“Future Prospects of Shallow Geothermal Energy Development in Europe”

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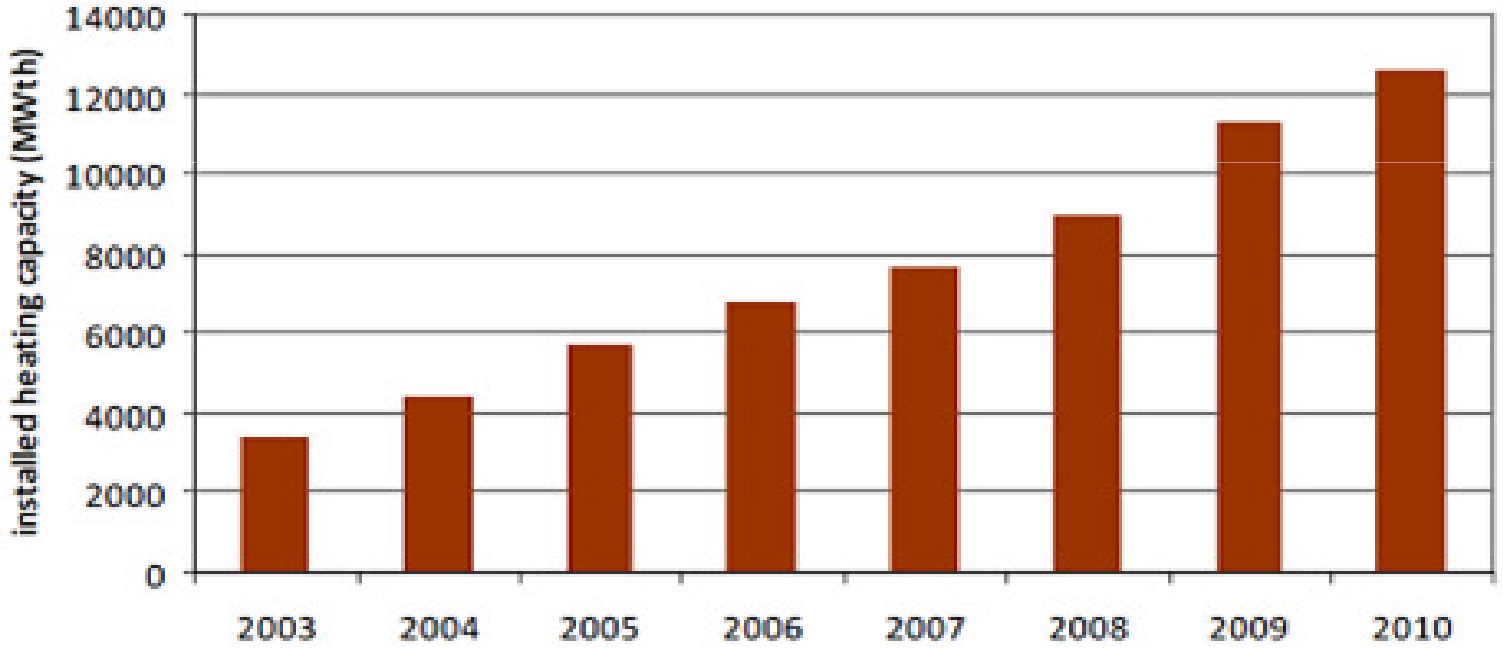
INSTITUTE OF ENERGY
FOR SOUTH EAST EUROPE

Presentation Outline

- Geothermal Heat in Europe – Current Situation
- Factors that drive investments in Geothermal Energy
- Barriers on a further Development
- Future Prospects

