



## THE EGEC CONFERENCE

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**European Geothermal Energy Council**

**Munich, 03/12/2009**



- **Geothermal Technologies and Market development**
- **Geothermal Targets 2020 – 20%RES Directive**
- **Measures to achieve these targets:**
  - **Policy**
  - **Financing**
  - **R&D**
- **Vision 2050**

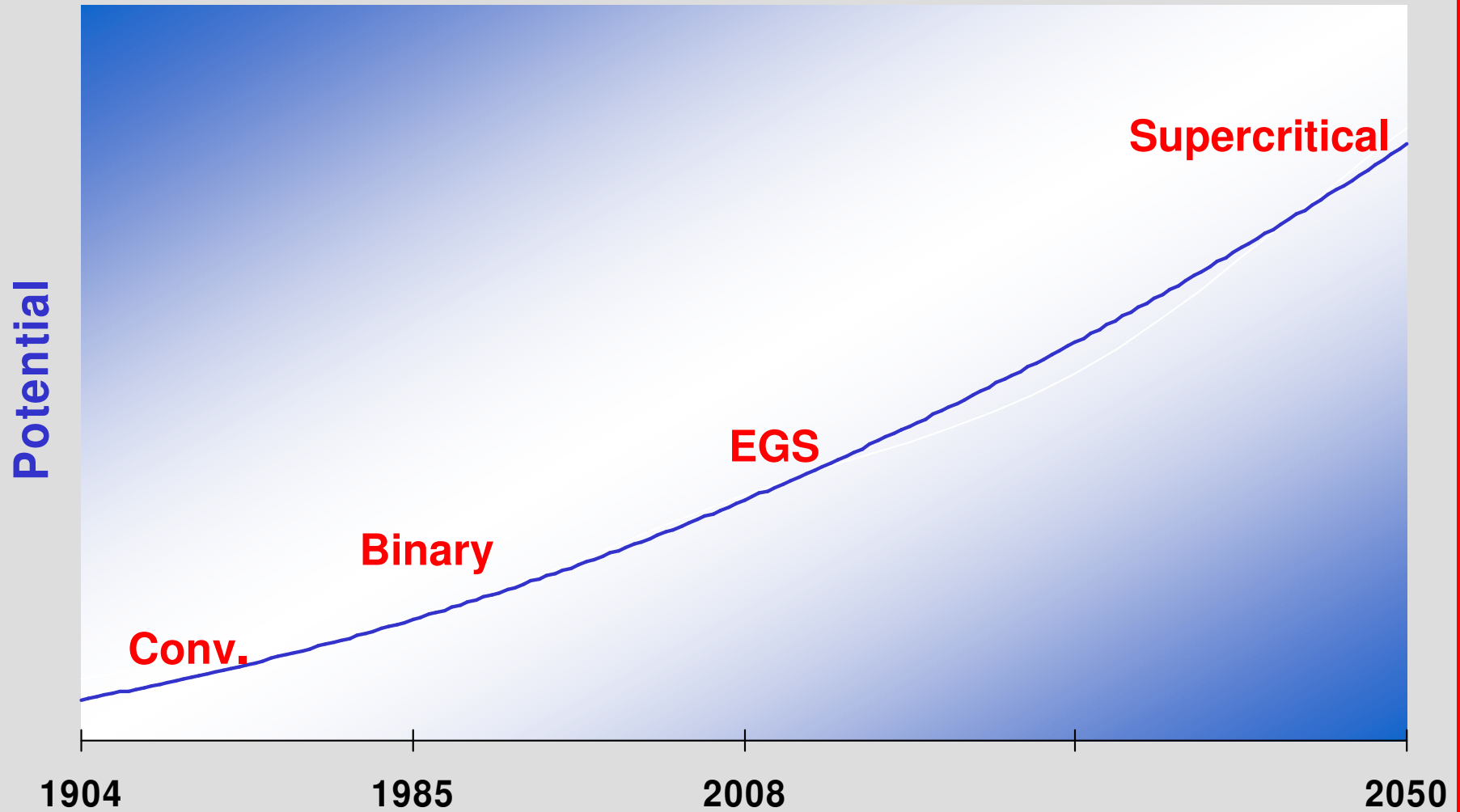


## GEOTHERMAL ELECTRICITY TECHNOLOGIES

- **1904: First experiment to produce conventional geothermal power,**
  - **Flash and dry steam power plants (50-100 MWe)**
- **1985: Binary geothermal power plants for low-temperature geothermal fluids (80 °C-170 °C)**
  - **Organic Rankine Cycle (5-10 MWe & 10-20 MWth)**
- **2008: Enhanced Geothermal Systems**
  - **From 1,5 MWe now to commercial plants: 25-50 MWe & 50-100 MWth**
- **?: Supercritical Fluids**



