



# GEOELEC



## Risk insurance for geothermal projects

Session2: "Legal, environmental & financial aspects"

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# Content

- **The notion of risk**
- **Risks associated with geothermal projects:**  
*a significant financial barrier*
- **Risk insurance for geothermal projects**
  - Existing insurance
  - Risk insurance scheme at European level



# The notion of risk

**RISK** - Risk is usually defined as the potential that a chosen action/inaction will lead to a loss. The notion implies that a choice having an influence on the outcome exists.

**Risks associated with geothermal projects** may appear to investors, banks and geothermal developers as significant and dissuasive constraints.

- Political
- Regulatory
- Technical
- Business
- Economical

These are usual business risks though. In addition, a geothermal project may have to face specific risks resulting from the particular financial configuration of a geothermal project and specificity of the resource,



# The risks associated with geothermal projects

*The whole bankability of a geothermal project relies on the geothermal resource economical potential.*



➔ **This potential has to be assessed. It can never be fully and accurately assessed until drilling has taken place though.**

As a consequence, drilling is required and **high upfront investments** have to be made before and without certainty as to the geothermal resource bankability, which may eventually be unfit for economical production.

# The risks associated with geothermal projects

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## Geological Risk

→ **Drilling phase** : Short-term risk

*of not finding an economically sustainable geothermal resource after drilling*

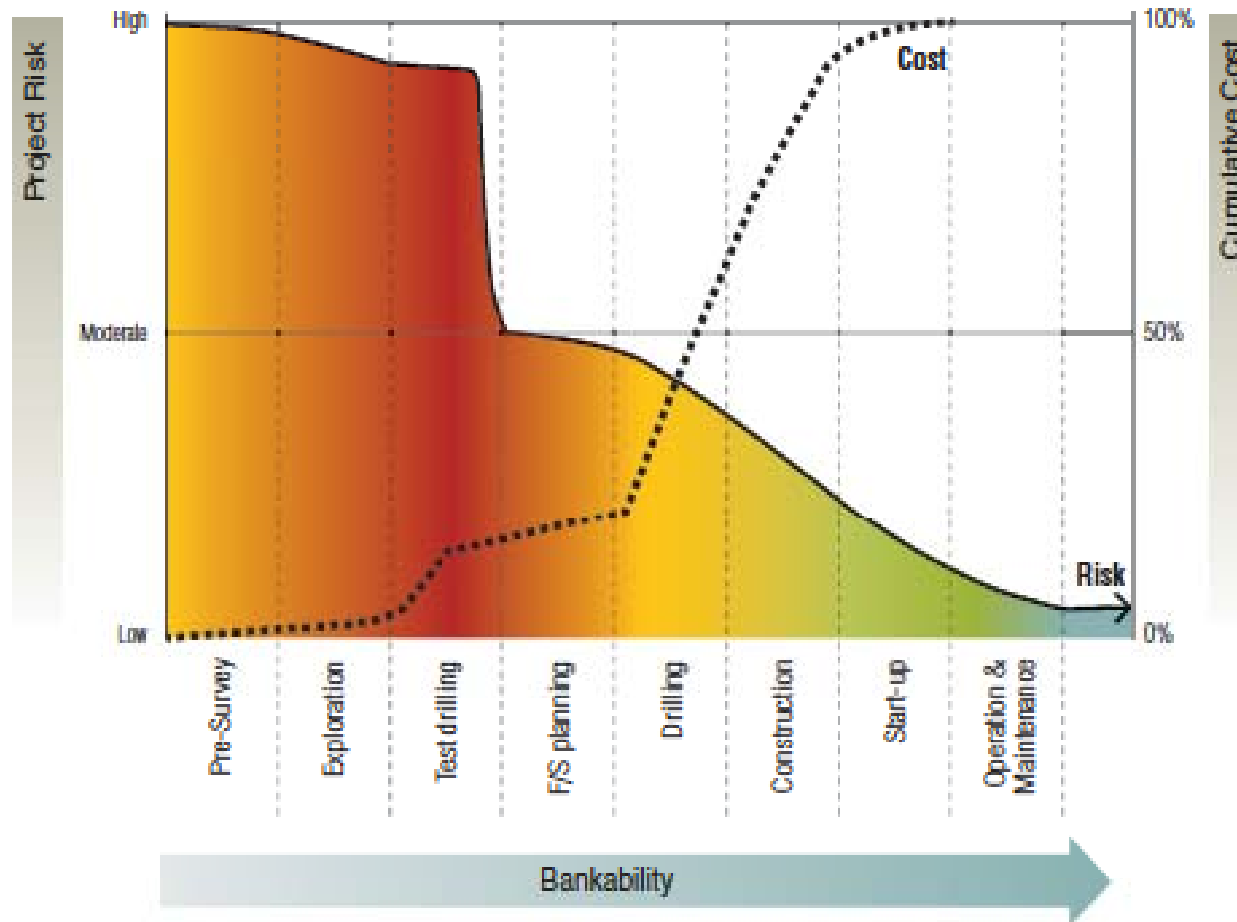
→ **Exploitation phase** : Long-term risk

*of the geothermal resource naturally depleting rendering the long-term production economically unprofitable*

# Phases of a geothermal projects

## When may the risks occur?

Geothermal Project Risk and Cumulative Investment Cost



# Geological risk perception in Europe



In Europe, the geological risk is traditionally shunned  
by the private insurance sector.