Geothermal Heat Pumps

the installed heating capacity in GSHP is growing steadily

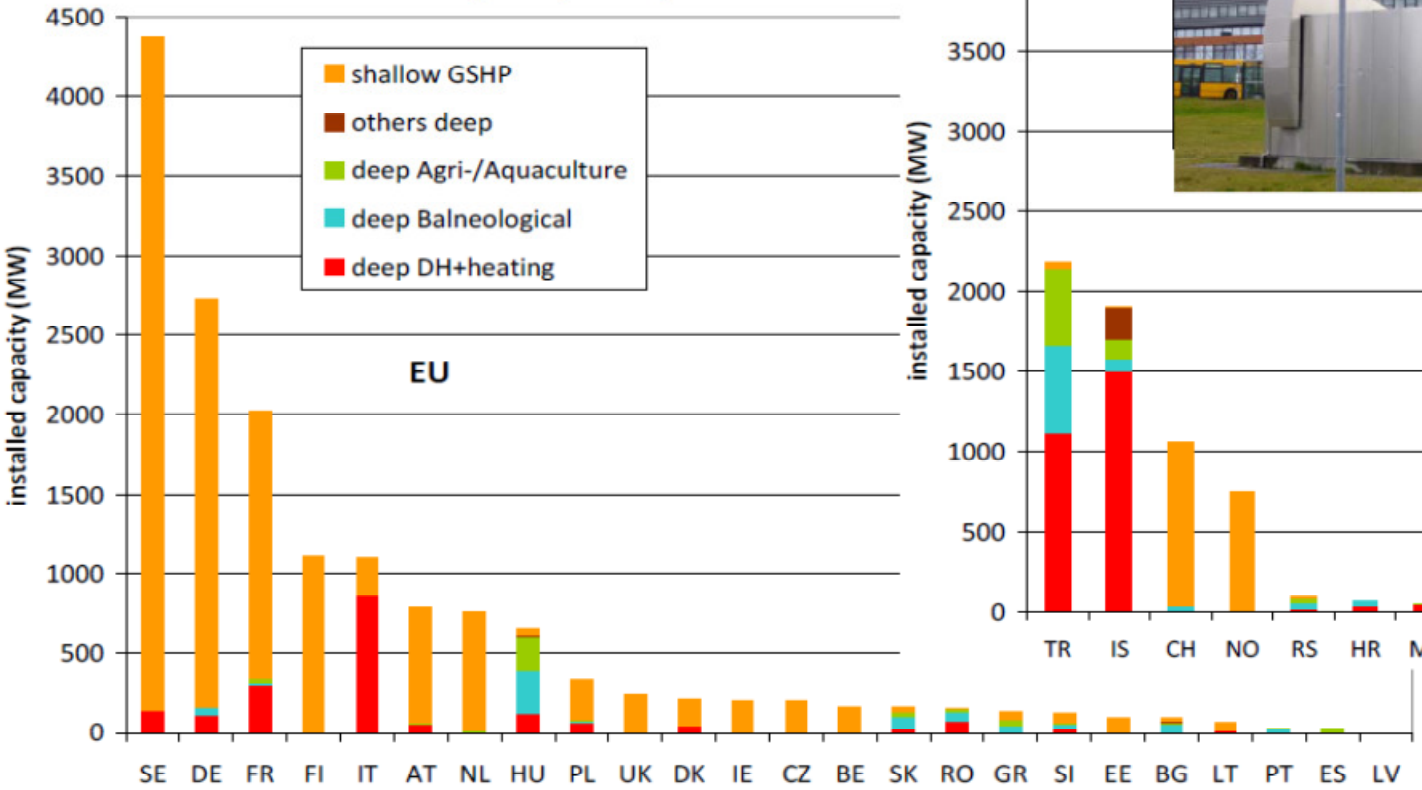


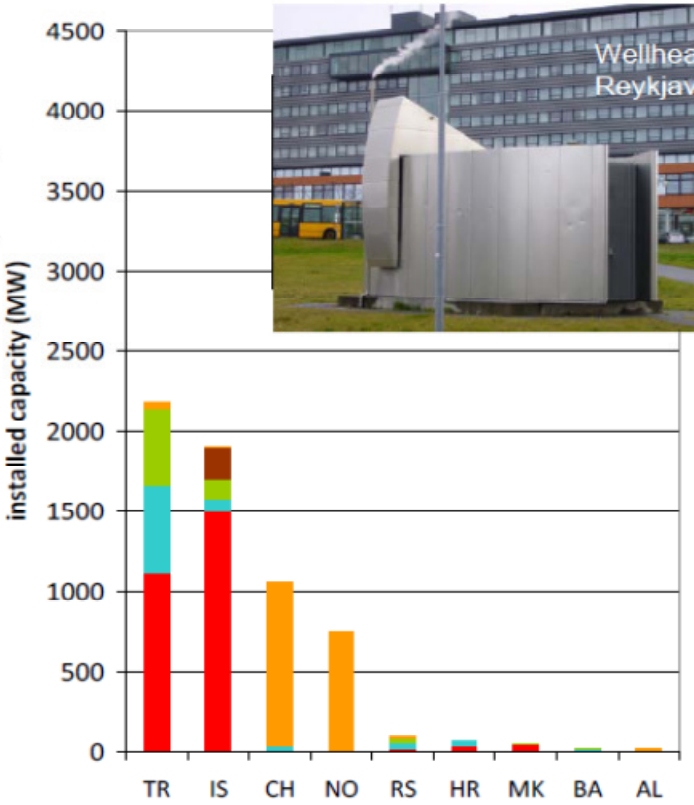
from:
Heat Pump Barometer EUROBSERV'ER
September 2011

