

Geothermal Energy in EUROPE

Strengthening Enabling Frameworks: Geothermal Policy, Regulation and Finance

High Level Conference of the Global Geothermal Alliance
Florence, 11-12 September 2017

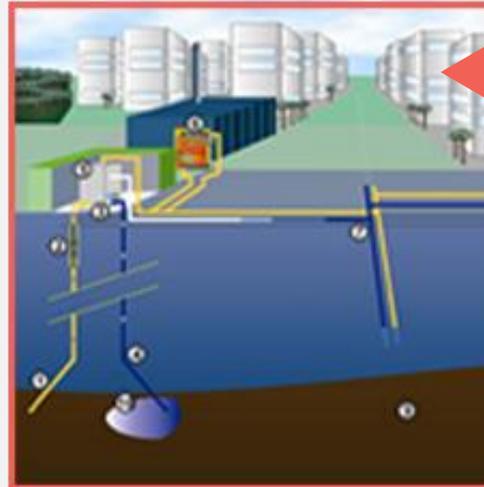


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Geothermal heating and cooling technologies in Europe



Heat pumps



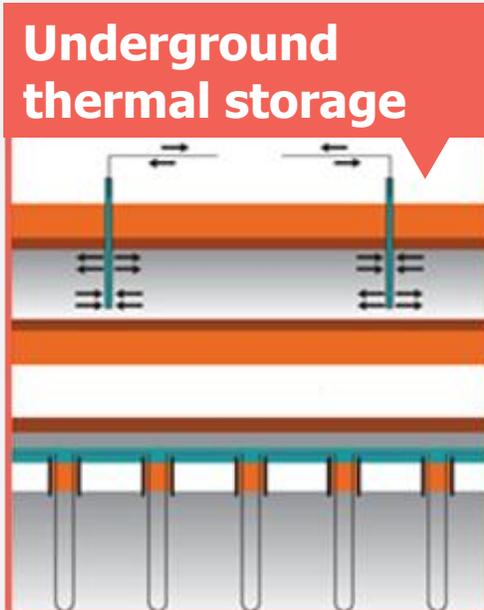
District heating and cooling



Direct uses: e.g. in agro-industry



EGS and cogeneration



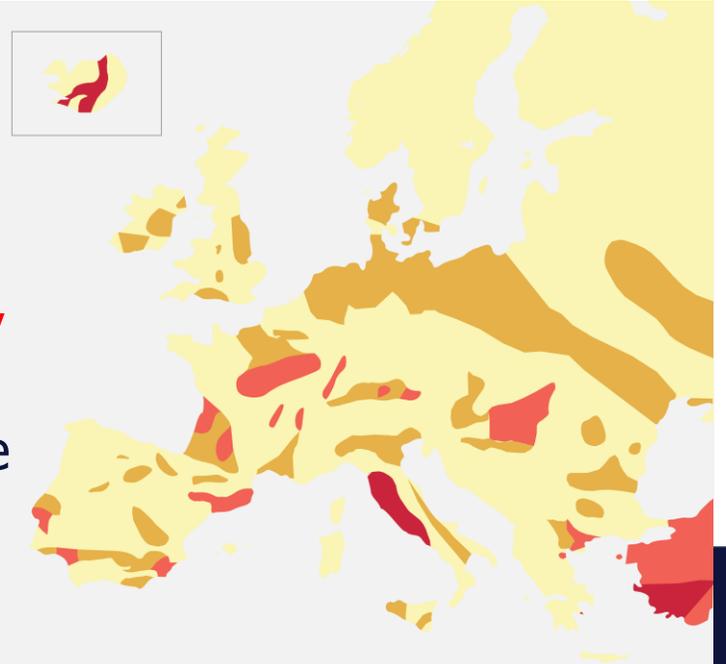
Underground thermal storage

Geothermal District Heating: TOP COUNTRIES

TOP 7 COUNTRIES
(production in GWh, 2015 data)