# GEOHERMAL ELECTRICITY TECHNOLOGIES



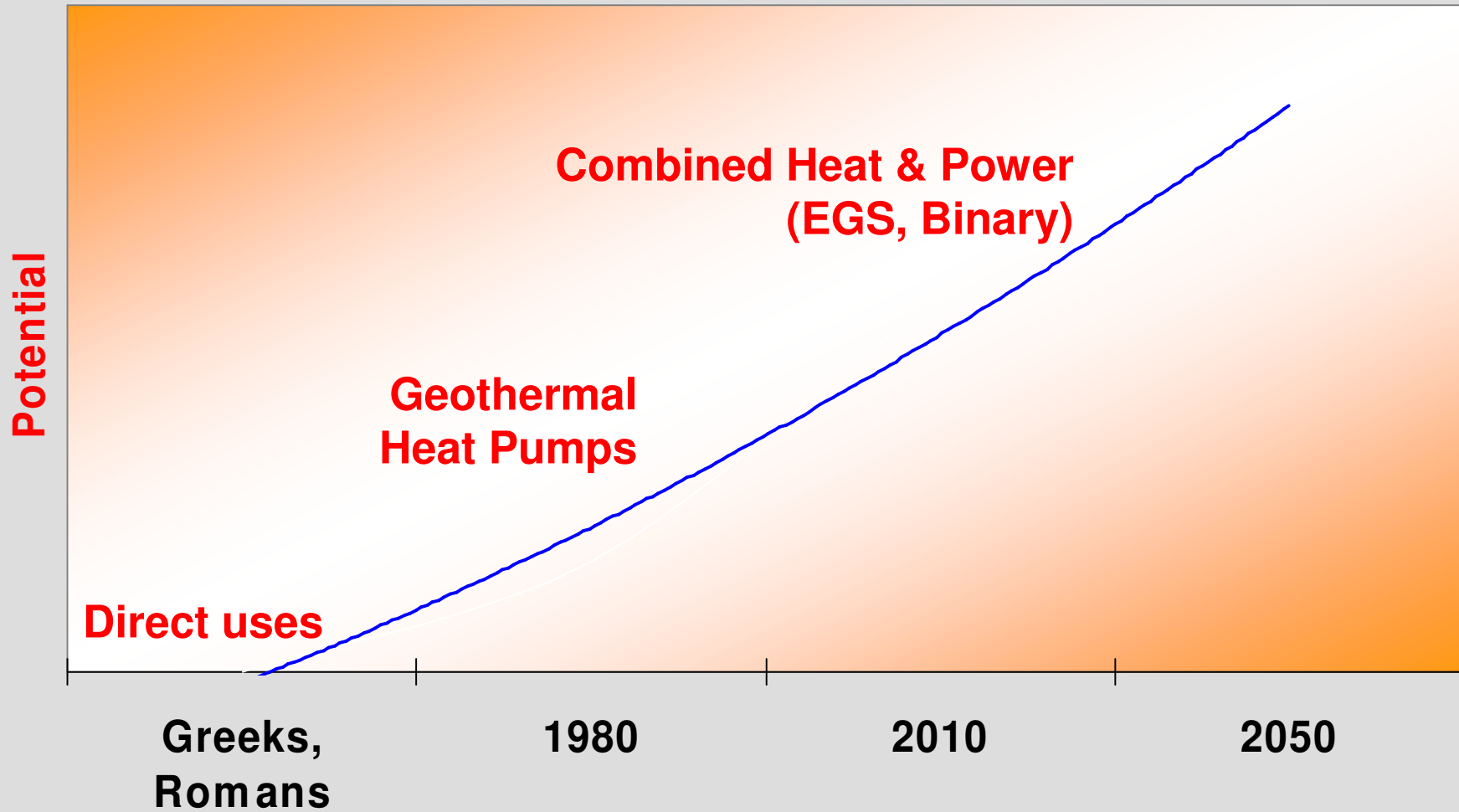


# GEOHERMAL HEATING & COOLING

- **Antique Times: Direct uses** (Balneology, Agriculture, Drying, District Heating, fish farming, Greenhouses...)
- **1980: Geothermal Heat Pumps**
- **2008: Heating from Combined Heat & Power plants** (Binary, EGS)