European Geothermal Energy Council

Geothermal Heat in Europe

Geothermal heating capacity





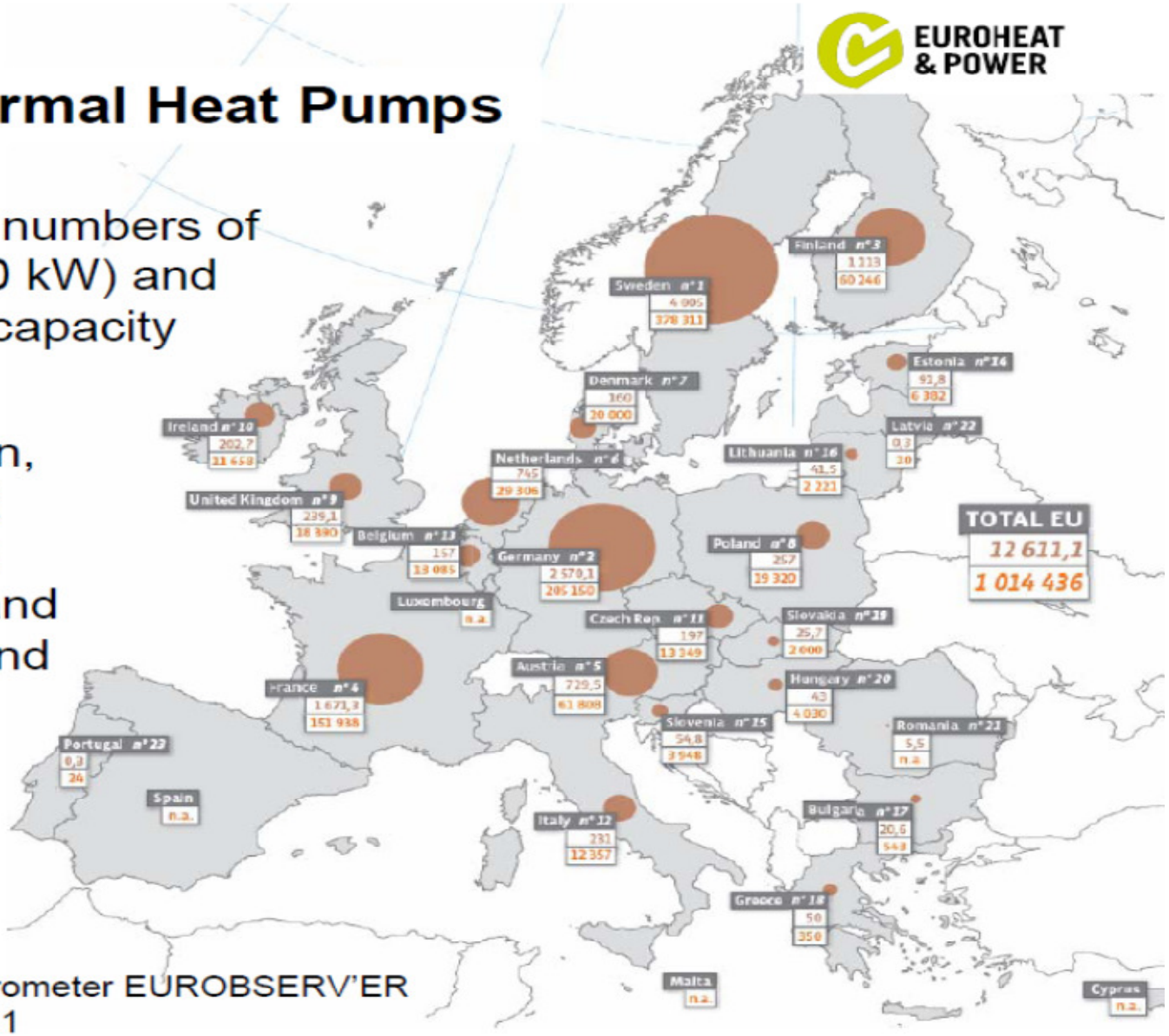
Installed heating capacity (after data from WGC 2010)

