



# The GEOFAR Project

*„A European Solution*

*for Boosting Geothermal Energy”*

Nicholas Sofianos  
(Mphil Development Studies, Glasgow University)  
Scientific & European Projects Coordinator, IENE

*“Hellenic – Bulgarian Cooperation in the Energy Sector”*

Sofia 29 April 2010



# GEOFAR

## Vision

- Combating and overcoming non-technical (financial) barriers via
  - developing and proposing appropriate and innovative financing and funding schemes
- Boosting the exploitation of geothermal energy via
  - promoting (industrial) geothermal applications, and
  - raising the awareness / knowhow among local and regional decision makers

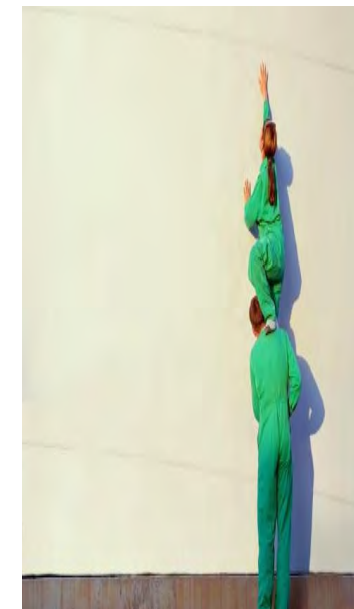




# GEOFAR

## Main steps

- Identify and describe
  - the financial instruments
  - the non-technical barriers in selected countries
    - Focusing on economic and financial ones
- Develop, discuss and validate with experts
  - (new) appropriate funding schemes
- Describe and present existing and emerging/innovative applications
- Disseminate it to key stakeholders





# GEOFAR

## GEOFAR target countries & partners





# GEOFAR

## Situation of geothermal energy

- A renewable energy source with extremely high potential
- Multiple usage : electricity generation, heating & cooling, ...

For GEOFAR focus on direct use (without heat pumps) and electricity production

- Technology for the exploitation of geothermal energy is proven
- **Lack of exploitation mainly due to non-technical barriers during the early stages of geothermal energy projects:**
  - Inappropriate funding schemes
  - Inappropriate legal frameworks
  - Ignorance of local decision makers regarding the potential of geothermal energy



# GEOFAR

## Non-technical barriers

- Legislation and regulation
  - Equivocal legislation (mining laws, environmental, ...)
  - Complexity of administrative procedures and total administrative time
  - Lack of geothermal energy definition
  - Problems with ownership of the resource

*Can lead to*



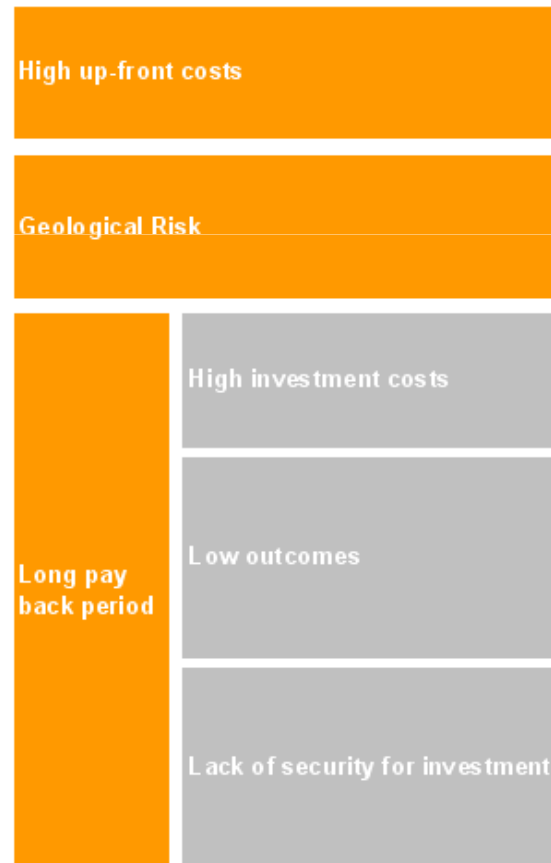
- Economic and financial
- Awareness, acceptance and will

Is the legislation adequate for the development of geothermal energy?		
Yes	Partially	No
Greece France	Germany Bulgaria Portugal	Spain Hungary



# GEOFAR

## Economic and financial barriers



Identification of main barriers met in **some** GEOFAR target countries



# GEOFAR

## High up-front costs

- Lack of financial support to finance early stages of the projects
- Non negligible additive costs
  - exploration and/or exploitation permission costs
  - cost of geological geothermal data





# GEOFAR

## Geological Risk

- Lack of (public) insurance mechanism insuring the risk of non-discovery of the adequate resource
  - only existing in France and Germany and Bulgaria (through the GeoFund)
- Lack of financial institutions participating at the early stages of the project
  - mainly due to the geological risk

