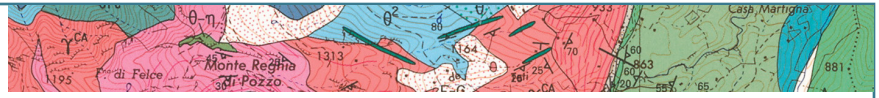


ENGINE Project …In a rapidly changing situation

C.Fouillac
President of the Executive Group

Géosciences pour une Terre durable
brgm

The European targets for renewable energy

> The European scene when Engine started

- **Directive 2001/77/EC : doubling the contribution of renewable energy from 6 to 12% of total energy consumption by 2010.**
- **The White Paper (Community Strategy and Action Plan, 1997) : doubling (500 to 1000 MW) of electricity production, increase from 750 to 2,5 MW for heat production of geothermal origin.**

> European energy strategic goals when Engine comes to its end

- **Very ambitious European energy targets fixed by 2020, 20% of CO2 emission reduction (1991 Ref), 20% of R.E in European energy Mix**

Research Direction

Géosciences pour une Terre durable
brgm

6th Framework, "Sustainable energy systems", the 2004-2005 work program

- **priority thematic area 1.6**
- a need for co-ordinating ongoing research and promoting the development and uptake of innovative methods and technologies to expand the exploitation of **Unconventional Geothermal Resources**, in particular **Enhanced Geothermal Systems.**
- A major scope is the identification of gaps that hamper the development of geothermal energy and definition of research targets for the future
- Prioritizing research needs

Research Direction

Objectives of the Co-ordination Action

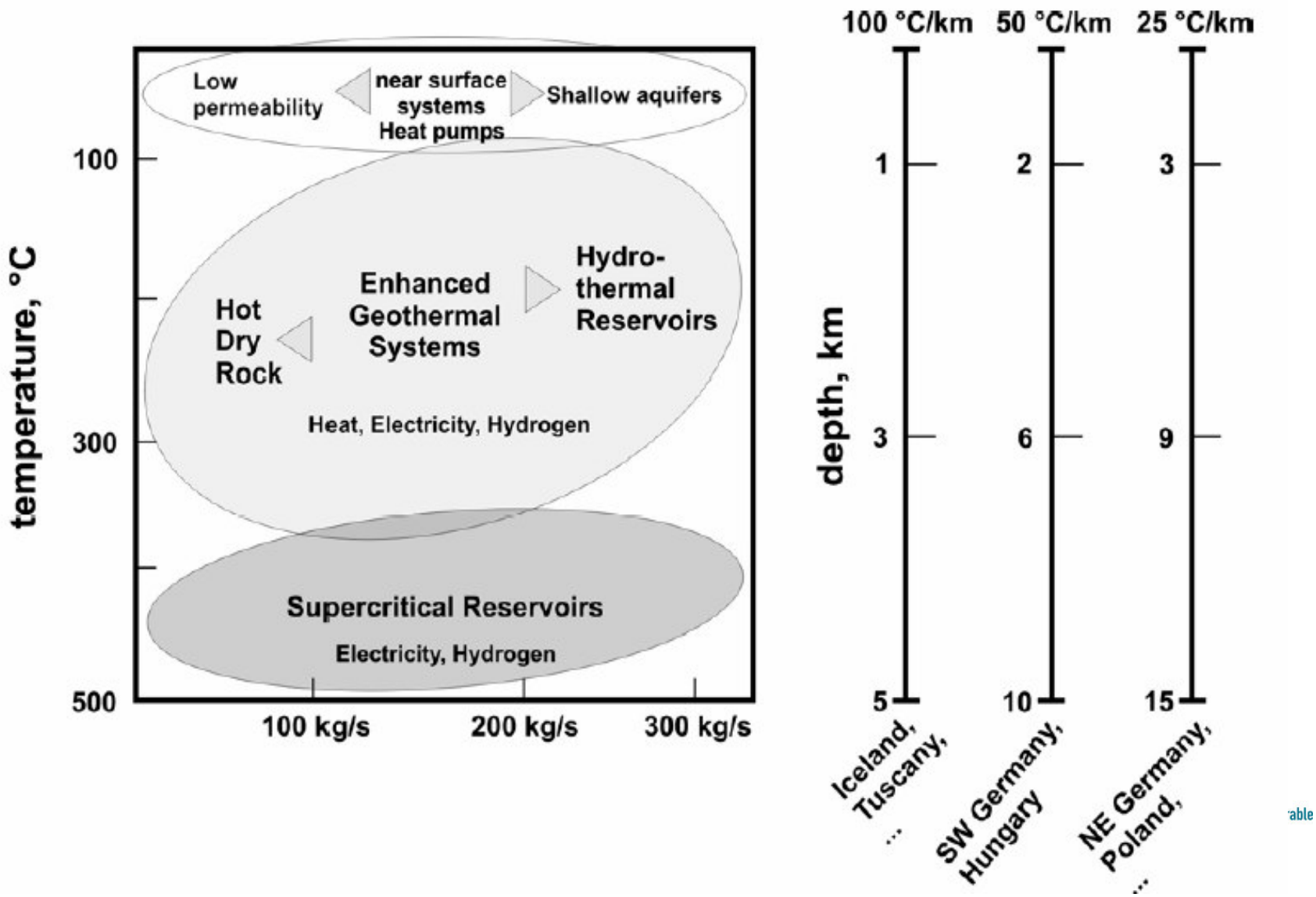
> an updated framework of activity to co-ordinate currently scattered research, propose spin-off projects and new targets for investigation, assessment and exploitation.