European Geothermal Energy Council

Geothermal Heat Pumps

Status of numbers of units (<50 kW) and installed capacity in 2010

In addition, important market in Norway and Switzerland



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Heat Pump Barometer EUROBSERV'ER
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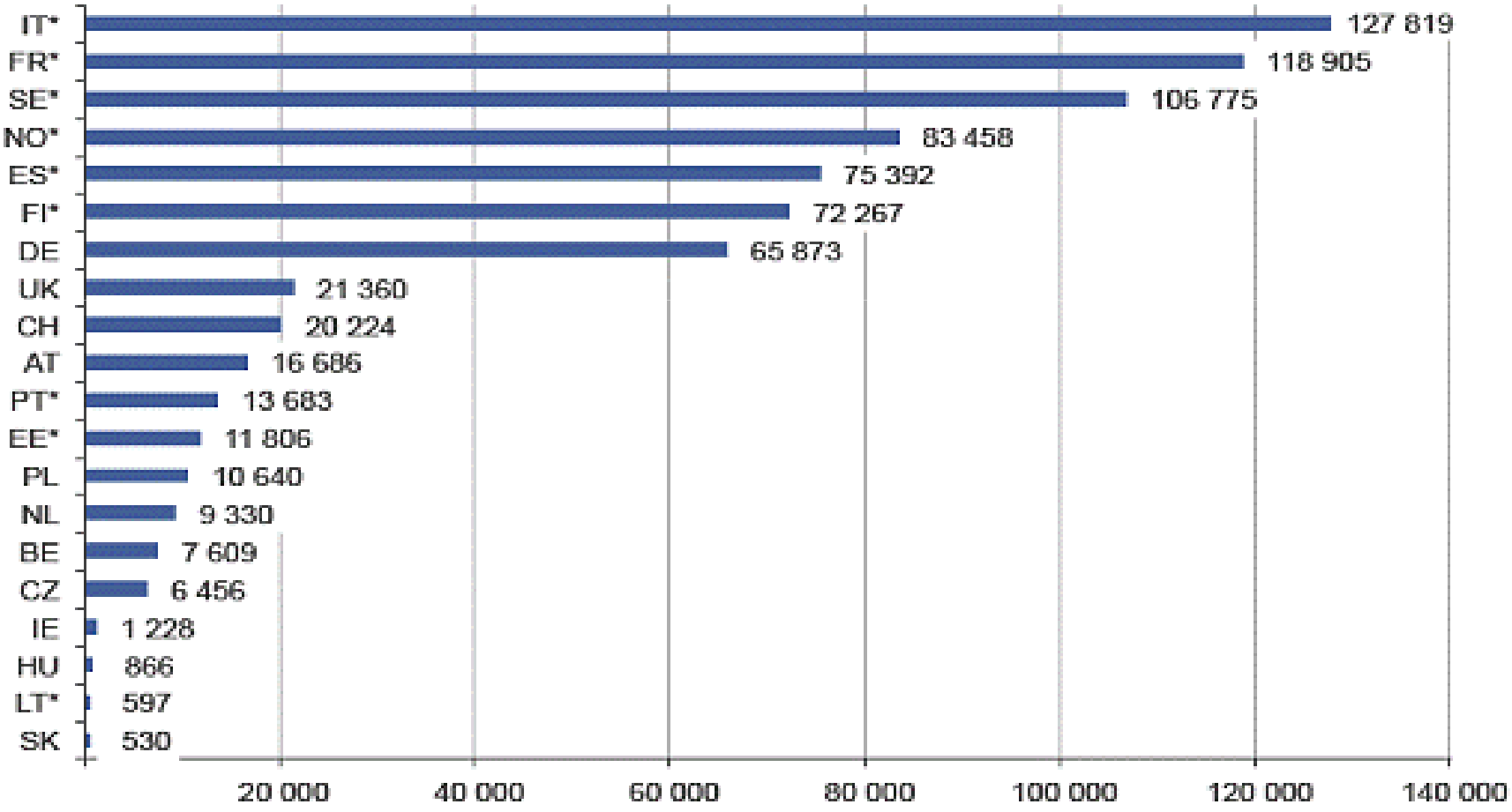
Sales of heat pumps in 20 European markets in 2011



