GEOELEC

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Prospective for Geothermal electricity in Europe

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Prospective for Geothermal electricity in Europe ➔ GEO-ELEC

- **PHASE I: Prospective for geothermal electricity**
  - **WP 2 - Prospective study**
- **PHASE II: Socio-economical conditions for a sustainable Development**
  - **WP 3, 4, 5**
- **PHASE III Dissemination**
  - **WP 6, 7**

Work Package 2

- Title: „Prospective for geothermal electricity in Europe”
- Lead: TNO
- Timeline: Month 1-20

Partners

Partner organisation	Task(s) for this partner organisation	Related to Task N°
TNO	WP lead Assessment and data compilation Forecasts for NL, BE, LU, DK, SE	1-2-3 1 3
EGEC	Data compilation Forecasts for UK, IE, FI, EE, LT, LV, CZ	1 3
BRGM	Assessment and data compilation Forecasts for FR	1-2 3
CRES	Data compilation Forecasts for EL, CY, ML, BG, RO	1-2 2-3
IGG CNR	Assessment Grid Forecasts for IT, SI	1 2 3
APPA	Data compilation Forecasts for ES, PT	1 3
GGSC	Data compilation Analyse Electricity demand	1 2
EnBW + Univ. Stuttgart	Data compilation Analyse Electricity demand Grid Forecasts for DE	1 2 3
Mannvit	Assessment Grid Forecasts for IS, HU, SK	1 2 3
GFZ	Data compilation Forecasts for DE, PL, AT	1 3

Current situation

- NREAP: National renewable energy action plans
- Roadmap for each member state (27) how to reach the 2020 targets
- Many countries showed their lack of knowledge about their deep geothermal potential
- WP2 targets on closing the knowledge gaps

Tasks of WP2

1) Resource assessment: energy supply side

2) Electricity demand and grid infrastructure: the demand side

3) Forecasts and prospective (➔ links supply and demand)

Task 2.1: Regional compilation of prospective areas and resource assessment

- Lead: BRGM/TNO
- Present the available geological information in the different member states
- Long-term success depends upon a detailed characterisation of European geothermal resources
  - Assessment of high temperature resource potential (➔ identify EGS areas, additional low-T areas)
  - Develop a geothermal resource classification system (➔ to determine site potential in a standardised manner)
  - Develop a data management system (➔ resource data available to researchers, consultants, decision/policy makers)

Task 2.1

- Four actions:
  - A) Adopt a methodology for resource assessment
  - B) EGS resource classification (BRGM, TNO, APPA)
  - C) Data compilation and dissemination
  - D) Web-based GIS

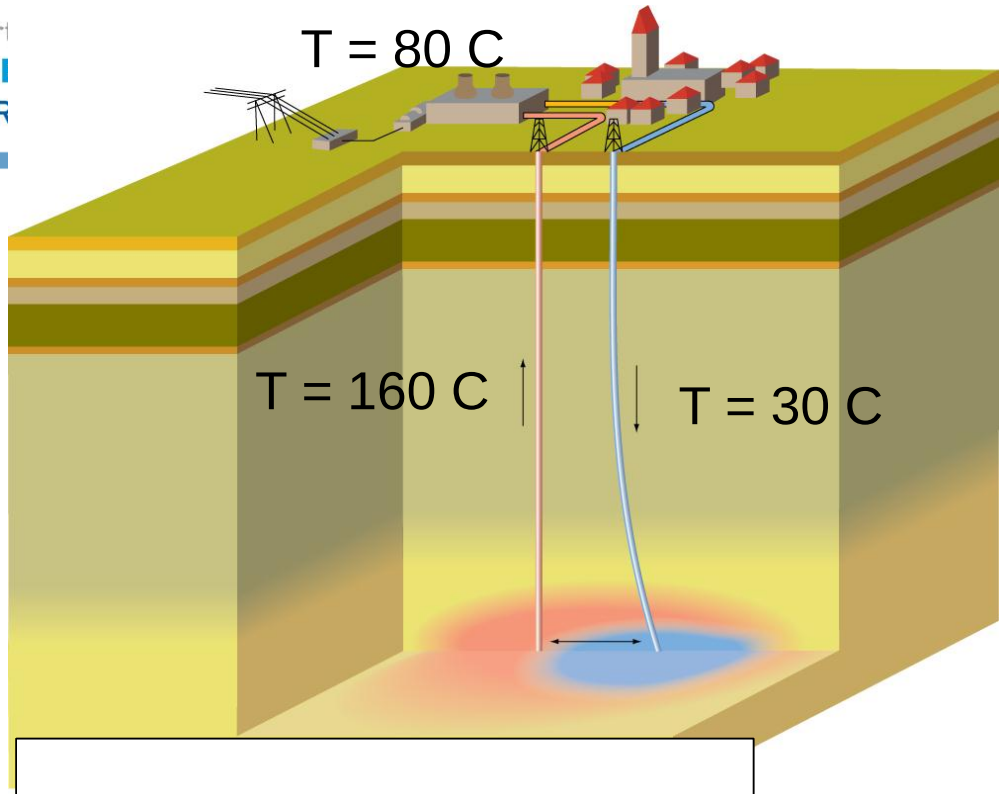
Task 2.1 A) Adopt methodology for resource assessment