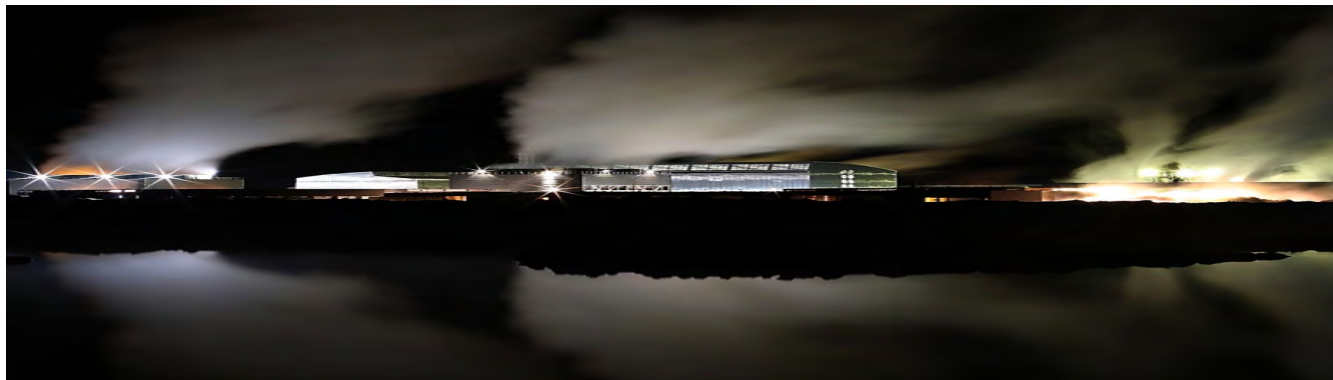


# GEOFAR

High investment costs

- Additional cost for the construction of district heating networks
- Increasing drilling costs because of a high demand of drilling equipment

Long pay  
back period



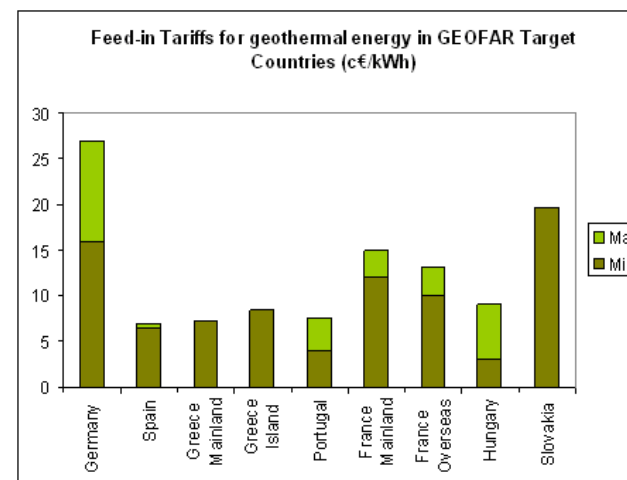


# GEOFAR

Low outcomes

Long pay  
back period

- Additive costs (royalties and other taxes)
- Low feed-in tariffs





# GEOFAR

## Additional non-technical barriers

- Public opinion and acceptance
- Acceptance
  - Environmental considerations
    - Perceptions

Noises

Smells

Visual impact

- Example the failed operation in Milos (Greece)