- to motivate the scientific community to face up to the above-mentioned challenges,
- to capitalise the know-how acquired in the framework of exploration and exploitation of different geothermal fields,
- to define new integrated projects that will federate the scientific community, in partnership with industry, in order to achieve the strategic objectives of the European Community.

Research Direction

Géosciences pour une Terre durable
brgm

Geothermal energy: Heat and power generation



Engine's key figures and milestones

- **Duration of 30 months**
- **A budget of 2.3 M €.**
- **34 Partners from 20 different countries**
  - 12 EU countries 5 European non EU countries,3 third countries
- **3 general conferences (launching, mid-term and final)**
  - France, Germany, Lithuania
- **7 specialised workshops**
  - Germany, Italy, Switzerland, Iceland, France ,Greece, Netherlands
- **Deliverables**
  - Updating all EGS activities on resources assessment, reservoir management, economic and societal aspects
  - Best practice handbooks and innovative concepts on risk evaluation, drilling, stimulation, economic and social impacts
  - Information dissemination (Web site data base, publication)
  - Contacts and links with International geothermal association and projects

Géosciences pour une Terre durable
brgm

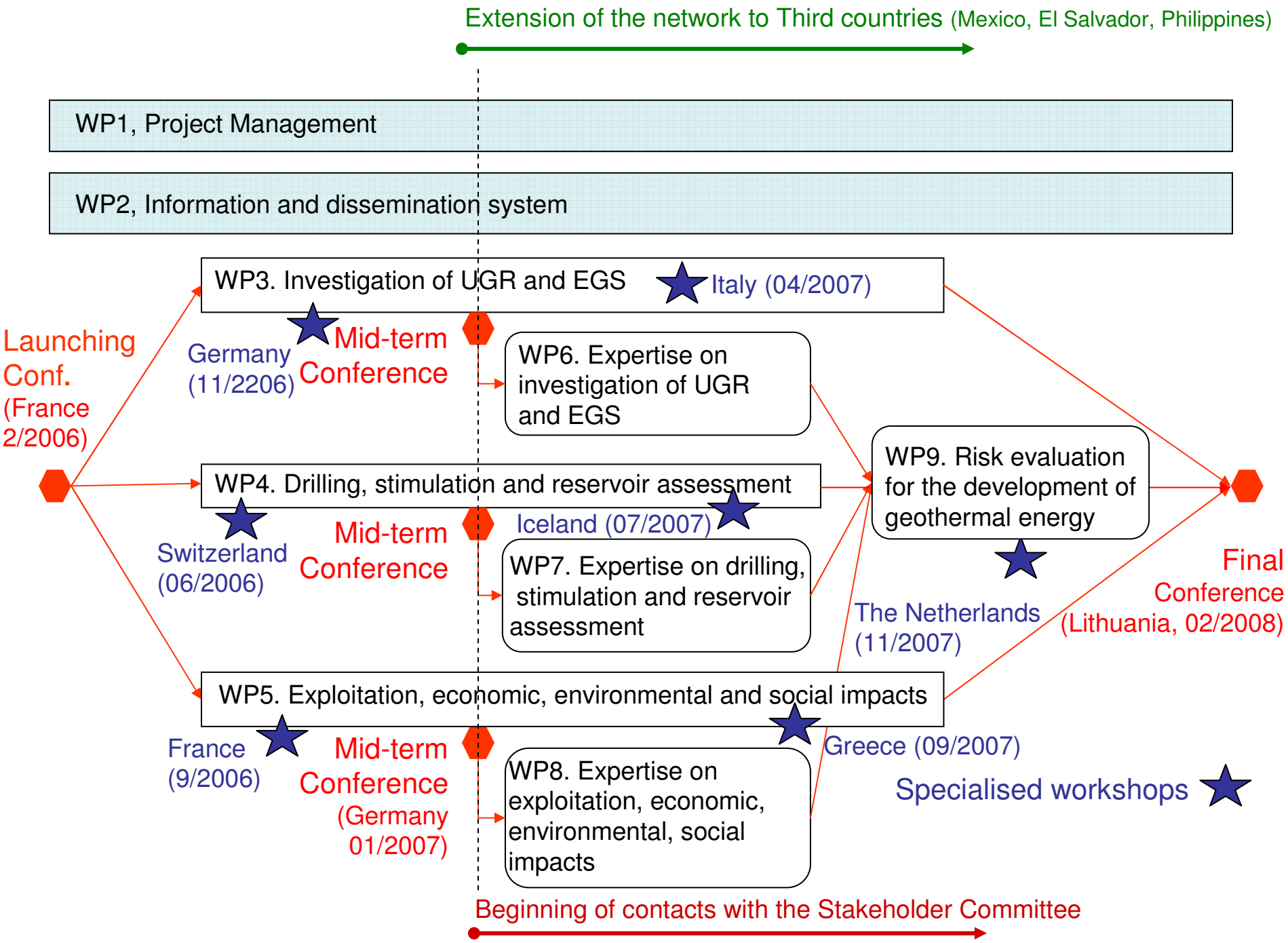
Research Direction

Challenges

- Scientific challenge: understanding the distribution of heat and permeability at depth in the uppermost crust.
- Technological and economic challenges to improve and render cost-efficient investigation and development technology
