

GeoDH Project Overview



Overview

- European Geothermal District technologies – State of the art and beyond
- Common barriers to development
- GeoDH project in a nutshell



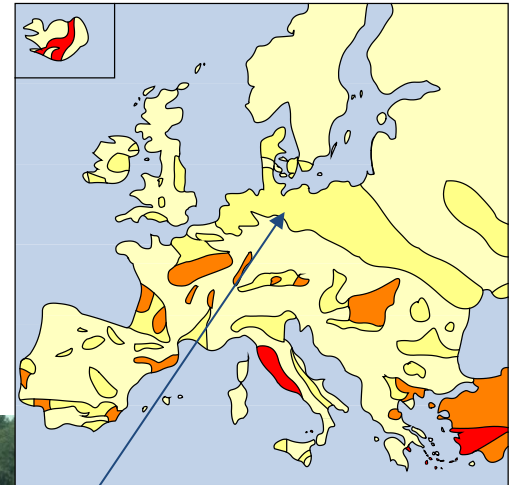
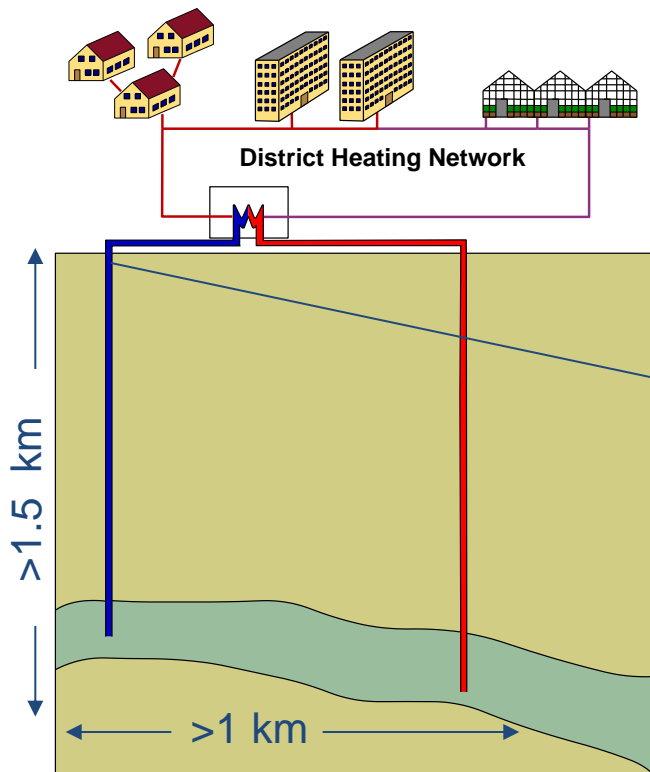
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Geothermal District Heating

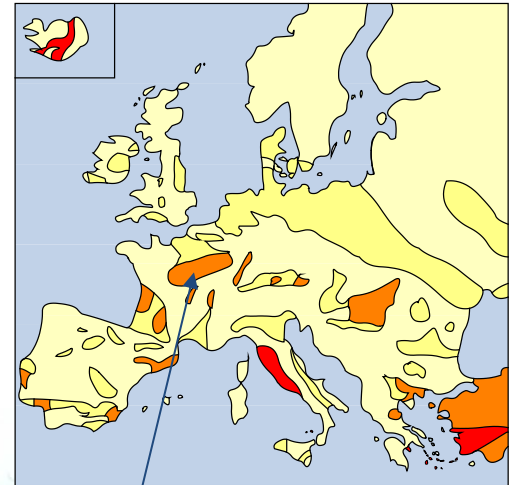
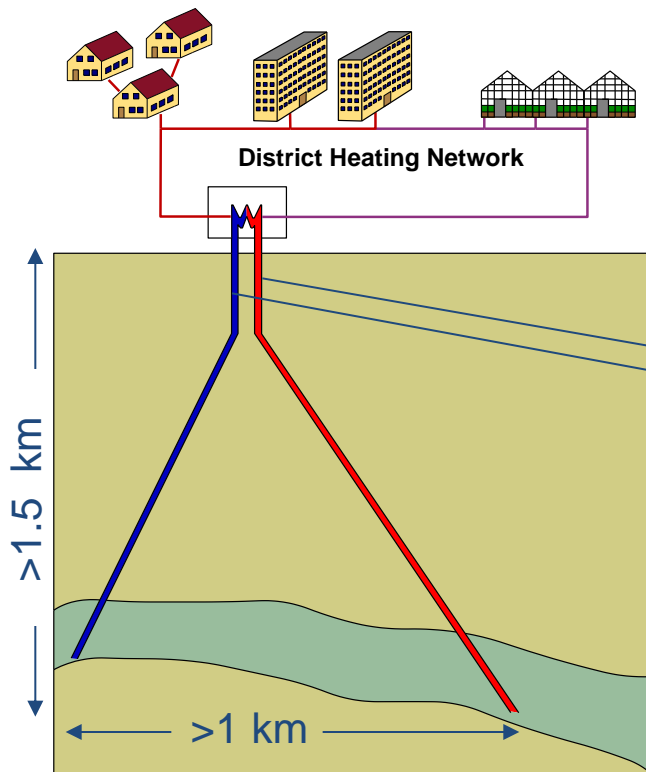
Doublet systems, used since the late 1970s in France and since 1984 in (Eastern) Germany, Hungary, etc.