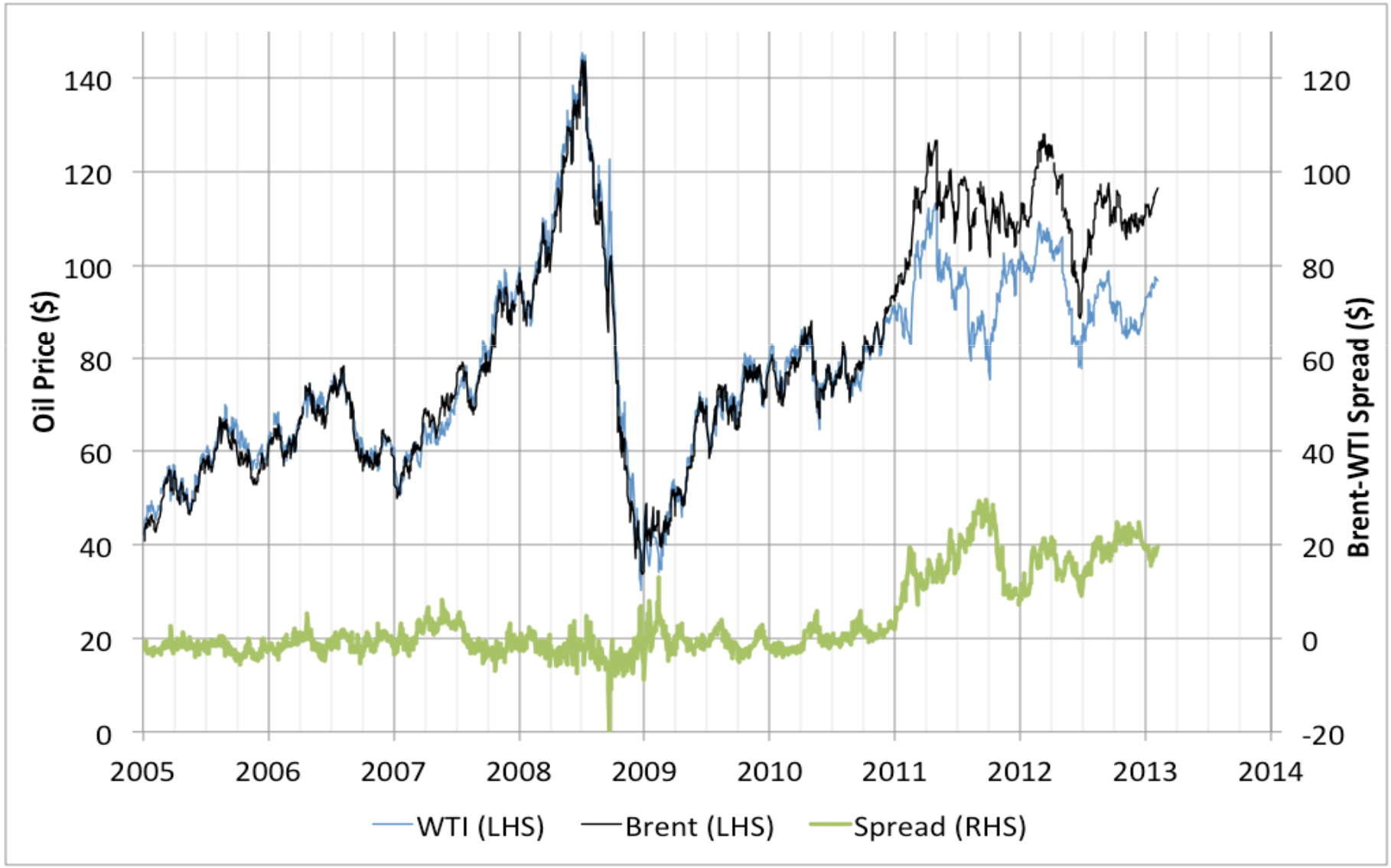
Factors that drive investments in Geothermal Energy

- Appropriate financial schemes, incentives and instruments
- Oil and electricity prices
- EU targets and policies for reduction of CO2 emissions
- Successful applications and dissemination of information
- New Investment Opportunity (more efficient, short payback period)
- R&D Activities

