

# GRMF POWER – TECHNICAL ASPECTS

8<sup>TH</sup> APPLICATION ROUND

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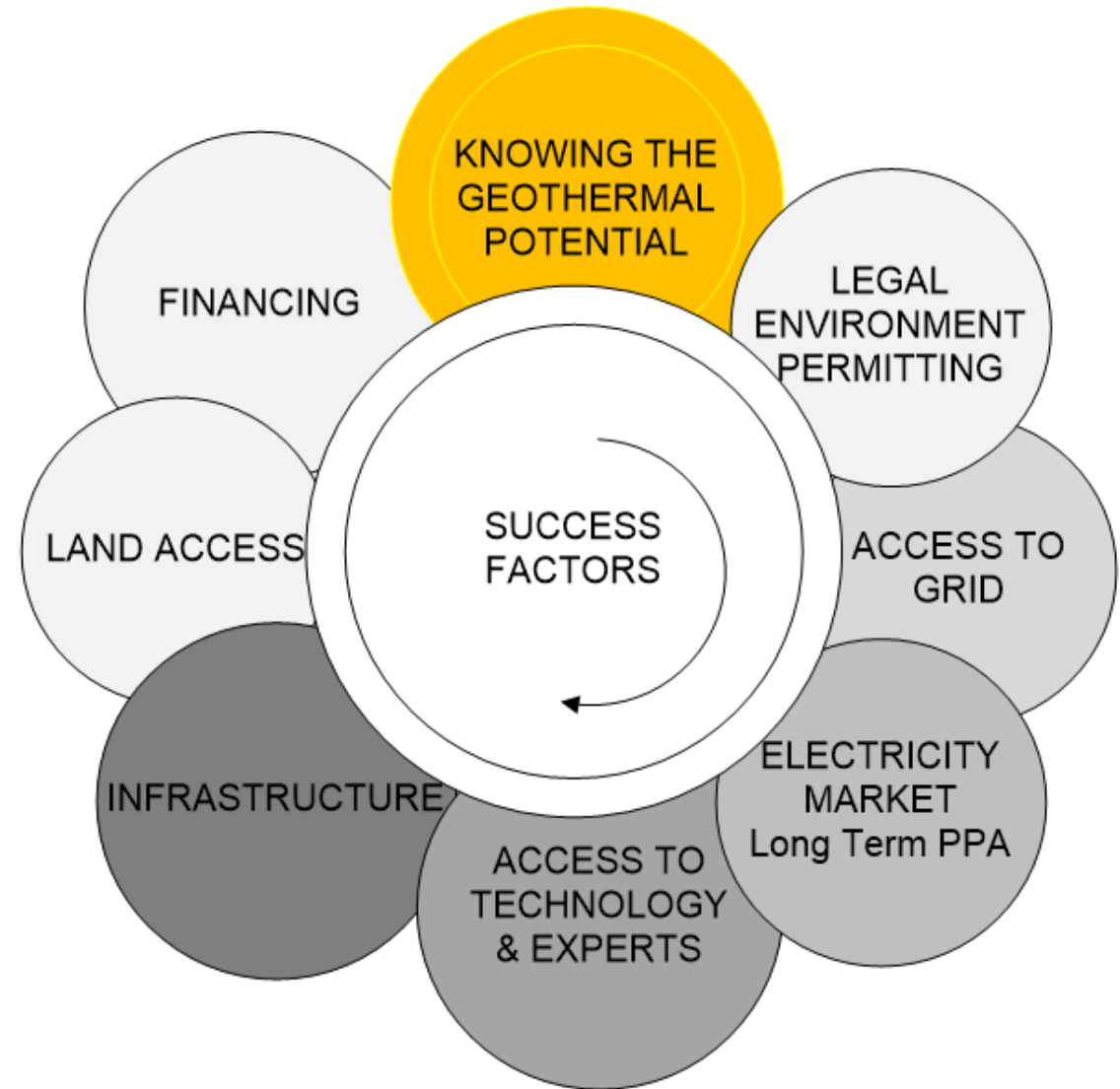
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# 1 WHAT TO CONSIDER WHEN PLANNING GEOTHERMAL POWER PROJECTS?

A certain level of planning should have been reached to be eligible for the GRMF POWER program.

- Surface Study (SS) is to refine previous studies in order to site the first well(s).
- Drilling Programmes (DP) applications should include specified site(s) and well target(s) justified by previous studies.