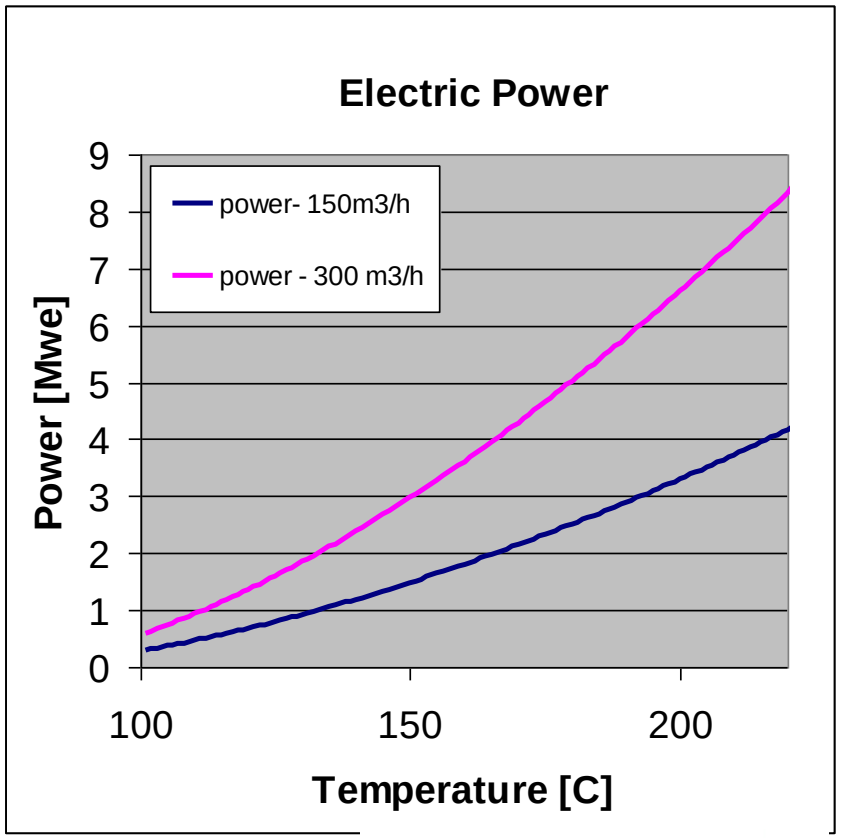
- Draft of the resource assessment protocol
- Composed by TNO
- Reviewed by the partners
- Most helpful input from Manvit

