reporting results.

## ○ HARMONIZED METHODOLOGY: SIMPLIFIED LCA MODELS

- Generation of simplified parameterized model for a selection of GEOENVI case studies, to simplify comprehensive life cycle assessment models into reduced models that allow estimation of life cycle impacts based on a very low number of input parameters
- Target: non LCA experts



**G E O E N V I**

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