

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

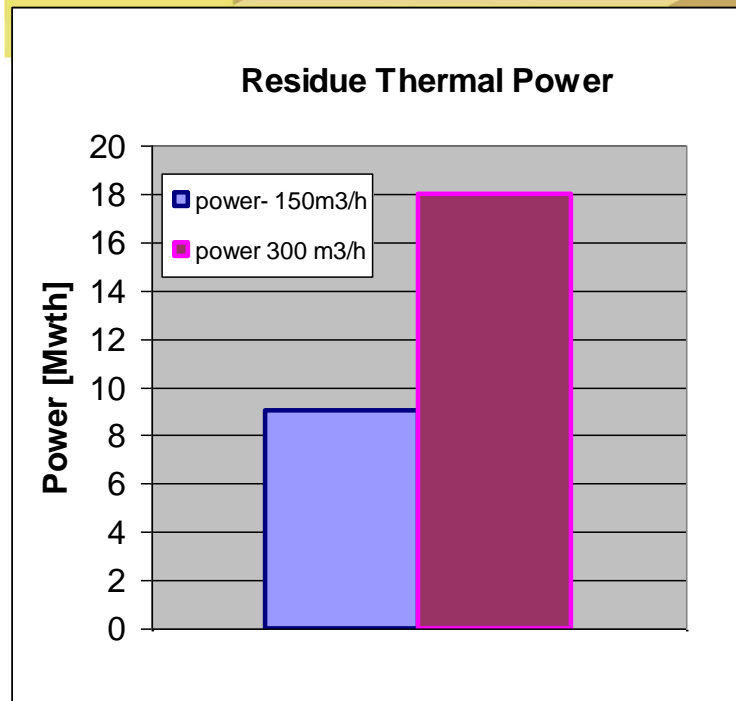
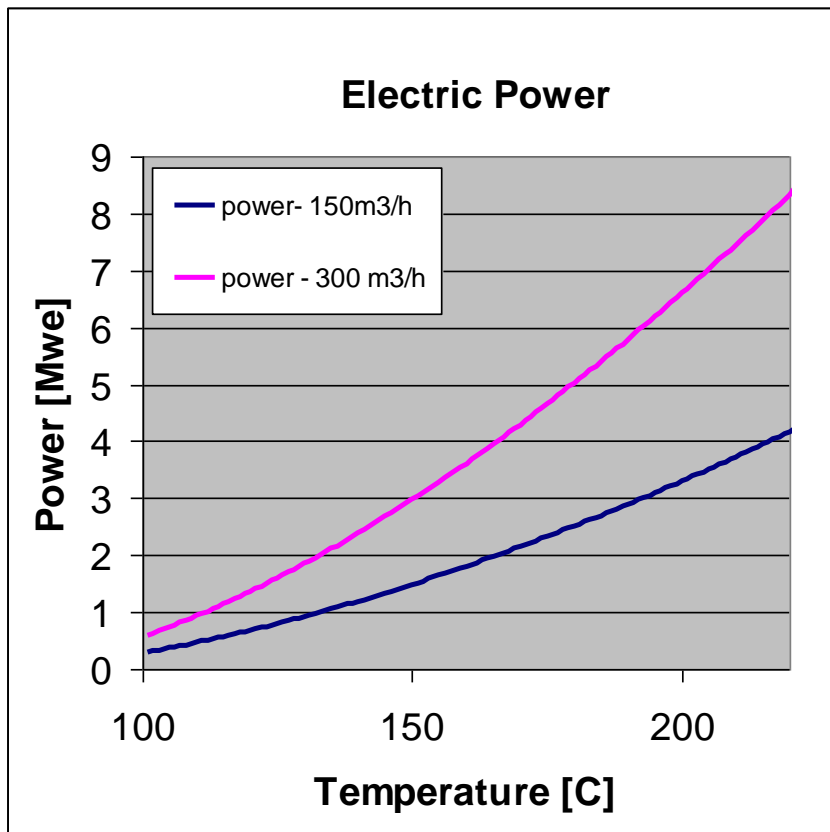
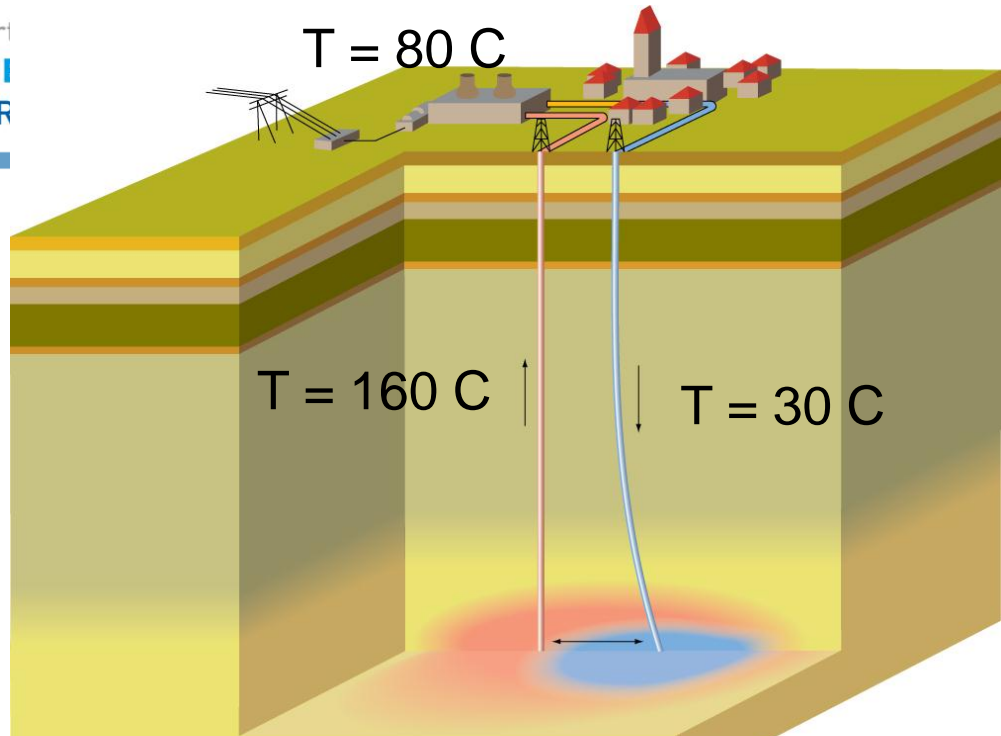
Task 2.1 A) Adopt methodology for resource assessment