# 1 WHAT TO CONSIDER WHEN PLANNING GEOTHERMAL POWER PROJECTS?

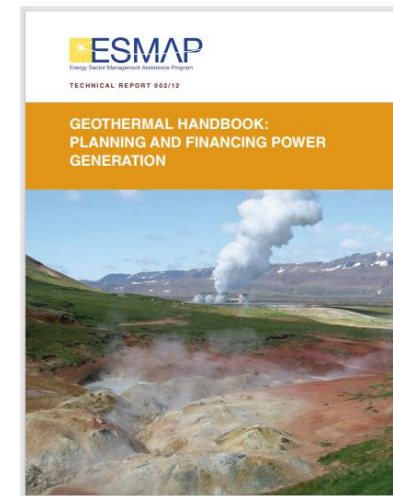
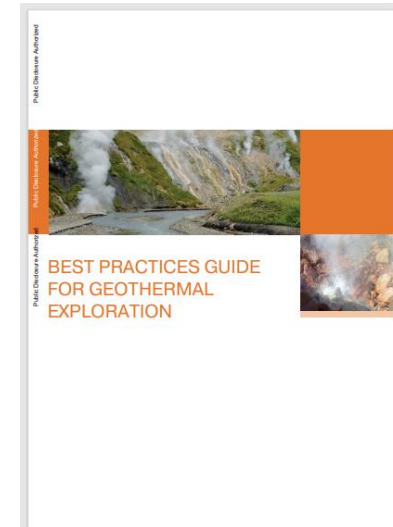
## Examples of best practise guidelines:

### Best Practices Guide for Geothermal Exploration, IFC

- <https://documents1.worldbank.org/curated/ru/190071480069890732/pdf/110532-Geothermal-Exploration-Best-Practices-2nd-Edition-FINAL.pdf>

### Geothermal Handbook, ESMAP

- [https://www.esmap.org/sites/esmap.org/files/DocumentLibrary/FINAL\\_Geothermal%20Handbook\\_TR002-12\\_Reduced.pdf](https://www.esmap.org/sites/esmap.org/files/DocumentLibrary/FINAL_Geothermal%20Handbook_TR002-12_Reduced.pdf)



## Each geothermal system is unique

The production capacity of geothermal systems is highly variable:

- Temperature
- Reservoir volume
- Geology and tectonics
- Fluid chemistry
- Dynamics and physics



*Detailed studies and exploration of the geothermal resource are the foundation of successful geothermal development.*



## 2 TECHNICAL ASPECTS OF GRMF POWER APPLICATIONS

For a successful application, please keep in mind to:

- Read the Developer manual.
- Make sure you know what you want to do and that it is eligible.
- Follow the given formats and fill in ALL sections.
- Provide all available information.
- Make sure application forms are in coherence with each other.



# 2 TECHNICAL ASPECTS OF GRMF POWER APPLICATIONS

## Experience (1/2)

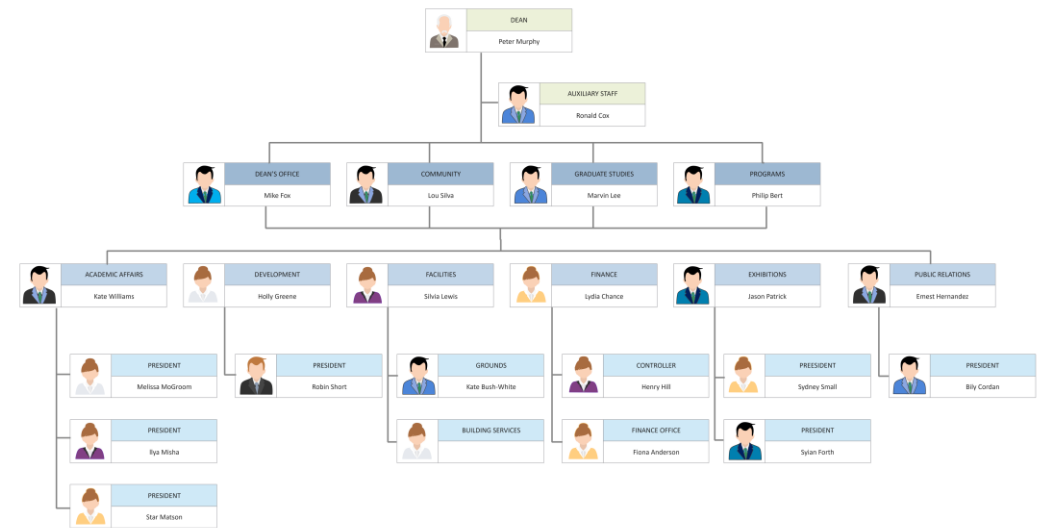
- Experience of key personnel and experience of the eligible entity are main criteria and need to be met for the project to be eligible for the application phase.
- In case of a known experience gap within the Applicant project team, a strategy for how this will be solved should be presented.



# 2 TECHNICAL ASPECTS OF GRMF POWER APPLICATIONS

## Experience (2/2)

- Two Organization Chartd (OC) are required:
  1. An OC to present the project team that will work on the activities applied for under the GRMF fund (including names of all the presented Key Personnel).
  2. Another OC can then be presented to introduce the eligible entity.
- In case the Applicant has multiple projects, it is good practice to also include the staffing strategy to meet the expected workload in case all applications are successful.