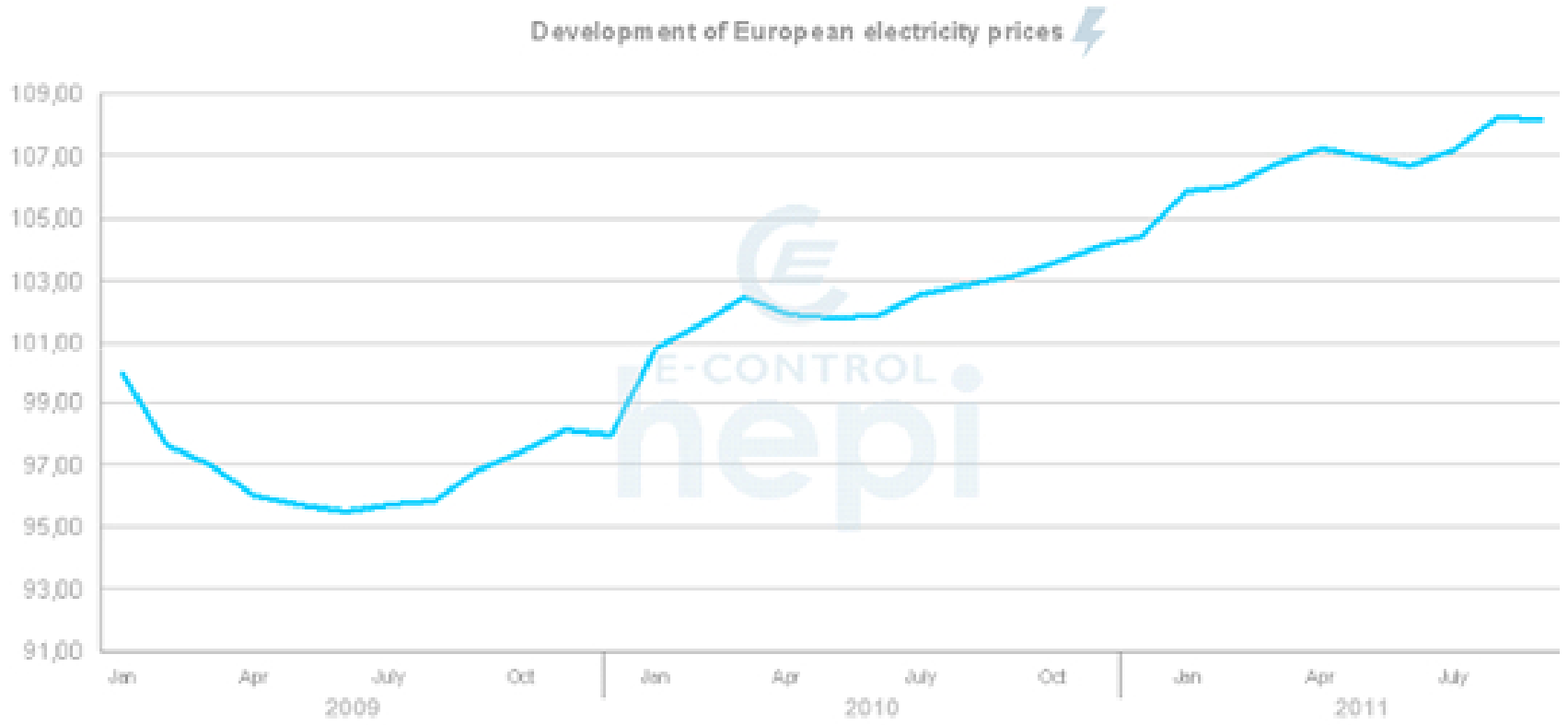
Financial Instruments and Incentives

- Combination: Subsidies (Euro/kw) and support on the investment costs (Germany – Austria)
- indirect support schemes
- EU structural funds (mainly in Central and Eastern European Countries and Italy)
- Financial incentives not for geothermal energy but only for heat pumps (Denmark, Finland)
- In Greece an important national programme on RES permits to this country to develop a lot of projects in geothermal heating and cooling
- In the countries like Portugal, Spain, Ireland where the financial incentives schemes don't mentioned geothermal energy, we don't see no development of this technology.