- › 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 dissemination

- › 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

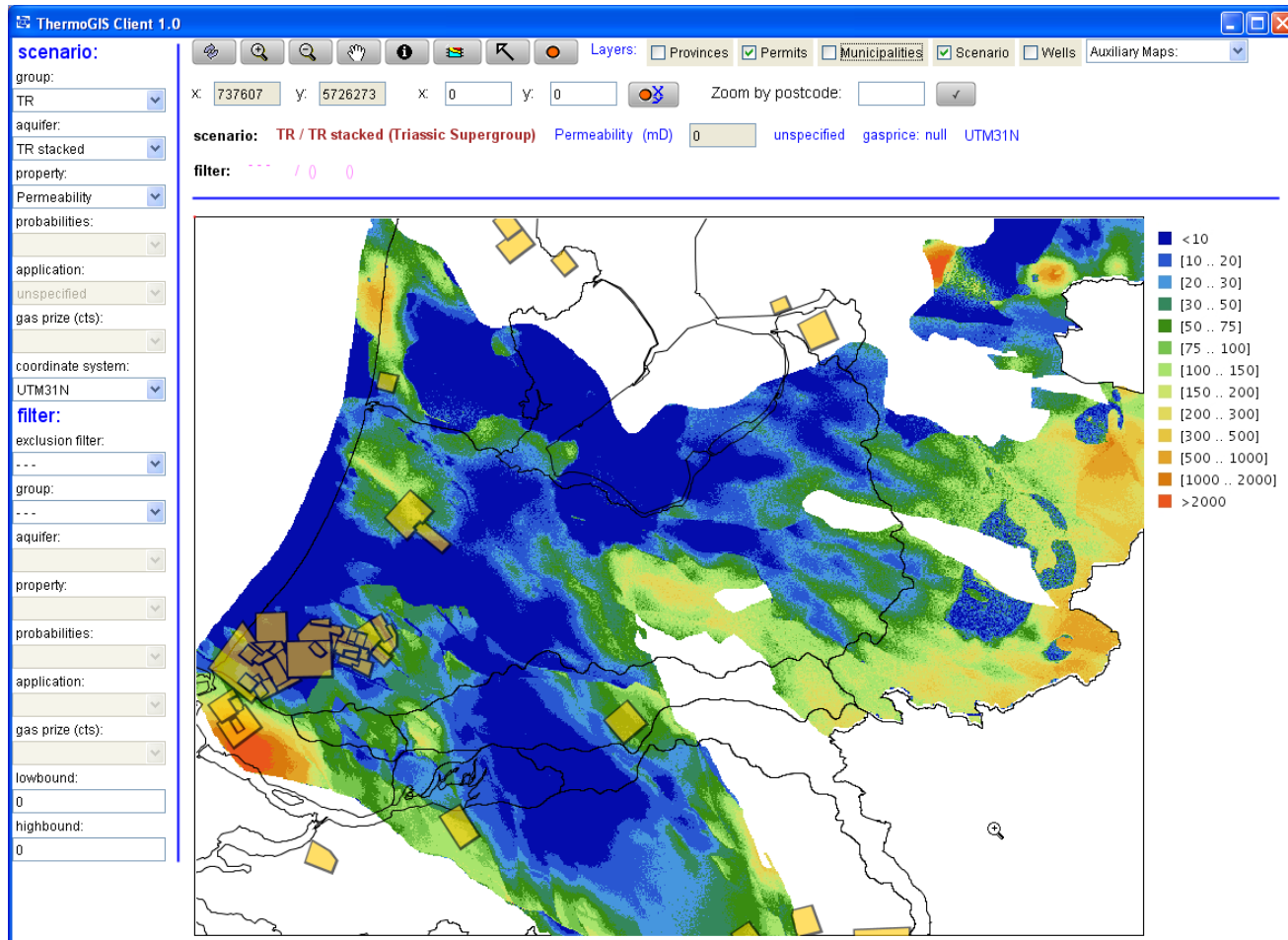
7 regional workshops

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