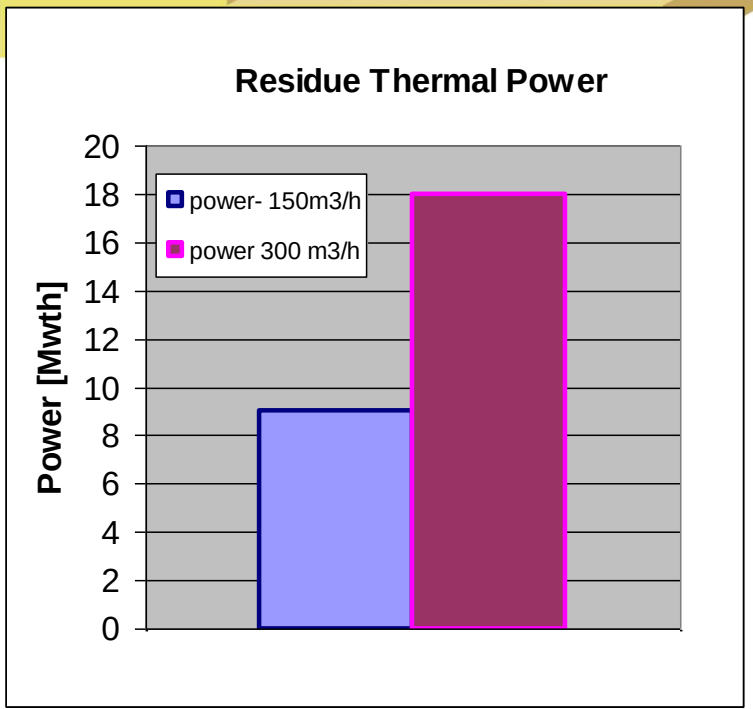
Task 2.1: B) EGS resource classification

- Delivers best practice for geothermal resources classification
- Simple performance evaluation tools for prospect and distribution of EU geothermal power
- Eurogeosurveys will help disseminating this methodology

Electricity Production (T, flowrate, depth)







Task 2.1: C) Data compilation and dissimination

- Dissimination of crucial data
  - T, basin and aquifer structures, structural framework, …
  - Requires exchange and transfer to geological surveys, academic/knowledge institutes
- Conducted through:
  - Critical review of bibliographic compilations
    - from national organisations in charge of permitting exploration licences
    - Oil & gas public reports
    - Direct contact with oil & gas industry
  - Data compilation workshops during the first 10 months of the project
    - Mobilise data in all European countries