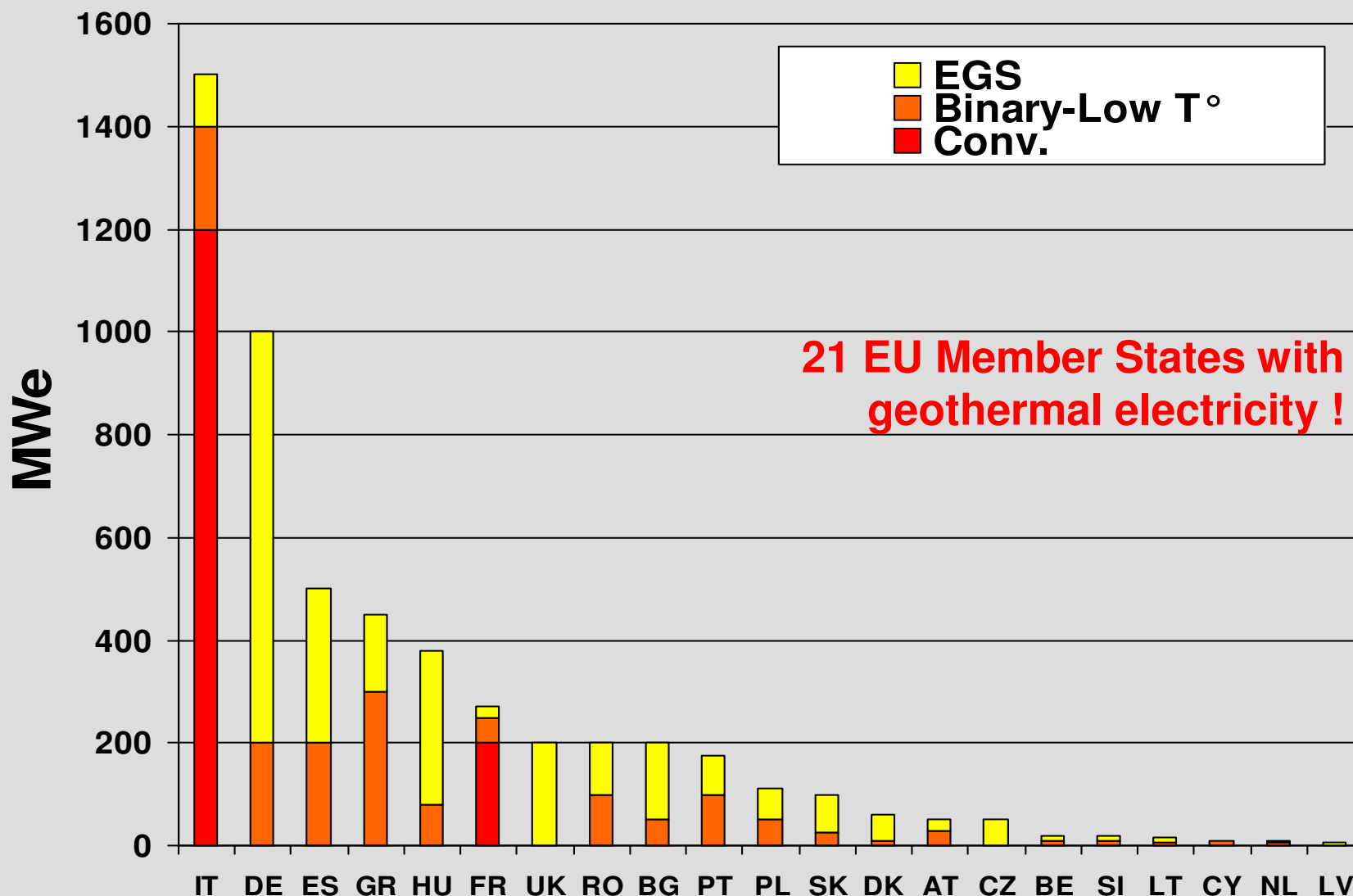


# GEOHERMAL HEATING & COOLING



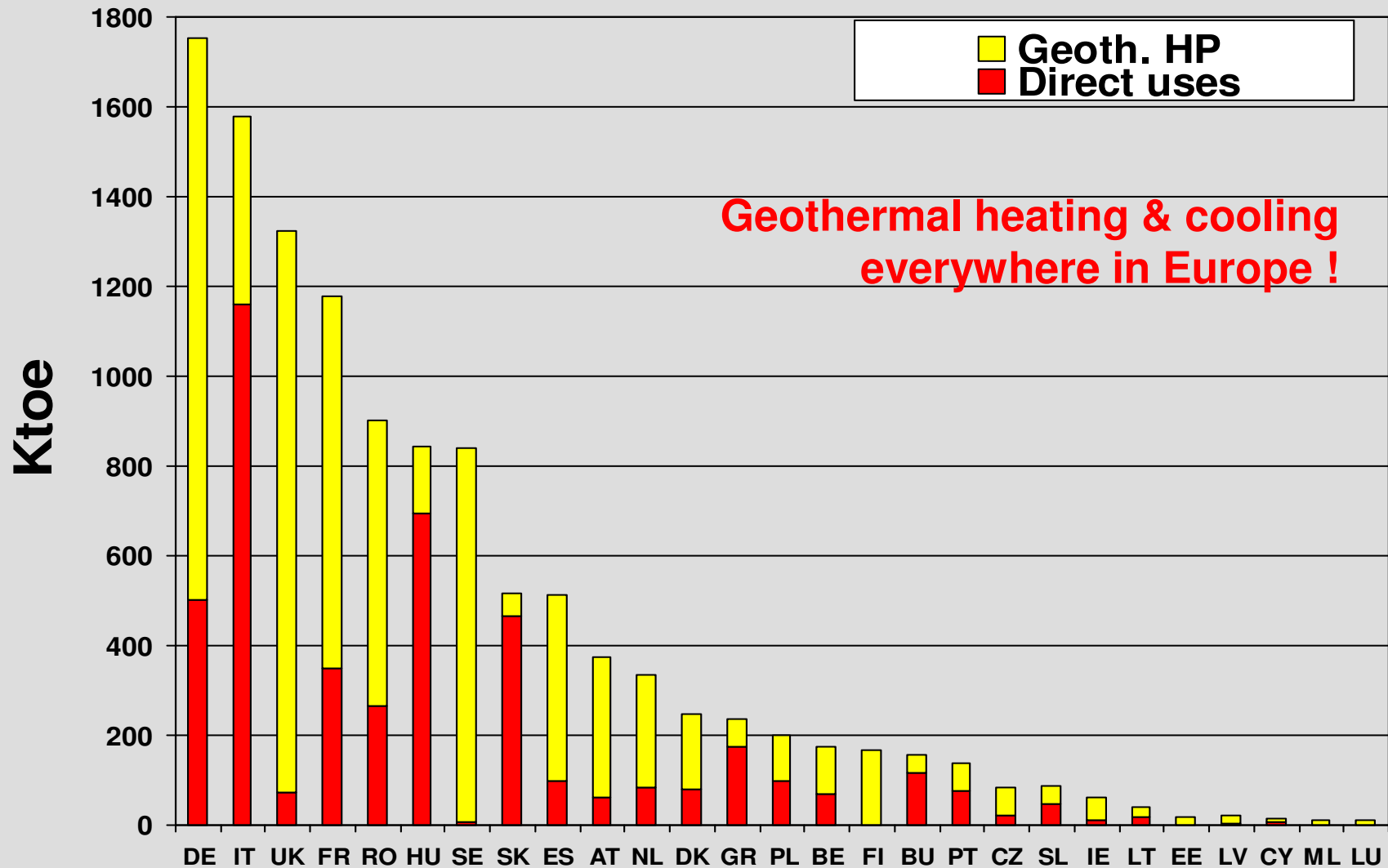


## EGEC National targets 2020 for electricity





## EGEC National targets 2020 for Heating



Targets 2020





