

# Unconventional geothermal technology development to address the climate change issue in the densely populated areas of the world.

by

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**BritGeothermal**



# WORLD CLIMATE CHANGE IS A WORLDWIDE PROBLEM

A MEETING WAS HELD AT THE WORLD BANK IN WASHINGTON DC  
ON 5<sup>th</sup> March 2015 under IGA/UNECE\*/World Bank

One of the items which was highlighted was

**the disparity**

between

**The availability of conventional geothermal resource**

and

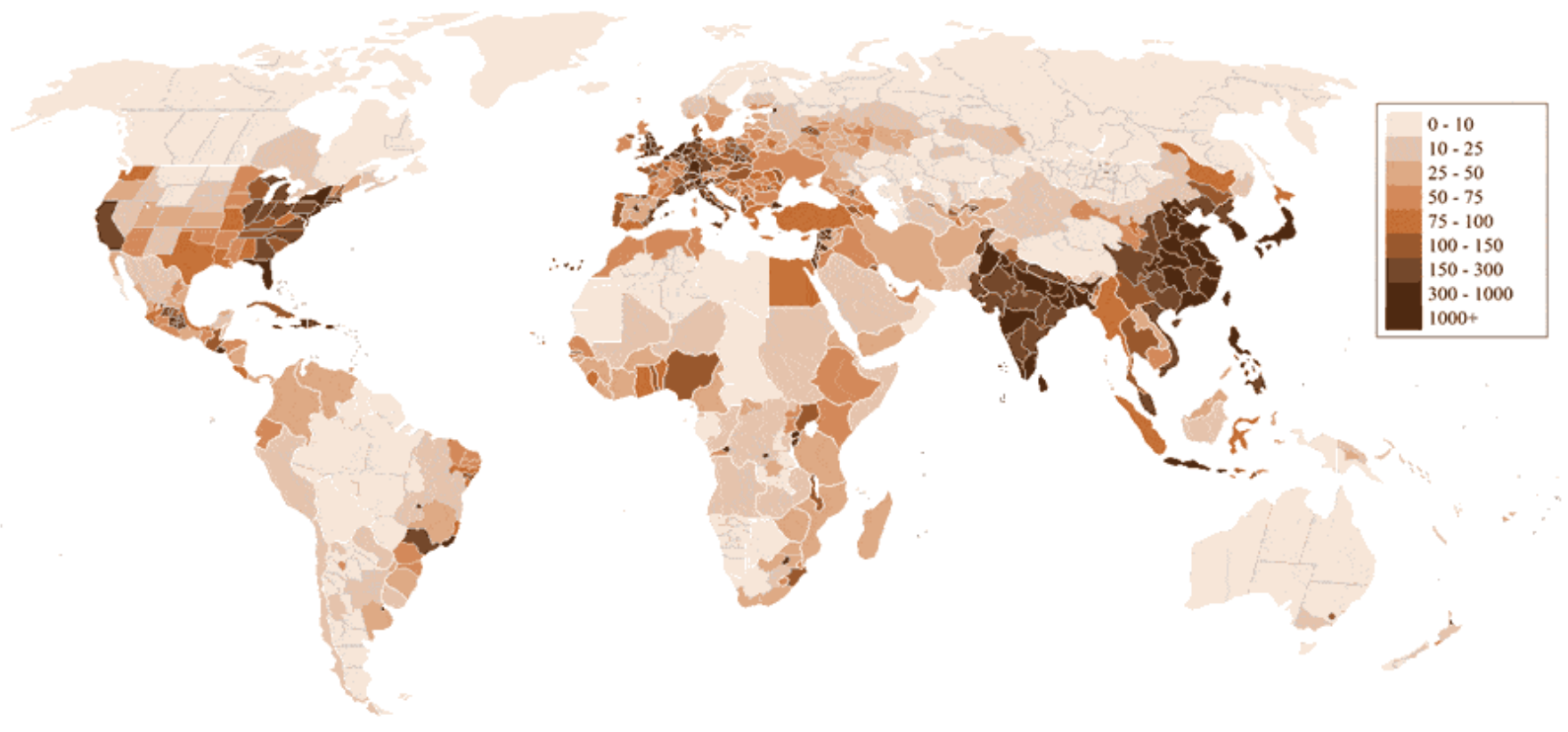
**The energy demand from high density of population in the world.**