7 regional workshops

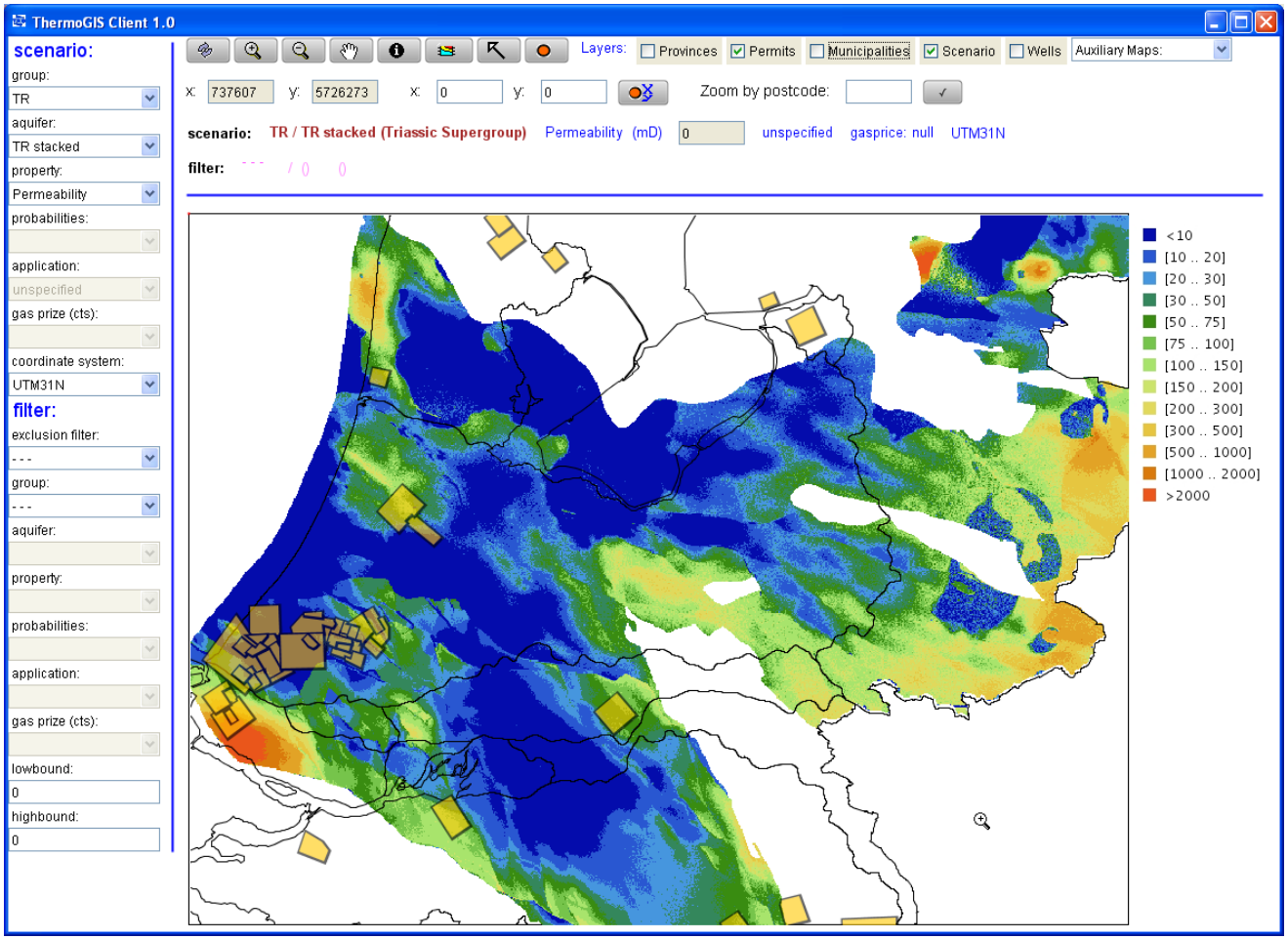
1. For United Kingdom and Ireland → organised by EGEC's members
2. Greece, Cyprus, Malta, Bulgaria, Romania and Turkey → by CRES
3. The Netherlands, Belgium, Luxembourg, Denmark and Sweden → by TNO
4. Germany, Poland, Slovakia, Czech Republic, Hungary, Austria → by GFZ with the support of Mannvit's office in Hungary, and of GGSC and EnBW.
5. France, Italy, Slovenia and the Balkans → by IGG-CNR with the support of BRGM
6. Spain and Portugal → by APPA
7. Finland, Latvia, Lithuania, Estonia → by EGEC's members