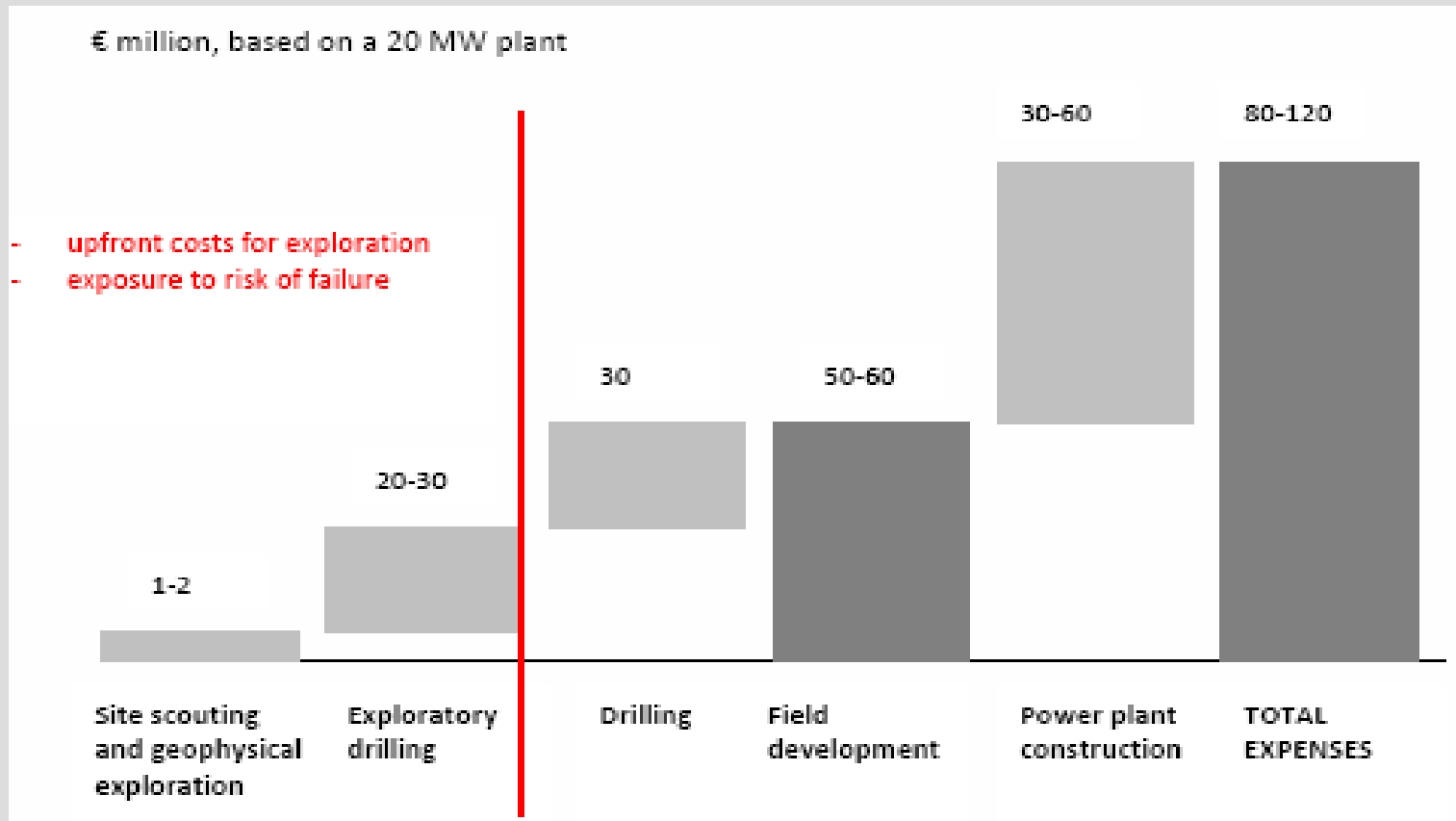
# How to reach these targets ?

## Barriers to develop geothermal energy:

- Increase awareness
- Simplify regulations:
  - Provide licensing procedures for EGS exploration
  - Reduce the time for planning permission
  - Liberalize energy markets
- Education, training, certification geothermal staff
- Mitigate geological risk
- Adapted and available drilling rigs
- Competition of geothermal with Carbone Capture and Storage, nuclear waste...