ie **SUPPLY & DEMAND**

for geothermal energy

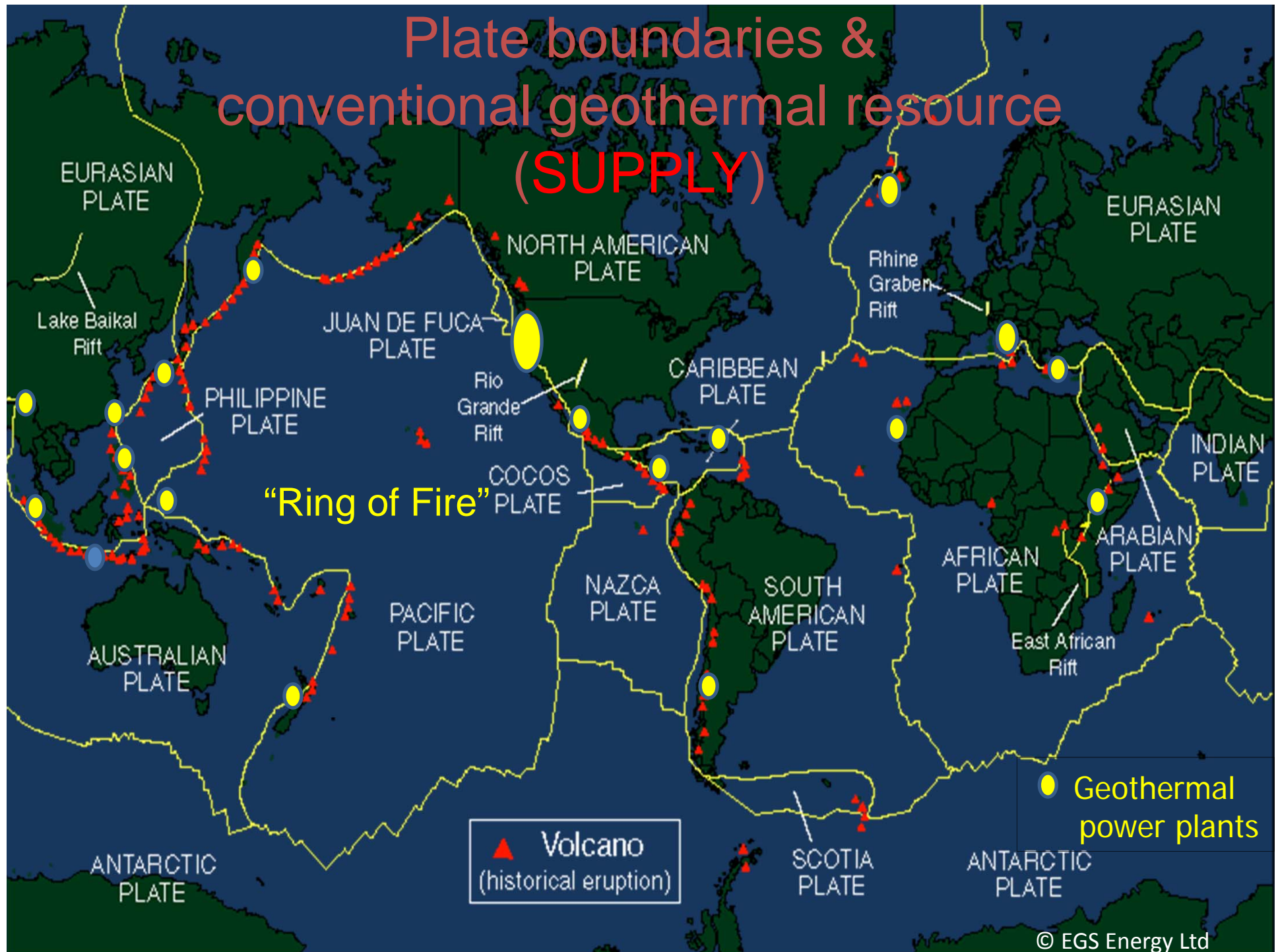
\*= United Nations Economic Commission for Europe

# World Population Density (people/km<sup>2</sup>) (DEMAND)



World population is **~7 billion** (estimated by the UN)  
The majority of geothermal is devoid of the population density