› TNO will attend all workshops, the other partners 3, respectively

Task 2.1: D) Web-serviced resource GIS system

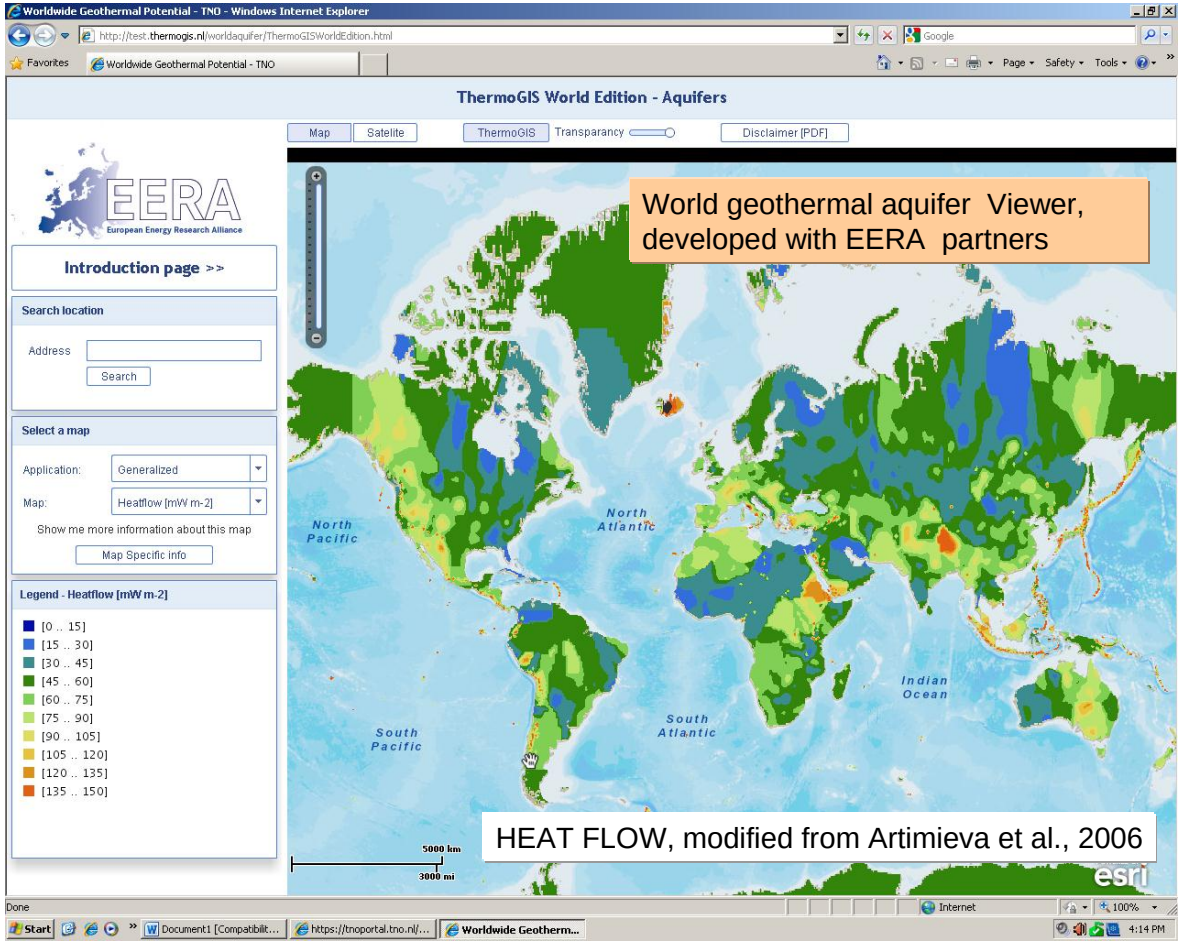
- Integrated GIS
- Performance assessment tools
- Will present geothermal resource assessment in each EU-27 member state
- TNO supported by VU Amsterdam: webGIS for deep crustal models
- Hosted on a TNO server

Example: ThermoGIS



http://www.thermogis.nl

Example: Worldaquifer Viewer



http://www.thermogis.nl/worldaquifer

Task 2.2: Infrastructures and the electricity market

- Lead: EnBW
- Task 2.1: Geothermal potentials (supply)
- Task 2.2: Evaluate electricity demand, grid access
  - A) Technical conditions for grid access
  - B) Match the demand, site selection

Task 2.3: Forecast per European country

- Lead: EGEC
- Forecasts on geothermal power production in EU-27 countries and turkey, provided key resource data are available and countries are willing to contribute to tasks 2.1 (potentials) and 2.2 (infrastructures)
- Consideration of *heat and electricity*
- Generation of a detailed procedure how to set up a geothermal project
- Linkage of the geothermal potential with demand side for each country
- Forecast on the implementation of low-enthalpy systems in the EU (Mannvit)
- Goal: Obtain prospective data with market forecasts and a geographical analysis revealing the most promising areas (countries)

Deliverables WP2

- D2.1: Report on the methodology for resource assessment and application to core countries (pdf, 30 p) (month 10), **task 2.1**
- D2.2: Reports on regional workshops - including main conclusions and feedback analysis (month 10), **task 2.1**
- D2.3: Web-service database on resource assessment with an online web tool through a 3 D web GIS (month 20) , **task 2.1**
- D2.4: Technical report on grid access (pdf, 30 p) (month 10), **task 2.2**
- D2.5: A prospective study (2020/2030/2050) on the geothermal potential in the EU (pdf, 50 p) (month 20), **task 2.3**
- D2.6: A factsheet on future geothermal market 2020/2030/2050 (month 20), **task 2.3**