1		Iceland	6421
2		France	1335
3		Germany	662
4		Hungary	380
5		Austria	272
6		Italy	249
7		Serbia	243

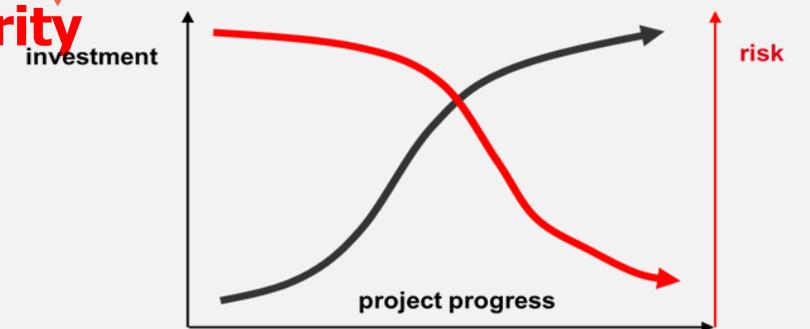
Source: EGEN Geothermal Market Report 2016



Key success factors for geothermal development in Europe

- An **open energy market**: European internal market=**Accessibility**
- A right **regulatory framework**: data availability, licensing, resource ownership=**Stability**
- A **fair market competition**: carbon pricing, stop of fossil fuel subsidies=**Level playing field**
- **Financial incentives schemes adapted**=**Technology Maturity**
- A geological **risk mitigation scheme**=**Investment Security**

Risk mitigation of geothermal projects



➔ Most of the investment falls into the high-risk phase!

The contribution of EGEC and of the European industry in the achievement of the GGA goals

- EGEC contribution: Mainly through in-kind work for the Working Groups, and for promotion and communication activities.
- EGEC can bring expertise on geothermal power and geothermal H&C.
- Experience from GEOELEC, GEODH and REGEOCITIES.
- EGEC can participate to the categories mentioned below:
 - **Regulatory barriers:**
 - **Financial barriers**
 - **Technical Barriers & R&I**
 - **Social & Environmental barriers**

The contribution of EGEC and of the European industry in the achievement of the GGA goals

Examples of policy and regulatory instruments which have proven to be successful in promoting geothermal development?

- Regulatory instruments: best practices
- Reduced Length of licensing procedures; protection of investors through ownership of the resources > adapted mining code, with proper geothermal legislation in France, Germany, Netherlands...
- Open Market competition

Financial barriers

- Geological Risk coverage: public in Iceland, France, Netherlands and private in Turkey
- Innovative financial mechanisms: in many EU countries
- Research funds to develop new pilot projects and to progress down the learning curve: national and EU with H2020 and ERANET