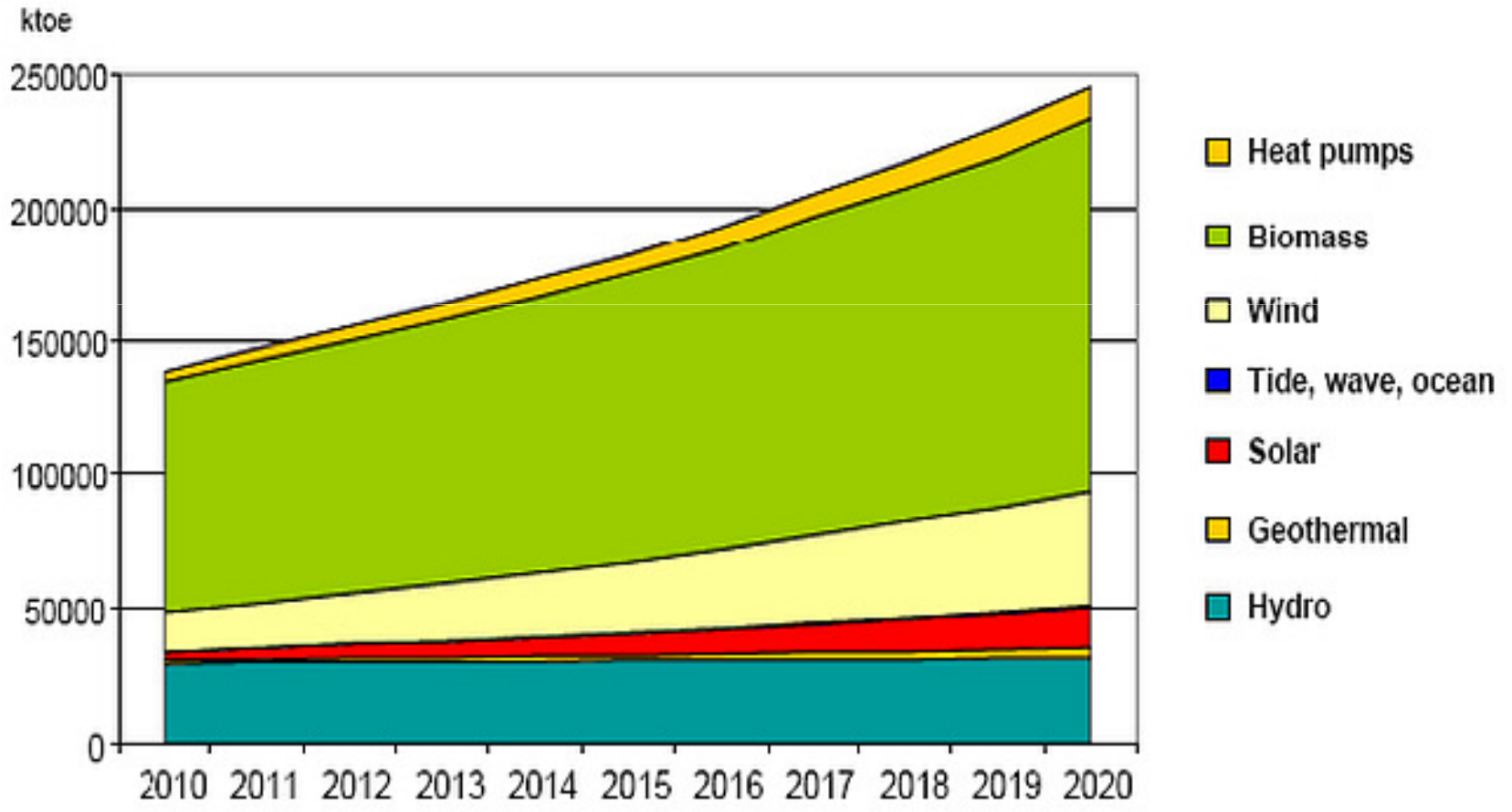
Oil Prices


140
120
100
80
60
40
20
0
Oil Price ($)
120
100
80
60
40
20
0
-20
Brent-WTI Spread ($)
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
WTI (LHS)
Brent (LHS)
Spread (RHS)

European Electricity Prices



EU Energy Targets 20-20-20 by 2020



Barriers on a further Development

- Low consumer confidence continues to hinder investment decisions and the availability of credit remains limited.
- No recovery of the construction sector is foreseen in the near future
- Even stricter budgetary constraints, at both European and national level have lead to incentives and support schemes being curtailed or withdrawn completely in most countries
- The discovery of new of gas fields, the exploration of shale gas, and the recently inaugurated Northstream pipeline have eased the pressure on gas prices and have thus brought the operating costs of gas boilers
- Many of the traditional large growth markets have now reached maturity. Notably Sweden and Norway have seen a decline in demand in recent times, while sales in Austria and Switzerland have levelled out

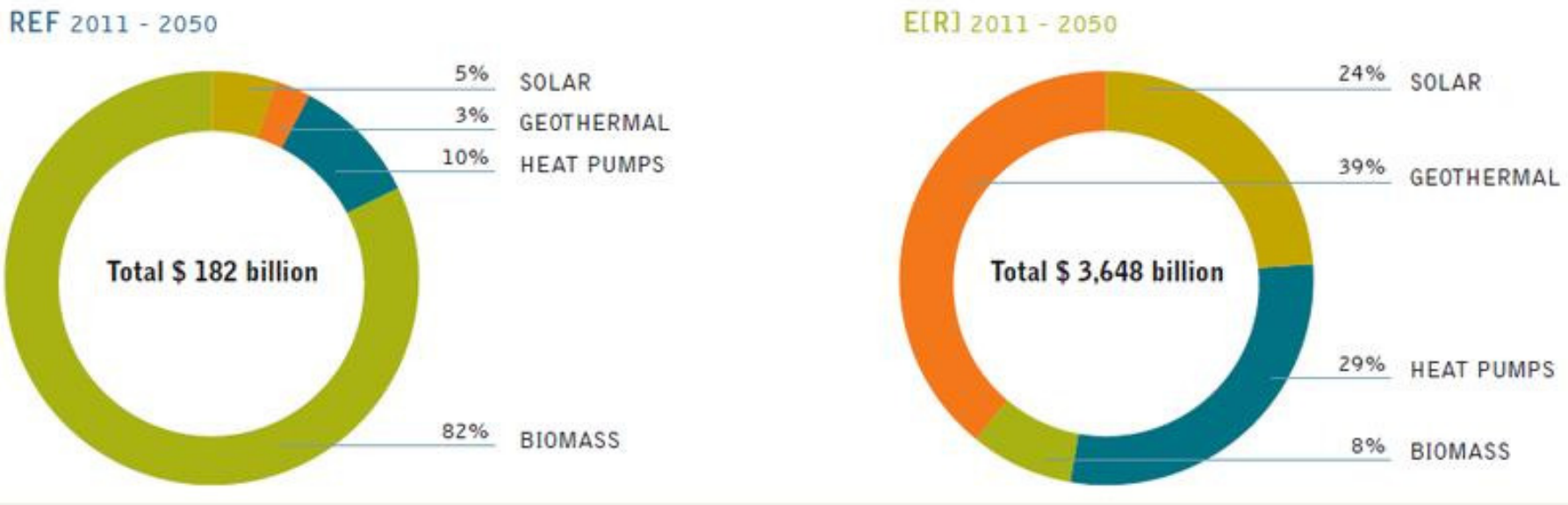
Future Prospects

- Today, renewable energy sources account for 7% of OECD Europe´s primary energy demand. Biomass, which is mainly used for heating, is the largest renewable source. The share renewable energy in electricity generation is 18%, whilst the contribution of renewables to heat supply is around 10%. About 85% of primary energy supply still comes from fossil fuels.

