



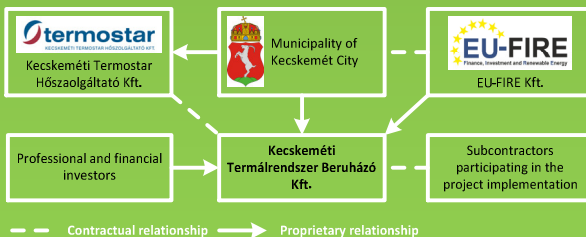
## Intelligent Energy – Europe (IEE) program

At the beginning of 2013, Kecskemét Municipality, EU-FIRE Kft., and Kecskeméti Termálrendszer Beruházó Kft. (Kecskemét Thermal System Investment Ltd) earned a subsidy from the European Commission, in the framework of the Intelligent Energy Europe – Mobilizing Local Energy Investment program, for the preparatory works of a geothermal energy investment project in connection with the city’s district heating service.

The objective of the project co-financed by the Intelligent Energy – Europe program is to complete all necessary technical and legal preparatory works for the later investment project aiming to supply the Kecskemét district heating system with geothermal energy. After successful completion of the subsequent investment project, the present natural-gas based fuel use of the city’s district heating system will be largely replaced by clean, smoke- and CO<sub>2</sub>-emission-free, locally available and efficiently producible geothermal energy. Moreover, connection of additional consumers to the system will become possible.

During the course of the thirty-month-long project (began in the spring of 2013), the geological and geothermal endowments of the city’s vicinity will be assessed, along with the possibilities of re-injecting the abstracted hot water back underground, as well as the potential alternatives for the system design. The appropriate technical plans and permitting documentation for the investment project will also be prepared, and a business plan will be established, which will provide guidance for financing the investment project.

### Project participants:



## Participants of the IEE Project

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A project co-financed by the “Intelligent Energy – Europe” program of the European Union



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## Kecskemét Geothermal Project - Development of a Geothermal District Heating System

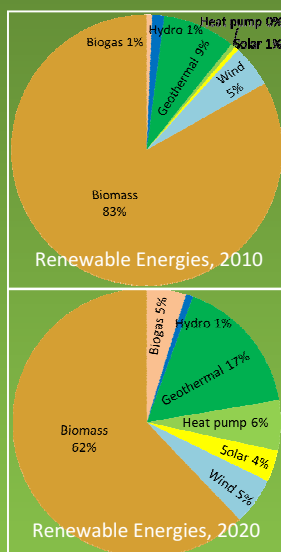


- Environment friendly, clean, renewable energy
- Long term supply from a local energy resource
- Reduction of greenhouse gas emissions
- Increasing supply security
- Mitigation of natural-gas import dependency



The energy supply objectives of the coming years are specified in "Hungary's Renewable Energy Development Action Plan," which was adopted in 2010, and the "National Energy Strategy 2030," approved by the Parliament in 2011. The strengthening of Hungary's energy independence is a fundamental goal, and the way to get there, besides more energy efficiency, is to increase Hungarian renewable energy produced in a decentralized way.

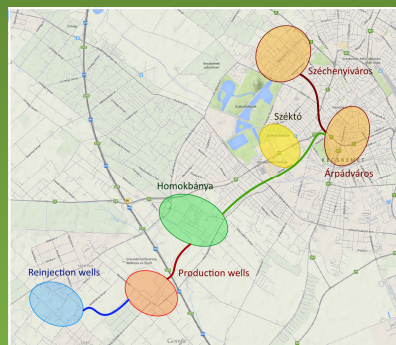
According to the Action Plan and the Energy Strategy, inside of the renewable energy resources category, the proportion of certain energy sources will be reduced, while the increased utilization of geothermal energy enjoys priority, which means primarily, but not exclusively, heat production development. Compared to today, geothermal heat systems shall be increased more than threefold by 2020. According to the adopted objectives, by 2020, within the consumed renewable energy quantity, geothermal energy will have to be present with 14.95 PJ/year for heating and air-conditioning, and 1.42 PJ/year for electricity production.