Head of reinjection well of geothermal DH system central in Neustadt-Glewe, Germany

Geothermal District Heating

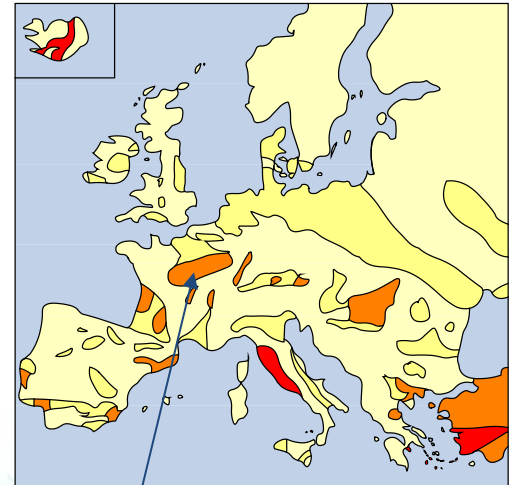
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Geothermal central in Chevilly-la-Rue, south of Paris, France

Geothermal District Heating

Doublet systems, used since the late 1970s in France and since 1984 in (Eastern) Germany, Hungary, etc.



1995

Geothermal central in Chevilly-la-Rue, south of Paris, France

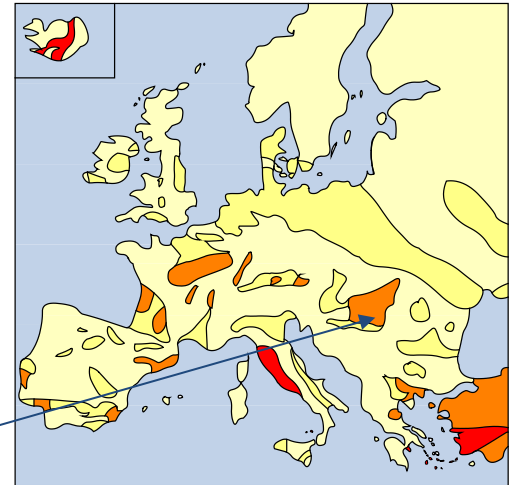


2008



Geothermal District Heating

Example of uses in Szentes, Hungary
(more than 50 years tradition in the city)



District heating

Heat for the hospital



Geothermal District Heating

Example of uses in Szentes, Hungary
(more than 50 years tradition in the city)



2008



District heating

Heat for the hospital



agriculture



Shallow Geothermal DH

Heat and Cold Production in Paris Intra Muros

- Issue: supply heat and cold to buildings where heated/cooled areas exceed land availability



144 Rue de Rivoli, PARIS
7000 m² (offices + shops)
Louvre district

470 kWth heating
850 kWth cooling

Balanced heat from and to the ground, when running time and COPs of the heat pumps are taken into account