## Cost estimate

- Breakdown of costs is necessary and should be according to planned activities.
- In SS, budget break down is required to show costs of the individual studies scheduled in order to enable cost comparison.
- In DP, cost breakdown should follow the provided cost estimate template. Additional cost breakdown/justification should be provided for non-AWC items with high costs.



## Infrastructure

- Clear overview pictures, showing key components should be included.
- A clear distinction should be made between new road constructions and rehabilitation/improvements of roads that are in place.
- Specifications and quantities for key components should be included.

## Reconnaissance study

- A concession wide reconnaissance study is not eligible in GRMF.
- The project area of a Surface Study should be within a previously known geothermal area.
- If the prospect area is near or within the boundaries of another prospect, evidence and justification that the two prospects are not connected is required.

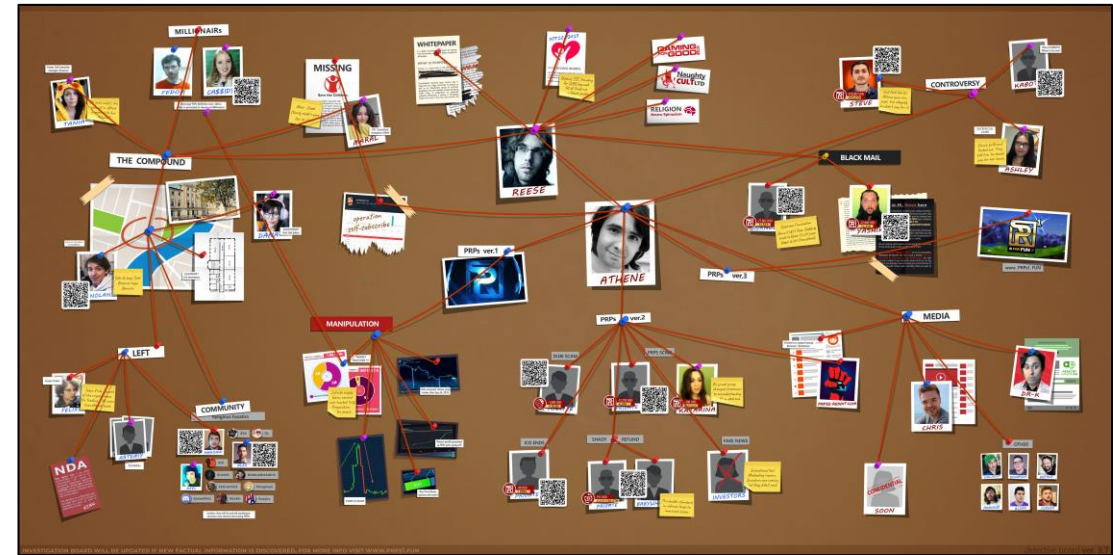




# 3 TECHNICAL ASPECTS OF GRMF POWER SS APPLICATIONS

## Justification of actions

- The eligibility of proposed actions can be clarified by connecting the dots on how previous geoscience studies of the area support them.
- The applicant is advised to state clearly what studies have been conducted in the prospect area and how these previous studies are used to define the proposed surface surveys applied for.





## Resource temperature

To avoid uncertainty regarding estimated resource temperature:

- State the range clearly.
- Support your estimate with references to surveys from the area.





## Work plan

- The Applicant is advised to take care to focus the proposed work on a specific area, which has been identified in previous surveys.
- Work plan should be reasonable for the study area, suggested actions should be supported by previous studies and justified for the siting of the first wells.
- Quantification and duration of actions should be clearly presented.

## Well siting and targeting

- The drilling target should be specified and justified with reference to previous studies of faults and fractures and estimated permeability within the targeted layer/fault.



## Geothermal specific challenges

- **Drilling technology.** Geothermal drilling has its own set of challenges which are different from what is faced in the oil and gas industry.
- **Hardware.** Drill bits selection has to be made with temperature in mind.
- **Drilling fluid.** The production sections of geothermal wells are often drilled with aerated water in order to increase productivity. Bentonite mud should however not be used when drilling the production section of a geothermal well as it can reduce the wells productivity.



## Grid connection

- The applicant is advised to provide a map that shows the distance from project site to nearest interconnection point of grid.



## Contradictions in schedules

- In the review, the connection between description and justification of the activity and work plan is used to justify the costs applied for.
- All cost should be connected to activities that have a specific duration and execution stated in the work plan and are justified by previous studies.
- When the sections are in contradiction, then the cost is questioned in the review accordingly.

### Description:

Action 1 described and justified



### Work Plan:

Methodology and duration for Action 1



### Cost estimate:

Cost estimate for Action 1 in coherence with previous sections



**Thank you for your attention!**

**Q/A**



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