# GEOFAR

## How to overcome the financial barriers?

### First ideas

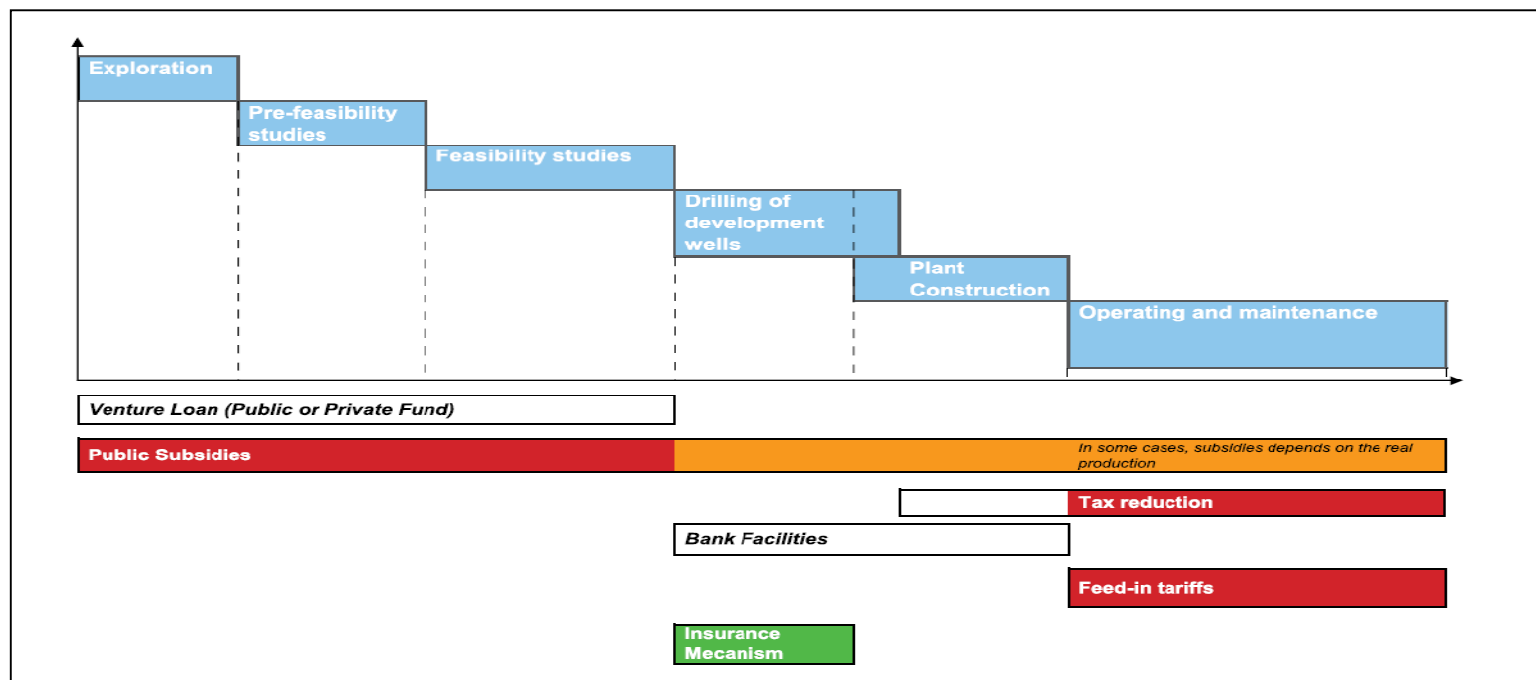
- Lack of harmonisation in financial instruments
  - Lack of financing for the exploration phase
  - Lack of geological risk insurance
  - Expanding drilling costs
- 
- **Development of solutions at European level ?**



# GEOFAR

## Financial instruments

- Geothermal project process scheme and existing financing instruments in GEOFAR target countries



## Conclusions (a)

- Geothermal energy is the worst known renewable energy. Financial proposals and awareness of GEOFAR Project could appear just in time to the decision makers and the public.
- In the GEOFAR partner countries there is more geothermal power than it seems. In general Europe has more geothermal resources than it takes advantage of.
- Geothermal demand and geothermal investment are growing in all of Europe in a large velocity.
- Rather high difference in experience & knowledge in the field of hydrogeothermal energy supply projects in Europe
- Completely different focus of the politics concerning the support of the development of the geothermal sector in particular countries
- There is no availability of geological data

## Conclusions (b)

- Large differences of financial tools used in the European countries for the development of geothermal energy. Inadequate financial instruments and incentives in many countries.
- Big variations in the feed-in tariffs for electricity produced by geothermal energy.
- The awareness on financial barriers lacks behind the awareness of technical barriers that are more common among specialists in geothermal energy.
- People's positive or negative opinion about geothermal energy is strictly dependent on previous experience and facts. It is very important to raise awareness on the potential of geothermal energy and the technical possibilities and thus update the specific knowledge on geothermal energy.
- It is important to include the public authorities in the dissemination process in order to influence the geothermal situation in the target countries.





# GEOFAR

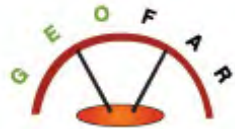
## Financial instruments

- 44 financial instruments from national, European and international level have been analysed
- Factsheets for all financial instruments have been developed to give detailed additional information besides the report
- Report „Financial instruments as support for the exploitation of geothermal energy“



- § **New Report: "Non – Technical Barriers and the Respective Situation of the Geothermal Energy Sector in Selected Countries."**
- § **New Report: "Innovative Geothermal Applications"**
- **New Report: "Case Studies for Selected Geothermal Operations"**
- **Five GEOFAR Newsletters**





EN | DE | FR | ES | GR | PT

[Home Page](#) | [Hot Links](#) | [Partners](#) | [Contact](#)

## Geothermal Finance and Awareness in European Regions

What is Geothermal Energy

Country Profile

Major Projects

Factsheets

The GEOFAR Project

GEOFAR Newsletters

GEOFAR Reports

Hot Links

Partners

Contact

**Geothermal Business Directory**

**Bank Financing**

Geothermal News

Analysis



### Geothermal News

Tuesday, September 22, 2009

#### German Geothermal Project Leads to Second Thoughts After the Earth Rumbles

Government officials here are reviewing the safety of a geothermal energy project that scientists say set off an earthquake in mid-August, shaking buildings and frightening

### Geofar News

Monday, November 02, 2009

#### Organization of two-days seminar by Rödl & Partner

On 11 and 12 February 2009 Rödl & Partner organized in cooperation with the German Heat and Power Association (AGFW) a seminar on "Geothermal Energy – from Claim to Customer" which took place in

### GEO THERMAL EVENTS