- **fairly small number of operations**  
not allowing a sufficient statistical basis to assess their  
probability of success;
- **the particular nature of the resource risk;**

# Geological risk

## Risk Management



**As usual, risk management relies on several steps** that shall apply throughout the whole geothermal project:

- evaluate the geological risk;
- manage it/take action to reduce it;
- measure/monitor the geological risk;



# Existing insurance

to cover the geological risk in Europe



→ Private insurance policies: the German exception

- made-to-measure

→ National insurance funds

- post-damage guarantee
- guaranteed loan

# Existing insurance to cover the geological risk in Europe

→ Private insurance policies: the German exception

- Geothermal projects insured
- Eligible costs
- Criteria for compensation
- Information to submit to the insurance company
- Premiums
- The German experience



# Existing insurance to cover the geological risk in Europe

## → National insurance funds

(France, the Netherlands, Switzerland)

- post-damage guarantee
- guaranteed loan



# Existing insurance to cover the geological risk in Europe

- **National insurance funds** (France, the Netherlands, Switzerland)
- post-damage guarantee

- ✓ Scope of insurance
- ✓ Governance
- ✓ Expertise
- ✓ Applications
- ✓ Capital and financial structure
- ✓ Coverage ratio
- ✓ Agreement
- ✓ Insurance process



# Existing insurance to cover the geological risk in Europe

- **National insurance funds** (France, the Netherlands, Switzerland)
  - Guarantee loan (Island and Germany)

- ✓ Scope of insurance
- ✓ Governance
- ✓ Expertise
- ✓ Applications
- ✓ Capital and financial structure
- ✓ Coverage ratio
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# Existing insurance to cover the geological risk in Europe

- Private insurance policies: the German exception
  - made-to-measure
- National insurance funds
  - post-damage guarantee
  - guaranteed loan



## Risk insurance scheme at European level The GEOELEC Project



Potsdam – 15th of April 2013



# Risk insurance scheme at European level



- The GEOELEC project
- Removing the financial barrier hampering geothermal development
- Scenarios for an EU insurance scheme

# Risk insurance scheme at European level



**type of insurance** : post-damage guarantee/ guaranteed loan;

**the risk insured** : short-term risk/long-term risk

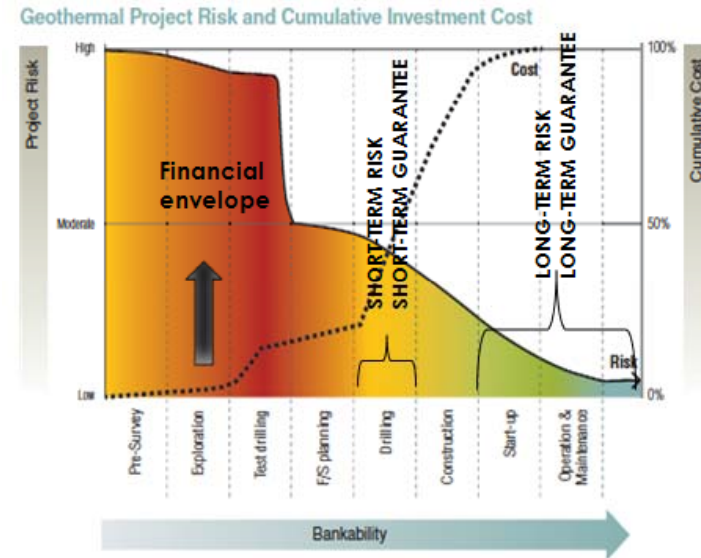
**phases** of the geothermal electricity project concerned with the insurance;

- financial envelope;
- the governance of the Fund;
- the seed capital and the operating incomes;
- the application to reinsurance to provide some financial relief to the European Fund;
- the beneficiaries of the scheme;
- eligible expenses for coverage;
- *% of eligible costs cover;*
- the insurance process ;
- required information and expertise;
- .....



# Conclusion

- ❑ The geological risk can be managed and mitigated
- ❑ Insurance concepts are developing in Europe
- ❑ European geothermal resources better harnessed thanks to European insurance scheme



# THANK YOU FOR YOUR ATTENTION



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