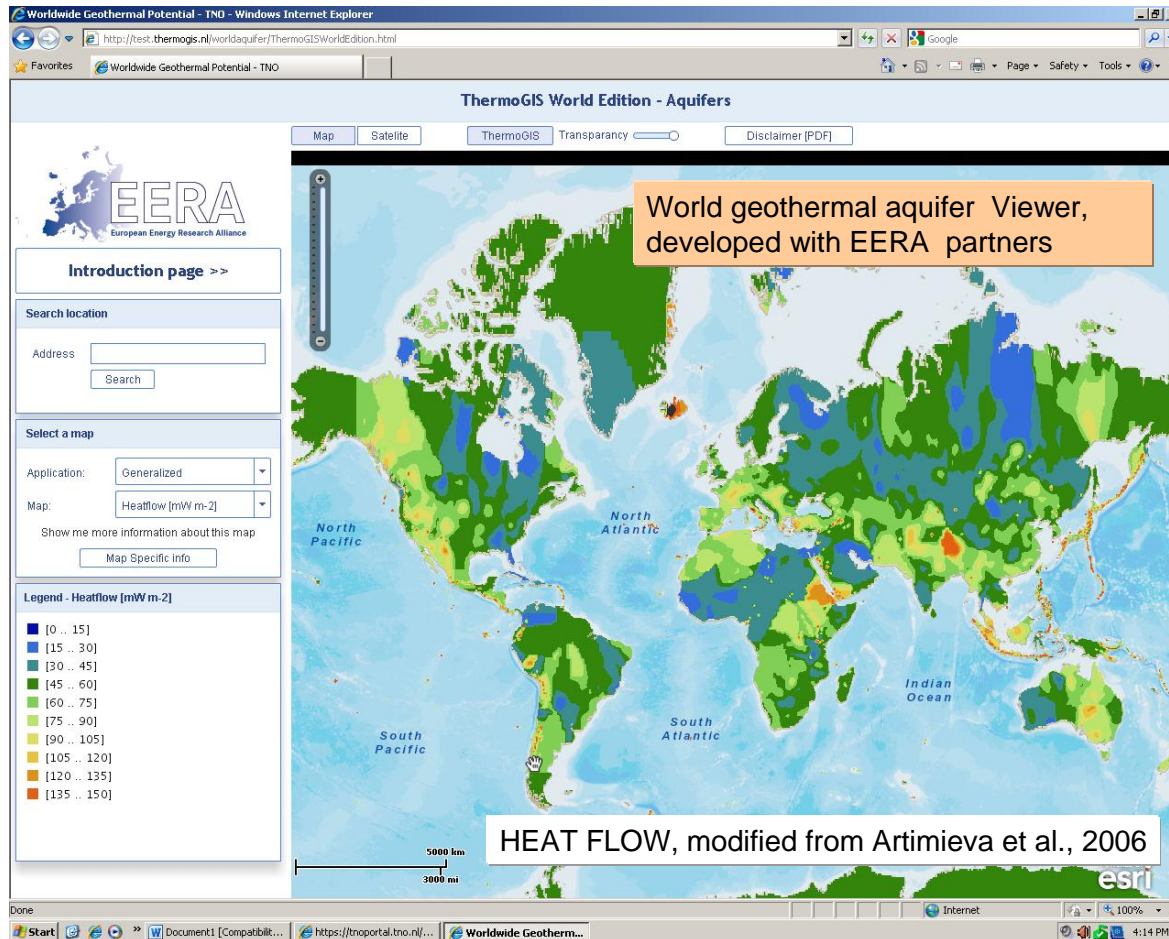
Task 2.1: D) Web-serviced resource GIS system

- › 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



Example: Worldaquifer Viewer



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**