Source: Hungary's Renewable Energy Development Action Plan 2010-2020

The Environmental Protection Program of the City of Kecskemét, supplemented by the Action Plan and the local Economic Program, have designated as an achievable goal, the transformation of the current natural-gas-based district heating system into a system applying renewable energy, emphasizing the utilization potentials of the geothermal energy resources existing underneath the city. The Kecskemét Municipal Government has prepared the preliminary mapping assessment of the local geothermal resources, consequently, the preliminary geological and other technical, design parameters were available in the course of local energy strategy preparation.

The current natural-gas based district heating service is operated by two interlinked networks in Kecskemét, each of them are supplied by one heat production plant. The Árpádváros system provides service to 3,763 households, while the Szechenyiváros system to 7,471, jointly providing heating to a combined total of 11,234 households.



Although the geothermal system would principally serve the supply of the existing district heating network, it would additionally supply heat to the Homokbánya district, which is also included in the development plans of the municipal government. Connection of additional consumers to the geothermal system would also become possible, primarily for public buildings in the Felsőszéktó and Alsószéktó districts.

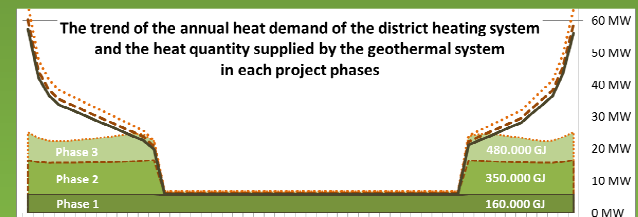
Investment costs for the complete geothermal system development is almost 30 million Euros, while its preparation budget, as co-financed by the IEE, is approximately 380,000 Euros, for which the consortium implementing the project has received a 285,000 Euro subsidy. During the IEE project, the following results will be achieved:

Investment costs for the complete geothermal system development is almost 30 million Euros, while its preparation budget, as co-financed by the IEE, is approximately 380,000 Euros, for which the consortium implementing the project has received a 285,000 Euro subsidy. During the IEE project, the following results will be achieved:

- ◇ Mapping the geothermal energy resources in Kecskemét-area
- ◇ Selecting a suitable technology for re-injecting
- ◇ Evaluating investment options
- ◇ Technical preparation for the planned investment project
- ◇ Obtaining necessary permits for implementation
- ◇ Creating a transparent financing plan

In Hungary, the value of the geothermic gradient (the rate of increase in temperature per unit depth in the Earth) is almost double the global average. In the region of Kecskemét, the temperature increases by as much as 54 °C/1,000 meters of depth. During the course of the investment project now under preparation, wells will be drilled to a depth of 2 kilometers, from which the production of thermal water with a temperature of 100 °C will become possible.

Implementation of the investment project is divided into three phases. In the first phase, a production well will be drilled, followed by the drilling of a well for re-injecting the cooled thermal water back underground – providing valuable information about the water reservoirs situated under the city. In addition, a geothermal heat center will be built and a thermal water pipeline will be developed in the first phase.



In the second phase, the geothermal energy supply can be increased by construction of additional production and re-injection wells. Connection of additional consumers in Homokbánya and Széktó areas will become also possible. In the third phase, with additional well drilling, the system will reach its mature development, supplying almost 85% of the district heating service's annual energy needs.

The investment program will contribute to Kecskemét energy management in the following beneficial ways:

- ◇ The use of clean, smoke-free, renewable energy resources instead of a fuel-based heating system
- ◇ A significant reduction in greenhouse gas emissions
- ◇ Efficient expansion of the city's district heating system, with the connection of new consumers
- ◇ Use of a local energy resource, without the need for transportation of materials from elsewhere
- ◇ Reduction of imports and raw-material dependencies
- ◇ Long-term secure energy supply