  - **Locate the EGS resource, drill geothermal wells, develop the reservoir, Improve the efficiency of above ground exploitation schemes**
- Organisation challenge to integrate the different research paths that currently exist
- Communication challenge to rally the support of policy makers and investors and, in certain cases, increase the social acceptance of a broader community.

Géosciences pour une Terre durable
brgm

Research Direction


Extension of the network to Third countries (Mexico, El Salvador, Philippines)
WP1, Project Management
WP2, Information and dissemination system
WP3. Investigation of UGR and EGS
Italy (04/2007)
Launching Conf. (France 2/2006)
Germany (11/2206)
Mid-term Conference
WP6. Expertise on investigation of UGR and EGS
WP4. Drilling, stimulation and reservoir assessment
Iceland (07/2007)
Switzerland (06/2006)
Mid-term Conference
WP7. Expertise on drilling, stimulation and reservoir assessment
WP9. Risk evaluation for the development of geothermal energy
The Netherlands (11/2007)
Final Conference (Lithuania, 02/2008)
WP5. Exploitation, economic, environmental and social impacts
Greece (09/2007)
France (9/2006)
Mid-term Conference (Germany 01/2007)
WP8. Expertise on exploitation, economic, environmental, social impacts
Specialised workshops
Beginning of contacts with the Stakeholder Committee

2005-2008 Somme important events

> Climate change

- IPPC report 2007: the situation may be worse than previously estimated
- Stern report 2006 shed light on the economic consequences of climate change

> Energy , general

- Oil prices escalating, Nuclear energy rebounds, CCS rapidly evolving, rapid growth of renewables