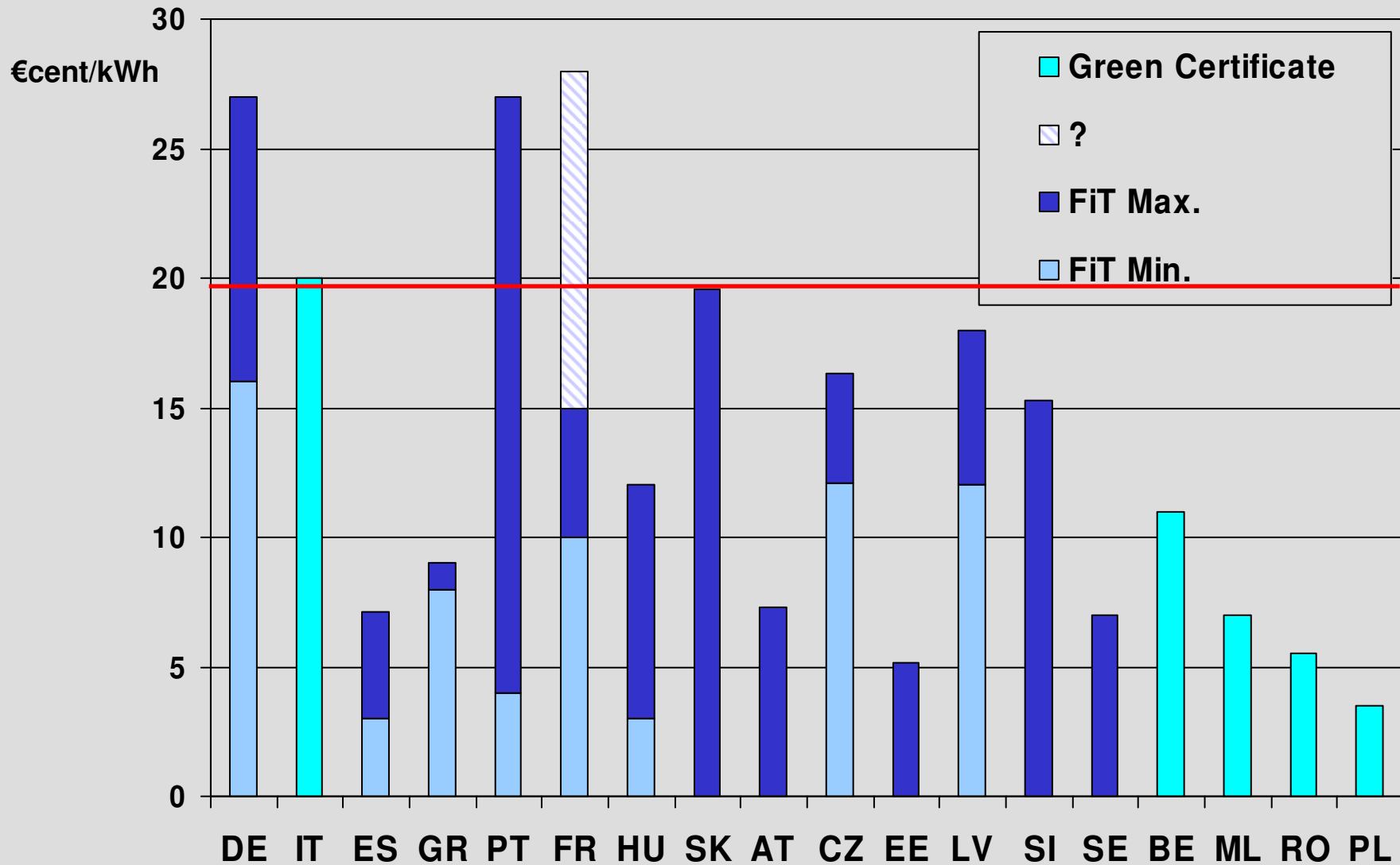
# Upfront Financing to cover drilling risk



- **Create an European Insurance Scheme to cover the geological risk related to geothermal operations**



