



GUIDELINES FOR DEVELOPERS AND PROMOTERS OF GEOTHERMAL ENERGY

CROWD THERMAL aims to “empower public to directly participate to the development of geothermal projects with the help of alternative financing schemes and social engagement tools”. To this end, stakeholder guidance is required to enable successful implementation of a geothermal energy project by developers and promoters, who must consider various external factors that influence the service life of the project.

A decision tree algorithm has been developed that integrates environmental, social, resource risk, legal and financial aspects of future geothermal projects to determine the most appropriate choices under specific conditions. The tool is designed to assist those engaged in developing and promoting geothermal energy projects to:

1. Enhance public engagement with their project to ensure successful implementation.
2. Identify alternative funding solutions for their project.
3. Ensure the community the benefits of the project.

The decision tree consists of nodes that ask questions to guide users to the most appropriate social engagement strategy and financing option. Its strengths include a graphical representation which facilitates decision making along with a transparent approach to how those decisions have been made. Risk mitigation options are provided to address potential public environmental concerns associated with geothermal exploration and exploitation and their corresponding financial measures are reported.

The tool acknowledges that each phase of a geothermal energy project is characterised by different risks, requirements, and opportunities, and accordingly, the risk will determine what type of capital should be used ideally (Figure 1). For example, resource risk is likely to be high during early stages, so raising capital via bank loans may prove difficult and alternative sources of finance should be considered.

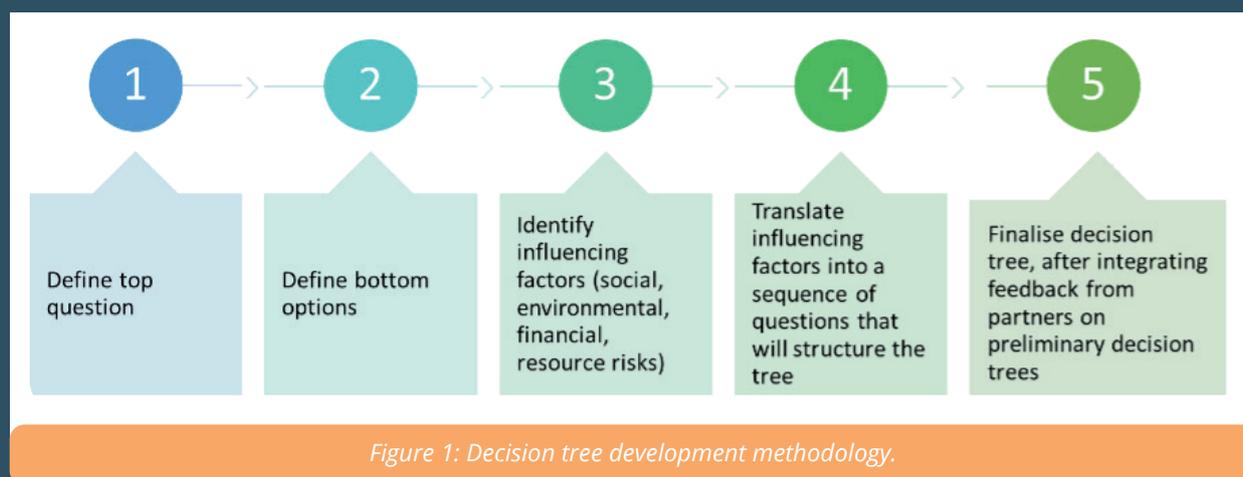


Figure 1: Decision tree development methodology.



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The algorithm identifies four types of investment capital in the context of CROWD THERMAL, namely risk absorbing capital, risk sharing capital, debt, and reserve. The selection of the most appropriate finance option depends on the development phase of the project, the type and amount of capital required, the level of risk, and the desired level of community involvement.

In addition, the risk posed by lack of public acceptance of the renewable energy technology may hinder development of a renewable energy project. The necessary mitigation for this will entail effective planning of a communication and engagement strategy to enhance the social acceptance of a project and ensure conflict prevention. Enabling the intellectual and financial participation of the community in the project enhances the public's engagement in and commitment to the project. In the same way, addressing stakeholders' environmental and social concerns helps remove barriers and local objections to successful implementation of the project (Figure 2).

Project Definition	Exploration	Drilling - First well	Resource development	Construction	Operation	Decommissioning
<ul style="list-style-type: none"> Subsidies/grants/donations Crowdfunding (E/R) Direct lending combined with governmental guarantee Governmental lease 	<ul style="list-style-type: none"> Subsidies/grants/donations Crowdfunding (E/R) Direct lending combined with governmental guarantee Governmental lease 	<ul style="list-style-type: none"> Subsidies/grants, Crowdfunding (E/(L)/R) Governmental lease, Direct lending combined with governmental guarantee Green bond Regular loan Regular bond Equity 	<ul style="list-style-type: none"> Crowdfunding (E/(L)/R) Governmental lease Direct lending combined with governmental guarantee Green bond Regular loan Regular bond Equity 	<ul style="list-style-type: none"> Crowdfunding (L/R) Direct Lending Leasing 	<ul style="list-style-type: none"> Crowdfunding (L/R) Direct Lending Leasing 	<ul style="list-style-type: none"> Retained profits Governmental subsidies
<ul style="list-style-type: none"> Announcement of the project Information of responsible authorities Correct and factual information Identification of opportunities and risks Far-reaching transparency, accessibility of information materials 	<ul style="list-style-type: none"> Information of responsible authorities Planning permits Asking for need of information/communication Offering financial participation opportunities Description of the process, different phases Direct communication with relevant stakeholder groups 	<ul style="list-style-type: none"> Drilling permits Documentation Regional information markets, topic tables Dialogue groups Local office with sufficient consultation times Site visits of existing projects/video/VR/3D presentation 		<ul style="list-style-type: none"> Construction permits Regional information markets, topic tables Dialogue groups Public construction diary 	<ul style="list-style-type: none"> Monitoring information to the stakeholders/ public according to legal framework Offering further financial participation opportunities Spin-off to other joint energy projects Operation starting party "Local energy party" Operation diary, website showing produced energy/saved CO2 emissions 	<ul style="list-style-type: none"> Decommissioning information-information to the stakeholders/public according to the stakeholders/public according to legal framework (focus environment, risks, post-utilization) Dialogue with citizens for future plans

Figure 2: Financing options and social engagement strategies per project phase.

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Key social engagement strategies include identification of stakeholders/context of the project, establishing a multi-channel approach for the announcement and information of the project (using a broad range of communication tools, including project website, social media, newspapers), encouraging stakeholder engagement and active participation, communicate clear and concrete messages.

The tool is not intended to give quantitative answers, rather it provides a logical and auditable workflow via a sequence of questions on social, environmental, resource risk and financial influencing factors, to screen which strategies would be most appropriate for a specific setting. The key questions the decision tree aims to address are:

- What is the most appropriate social engagement strategy for my project?
- What are the most appropriate (alternative) financing methods for my project?

In addition to the review of the various deliverables, the creation of the decision tree algorithm was based on input from project expert partners who provided a significant source of knowledge about the specifics on financial, resource-risk and social aspects of geothermal energy developments.



More information:

CROWD THERMAL Deliverable 4.2 [Guidelines for developers and promoters of geothermal energy](#)