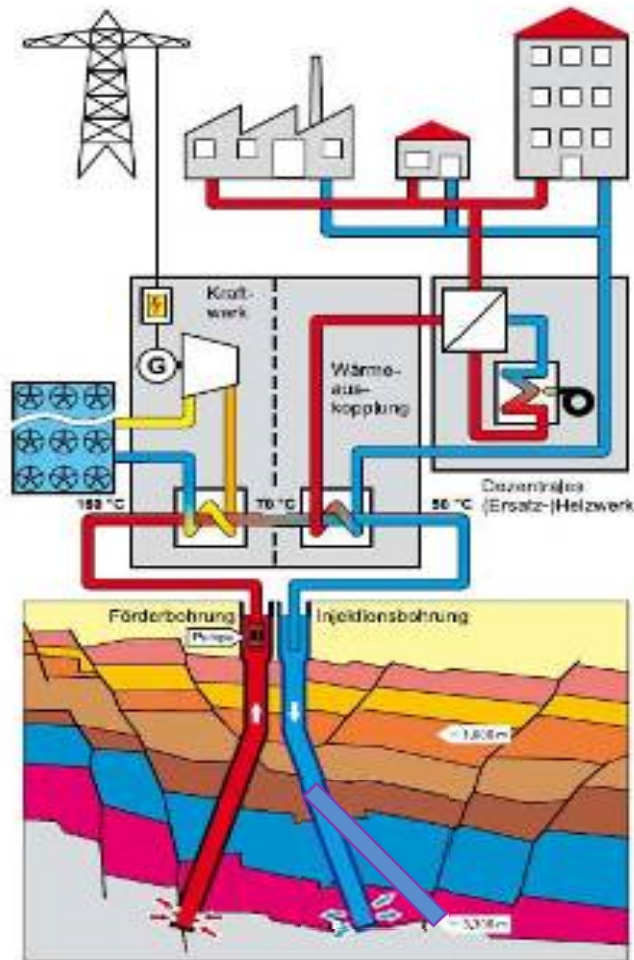
# Plate boundaries & conventional geothermal resource (SUPPLY)



If Geothermal Energy is going to play  
an important part in  
industrialised & populated areas  
then  
**a new and unconventional type of  
geothermal resource (EGS)**  
needs to be identified and exploited  
where the population density is high and  
not on the margins of continents.



# EGS project in Insheim, Germany



## Insheim

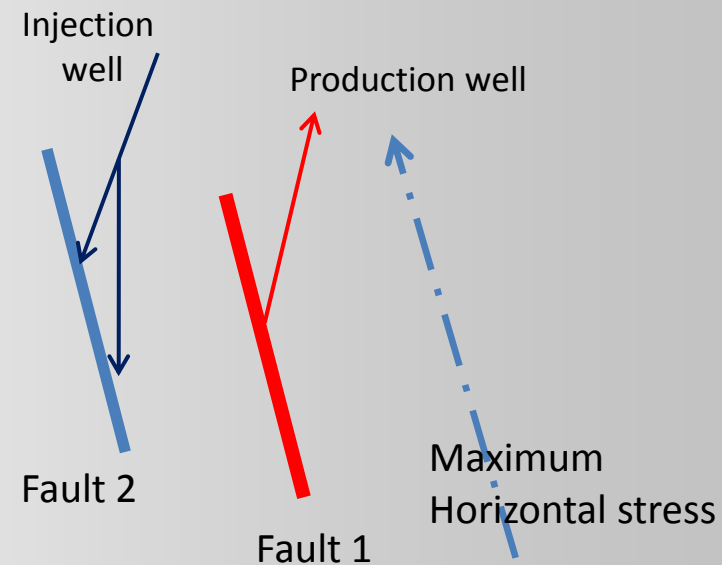
2008-2012; depth ~3800m

Temp ~165°C

Flow 65-85 l/s

Power output 4-5MWe (~8000 homes)

Thermal output 6-10MWth (~1000 homes, potential)