# Geothermal Feed-in tariffs and Green Certificates in the EU

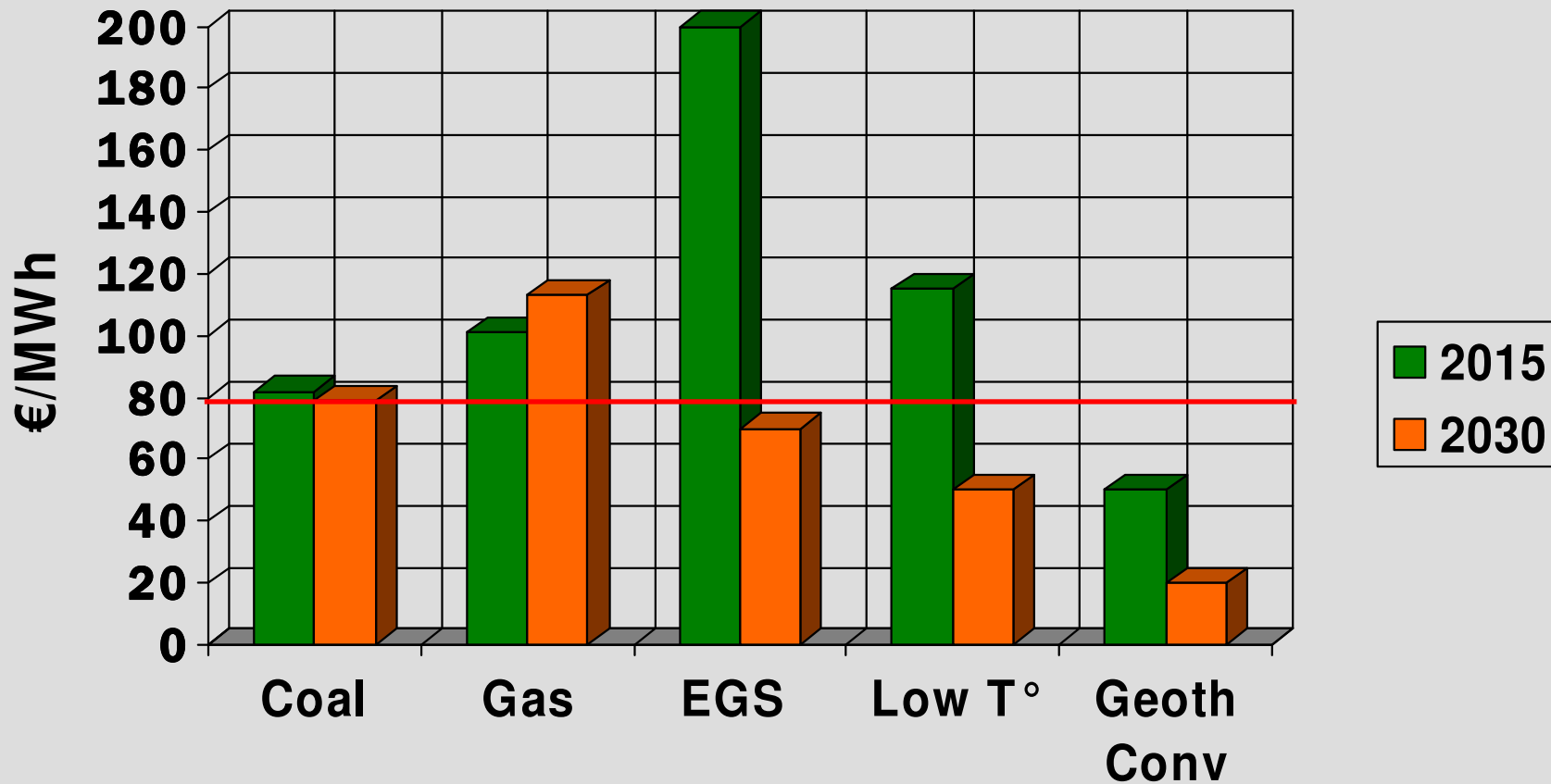


How to reach these targets - Financing



## R&D to decrease geothermal costs

### Electricity Generating Cost in EU



How to reach these targets – R&D



## Research & Development

### Objectives:

- **Decrease costs, bring innovations**
- **Implement the EGEC Geothermal Research Agenda**

### Tools:

- **European Technology Platform – Renewable Heating & Cooling: a geothermal panel**
- **EGEC Technology Platform GEOELEC**
- **Initiatives: European Energy Research Alliance, Strategy Energy Technology Plan...**



**Thank you very much for your attention**

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