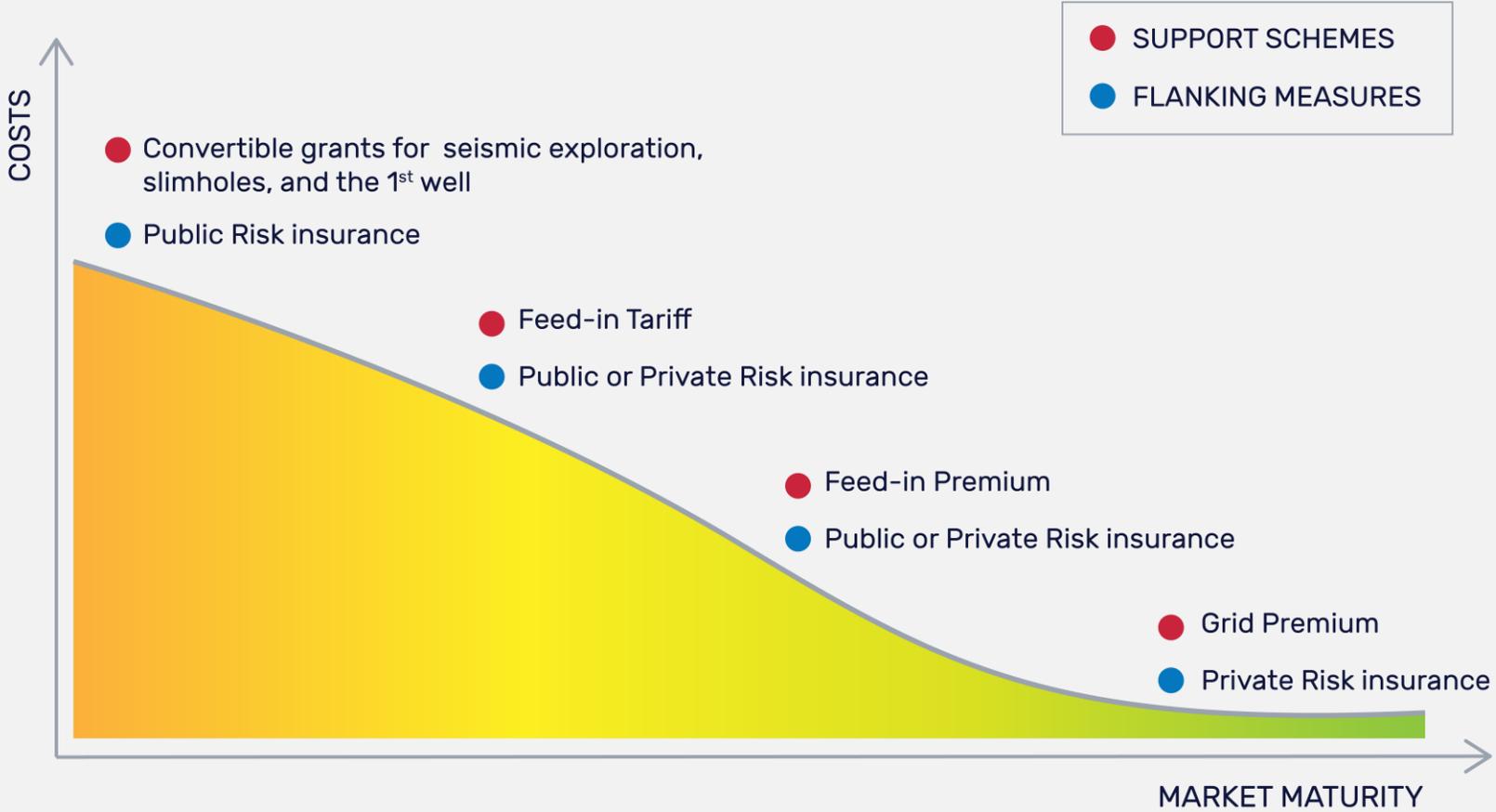
Why public funds should be used to support the geothermal industry and interfere with the market?

- 1) To compensate for market failures and unfair competition
- 2) To favor the deployment of a given technology

Support schemes should be phased out when technology reaches full competitiveness ...

... in an open internal market where a level playing field is fully established!

Support schemes for Geothermal adapted to technology maturity



The Geothermal VISION in the achievement of the GGA goals

- Integration in energy system
- Heat storage
- Commercial deep geothermal projects for industrial use and agriculture applications, desalination and innovative applications
- Large integrated district heating and cooling systems in which geothermal energy is flexibly used in different forms, alone or in combination with other RES.
- Heat from geothermal CHP systems (Cascade Utilizations)
- Geothermal from low temperature and low permeability deeper resources
- New district heating systems for dense urban area
- Geothermal & flexible generation synergy with intermittent « other renewables »
- Geothermal as multiple/distributed generation/cogeneration
- Geothermal & networks (heat & electricity)
- Geothermal & smart grids/cities
- Customer perspective: diffusion of geothermal knowledge and acknowledgement
- Role of consumers/prosumers (attractiveness of indigenous, locally available, environmental benign, clean, renewable & sustainable energy source)