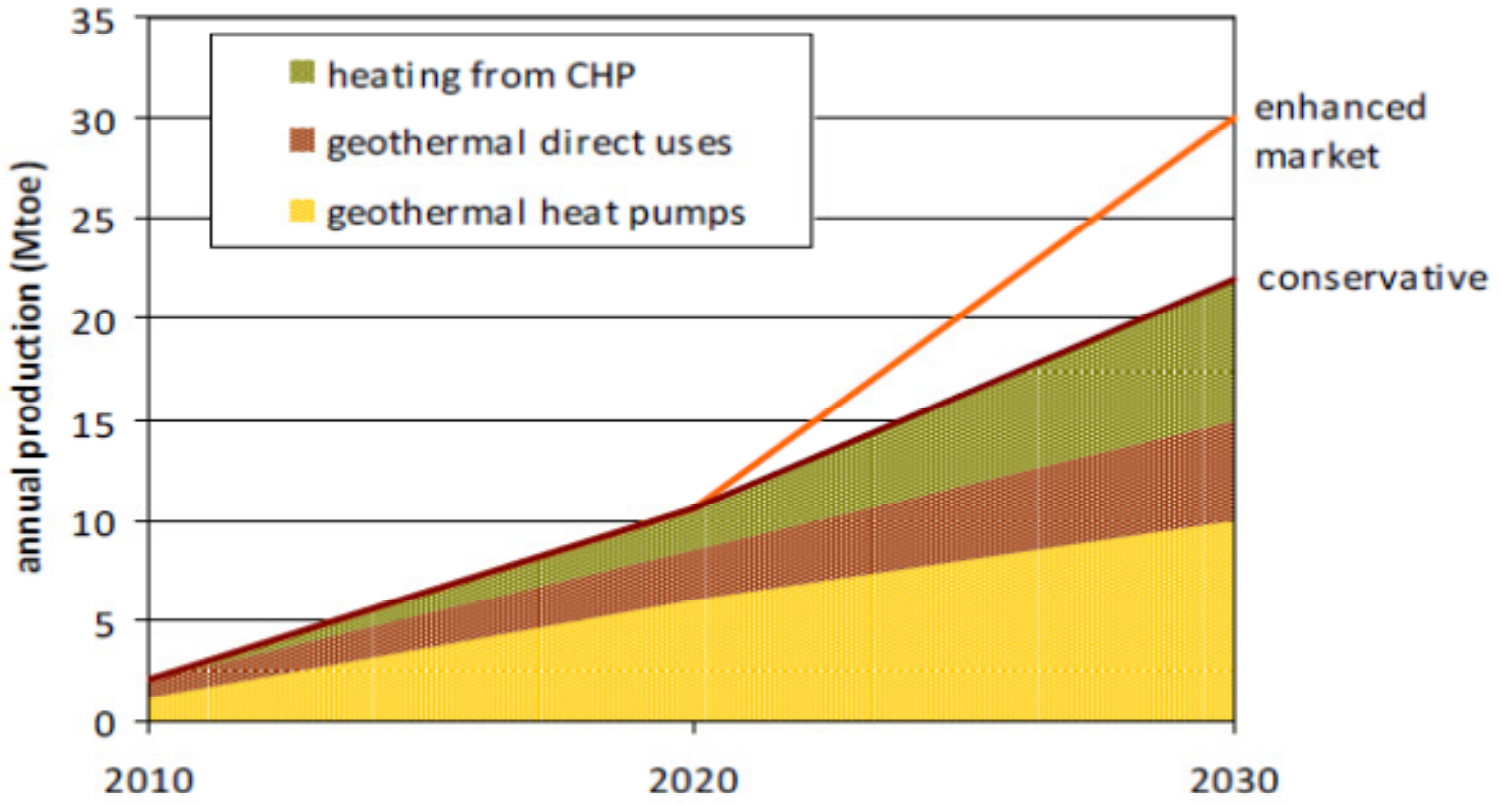
- In many of the European countries it is expected that the geothermal heat pump market will annually increase by 10% or more during the next decade. Few countries expect a smaller increase. The attitude of the authorities to the use of heat pumps will be crucial.

EREC Scenarios

eastern europe/eurasia: investments for renewable heat generation technologies under the reference scenario and the energy [r]evolution scenario



EGEC Scenarios



Geothermal heating scenario – vision to 2030

Thank you for your attention

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