New concept of accessing deep permeable faults in igneous basement

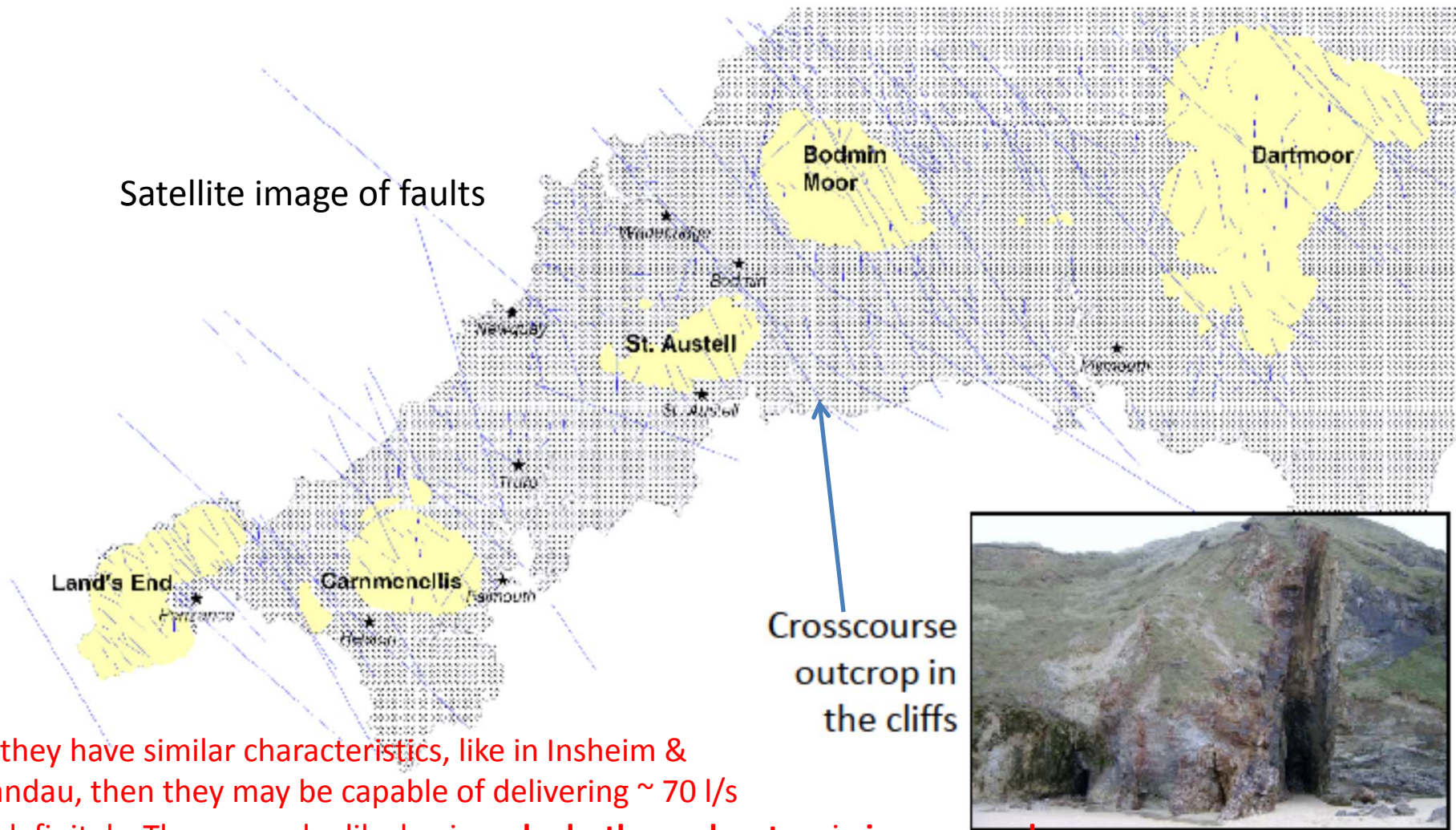
# Commercial EGS project in Insheim, Germany

## An Aerial View





# Major fault zones





# A CHINA CLAY PIT IN ST. AUSTELL



**BEFORE**

**eden project**

**AFTER**



Test the EGS concept at the  
Eden Project, Cornwall

## WHAT NEXT to address the climate change issue

- Establish a European EGS project ( UK, Portugal, Hungary etc.)
- Characterise properties of these deep faults away from Rhine Graben.
- Demonstrate that these faults can resemble hydrothermal systems but in igneous rock and are more widely available than hydrothermal systems.
- Improve the economics by further development of this technology.
- Develop a mechanism for scaling up from 4-8MWe to 50-100MWe.
- It will prove to other nations that geothermal energy is accessible using this technology, both for heat and power generation.
- Create a European Centre of Excellence which will include a number of Universities from Europe to unify the European research on this topic.
- This will establish European Leadership for EGS market in the world.
- UK & European Commission will be able to help the climate change issue by supporting development of such projects in populated areas of the world.
- International cooperation should be encouraged (e.g. FORGE; US DoE), with IEA/GIA and EGEC as a part of the supervisory group who could advise on the future direction of this technology.





**SOUTZ SOUS FORET; FRANCE 1995**

**Thank you**