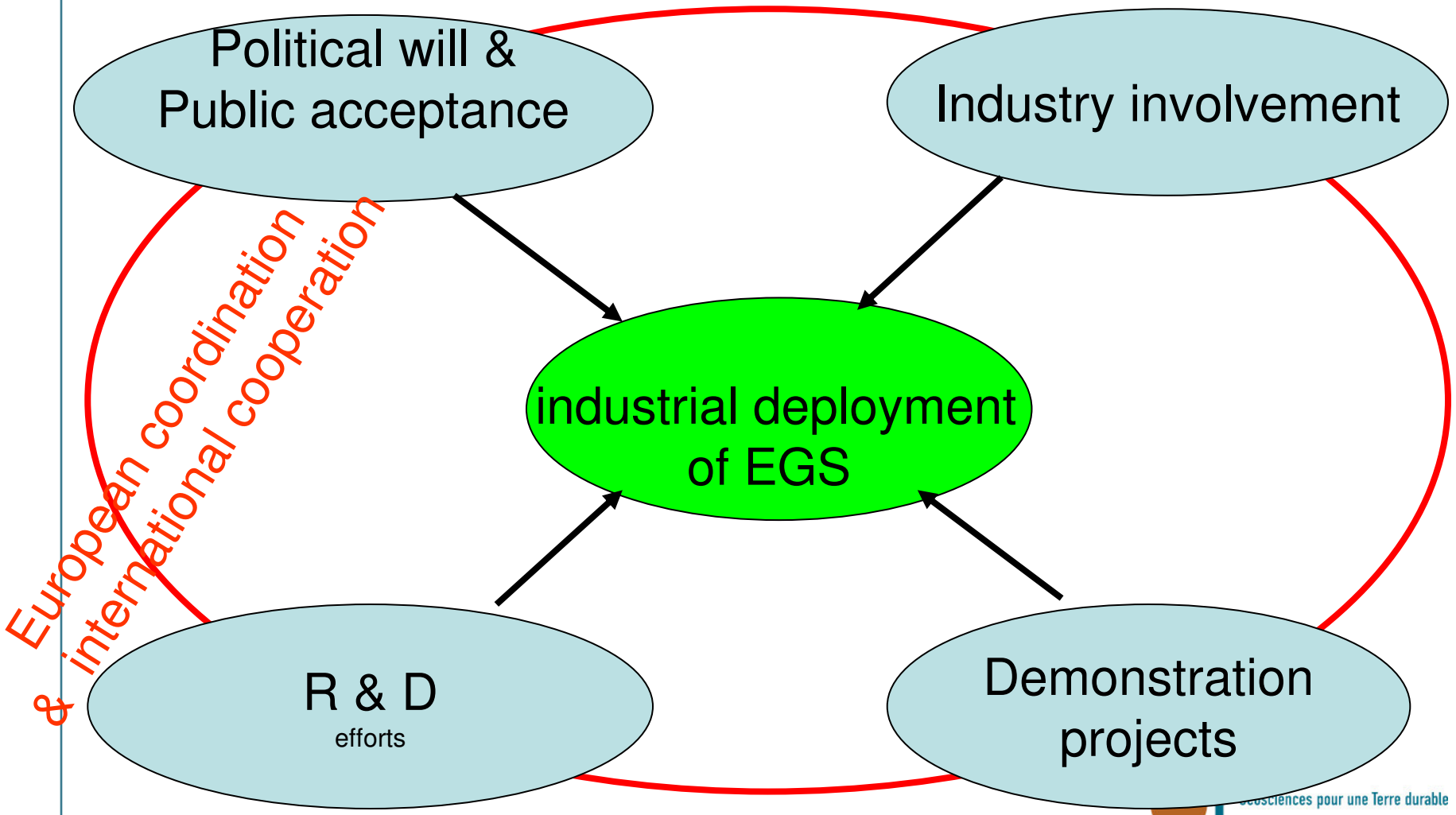
> Geothermal energy

- Very rapid growth of Geothermal heat pumps
- Increase of conventional geothermal power production
- EGS
  - MIT report in USA, Progress in Australia
  - Induced seismicity event in Basel

Géosciences pour une Terre durable
brgm

Research Direction

A complex situation



Research Direction

Conclusions

- Even more than two years ago, all forms of renewable energies must be deployed rapidly, safely, and, after a period of public support, economically

- Geothermal energy has several advantages and EGS offers a huge potential (hidden ? Poorly known?)

- Enabling and accelerating its deployment will still need a lot off research efforts and industrial involvements

- Engine project has already gathered an impressive number of EU an non EU participation many achievements will be presented in this final conference

Géosciences pour une Terre durable
brgm

Research Direction