Other Sources for Geothermal DH: Water from abandoned mines

- Deep mine workings provide a source for heat and cold, or an option for thermal energy storage

**Example:
Minewater system in
Heerlen, NL**

**Alternatives:
Water from long, deep
tunnels e.g. in the Alpes (like
Furka tunnel)**



Photo: April 2006, Niitsuma



European Geothermal District technologies– Technological challenges

- Towards low temperature GeoDH systems with HP
- Large versus Small GeoDH installations
- Increase operational lifetime: from doublet to triplet
- GeoDH from CHP: new opportunities with EGS
- EGS purely for industrial heating: case of ECOGI project
- What about Geothermal District Cooling ?
- GeoDH for smart cities = intelligent thermal grid
- To which other source combine the GeoDH ? Biomass, solar etc.



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Barriers to European Geothermal Development - District Heating

Technical barriers

- Lack of wide and detailed information on geothermal energy resources
- Renovation of existing DH networks to improve efficiency

Regulatory barriers

- Lack of national/regional/local geothermal regulatory framework
- Length and administrative burden of licensing procedures for exploration and drilling



Barriers to European Geothermal Development - District Heating

Financial barriers

- Risk associated to the first drilling and its coverage
- Capital intensive (c. 1-5-2,2 Mio € / MW_{th} – European Average)
- Need new business models to make GeoDH economically viable
- Fragmented and very limited financial support for geothermal district heating in Europe
- Unfair competition with conventional sources



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Promote Geothermal District Heating Systems in Europe

GEODH Project

Contract n°: IEE/11/813/ SI2.616373 - GEODH

Project duration: 01/04/2012 – 30/09/2014

Created:08/06/2012



Objective

Stimulating geothermal district heating projects...

In 14 EU Member States



By:

- Increasing awareness on the potential applications and benefits
- Simplifying regulations and improving national and local framework
- Attracting more financing
- Transferring best practices
- Training energy officers on geothermal DH technologies.



Potential of Geothermal DH

➤ *Potential of Geothermal DH* → showing the matching of areas with good geothermal potential AND heat demand in the form of an interactive web-map service

What will we deliver?



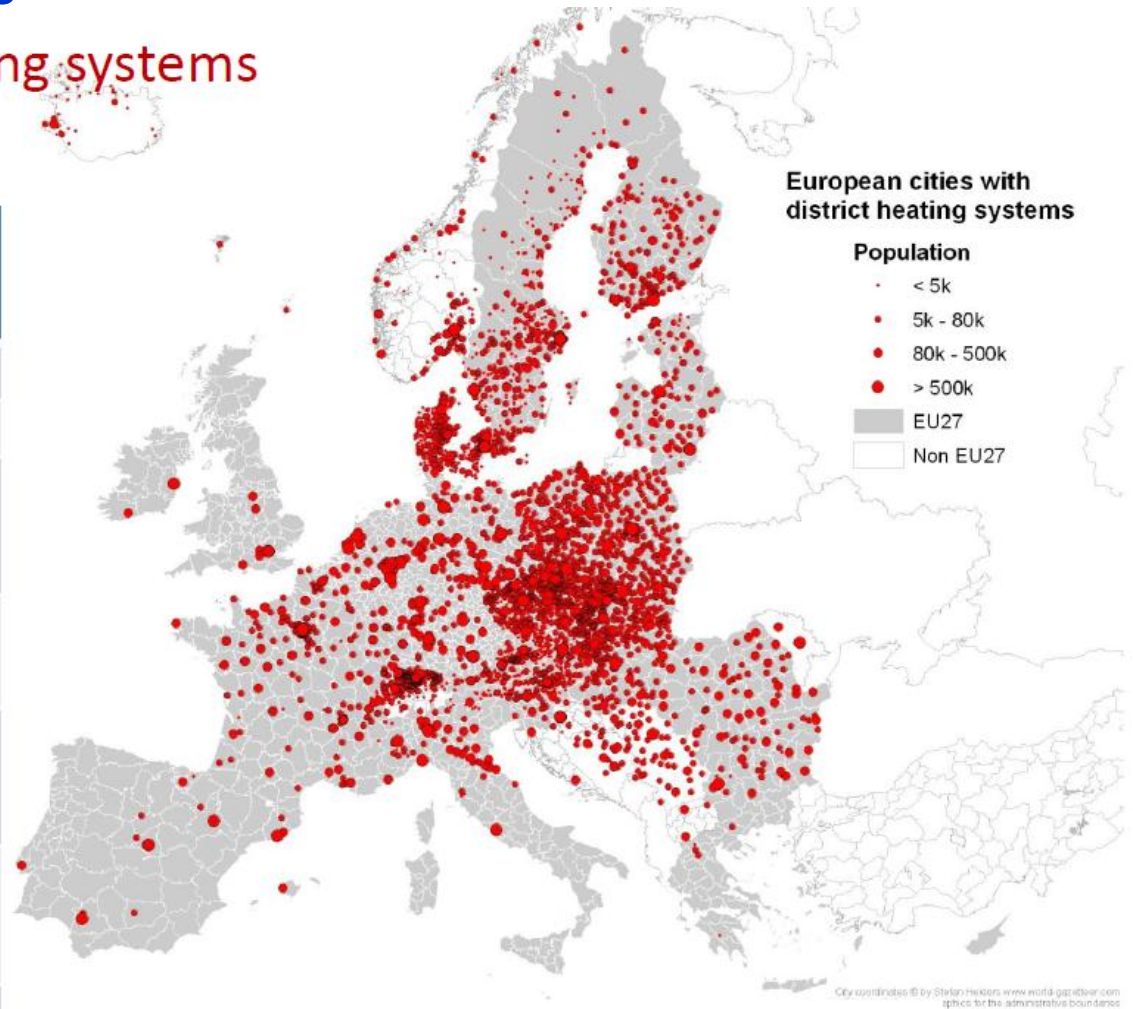
- Geothermal DH Map (web tool); June 2013
- Report presenting potential for geothermal DH in selected regions, including heat demand



Potential of Geothermal DH: Analysis of Heat Demand

European district heating systems

	Europe	EU27	EU27 population concerned	
			[Mn]	[%]
Systems	4174	3549	60	12
- in cities over 5000 residents	2778	2430		
Cities concerned	3731	3233	141	28
- cities over 5000 residents	2432	2173		
NUTS3 regions - concerned	660	600	287	57
NUTS3 regions - all	1461	1303	500	100

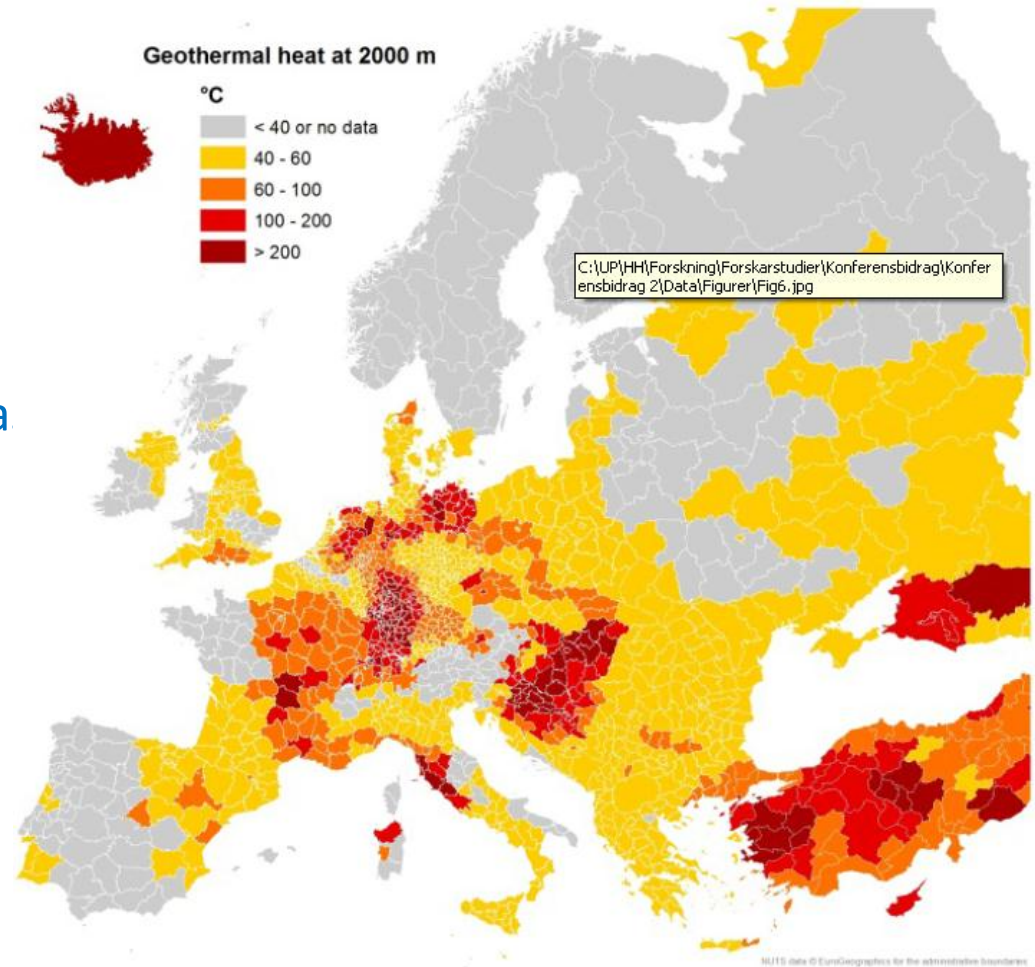


District heating systems in Europe according to the current content of the HUDHC database (June 2012)

Potential of Geothermal DH: Matching Resources and Demand

Geothermal highlighted
as a significant local heat
source:

- ¼ of EU population in area where geoDH is possible
- 4% in areas >200°C
- 8% in 100°C to 200°C
- 19% in 60°C to 100°C



Recommendations on Regulations of Geothermal DH systems

- 14 national workshops (NL > Heerlen: 03/04/2013)
- Identify national barriers
- Recommendations to remove regulatory obstacles



Financing solutions and project management

- Manual for implementing sustainable support schemes for GeoDH
- Report on the business models
- Guide on Project Management
- Factsheet for financial institutions



Best practices and training activities

- Database of best practices
- 14 national training courses (in 2014)
- Training manual



Communication & Dissemination

- Website; Newsletter; Video; GeoDH brochure
- GeoDH Final Report (500 copies + pdf version, EN)
- 14 local promotional workshops with site visits and 1 Final Conference



Expected results

GEODH will increase the share of geothermal in DH in Europe

To make heat more sustainable, cleaner and affordable...



GEODH system in Copenhagen



GEOELEC Project

Covers also:

- Geothermal risk insurance in Europe
- Deep Drilling market conditions
- Environmental Impact
- Public Acceptance

See www.geoelec.eu for more information



Partners & Contact

Enquiries Contact

Co-ordinator

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Partners:

- Coordinator: European Geothermal Energy Council (EGEC) – Belgium
- Magyar Állami Földtani Intézet - Hungary
- Agency for geothermal power engineering - Slovakia
- Union of Bulgarian black sea local authorities - Bulgaria
- Slovensko društvo za daljinsko energetiko - Slovenia
- Consorzio per lo Sviluppo delle Aree Geotermiche - Italy
- Association Française des professionnels de la géothermie – France
- Polish Academy of Sciences - Mineral and Energy Economy Research Institute - Poland
- Fjernvarmens Udviklingscenter - Denmark
- Gemeente Heerlen - Netherlands



THANK YOU!!!!

Visit www.geodh.eu





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GEOTHERMAL ENERGY TOWARDS A NEW HORIZON

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EUROPEAN GEOTHERMAL CONGRESS, PISA, 3-7 JUNE 2013



EGGC 2013

GEOTHERMAL ENERGY TOWARDS A
NEW HORIZON
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When? 3-7 June 2013

Where? Palazzo dei Congressi, Pisa, Italy

Why? EGC2013 gathers together the entire European geothermal sector providing a stage to present and discuss new developments in the science, technology, industry, and policy of geothermal energy on our continent.

For more information, please visit
www.geothermalcongress2013.eu