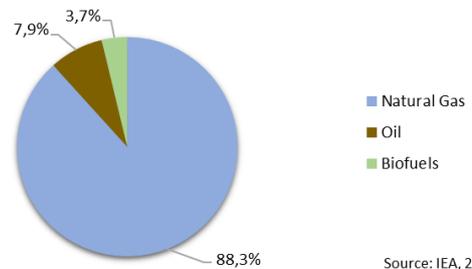


Croatia – Geothermal Energy and District Heating

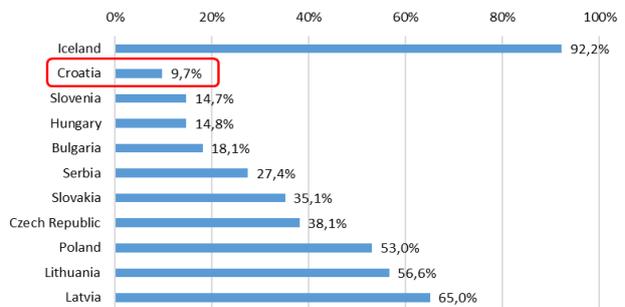
Geothermal energy in Croatia

- There is a large potential for geothermal heat use in Croatia, especially in district heating systems.
- Currently there is no practical utilization of geothermal heat, such as heating houses.
- Several locations where geothermal waters have been found are also suitable for electricity production.
- There are five geothermal fields in Croatia, of which only two are currently in production. Areas suitable for electricity generation are located in the North West part of Croatia.
- Private investors (mainly Italian and Turkish) have been showing a growing interest in Croatian geothermal potential over the last several years.
- An innovative project is ongoing in Draškovec, where a hybrid geothermal power plant is being built.
- The latest project is developed in Bošnjaci by a private investor, with the main purpose of greenhouse production (heating) on 2ha with plans for further development.
- **It would be of vital importance to support the first steps and development of geothermal heat projects with an incentivizing scheme.**

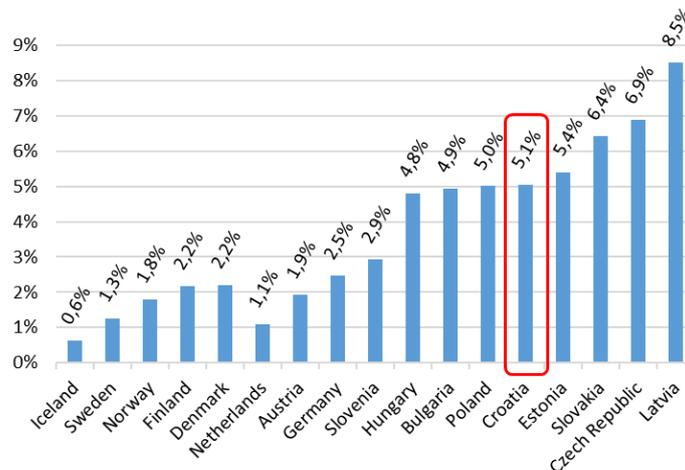
Share of Energy Sources Used to Generate Heat in Croatia in 2014



Share of Citizens Served by District Heating in 2013



The Share of Net Annual Salaries* Spent on District Heating for a 100m² Household in Europe



* Two-earner married couple with two children, both in 100% job.

Sources: NEA, 2015. Euroheat&Power, 2015. Eurostat, 2016. ODYSSE-MURE, 2016. EIHP, 2014. European Commission, 2016.

Energy dependency

- According to Eurostat, in 2014:
 - 43,8% of all energy in Croatia was imported.
 - the share of renewable energy was only 27,9% of the gross final energy consumption.
- According to IEA, in 2014, 46,3% of natural gas supply was imported or 69,2% of Croatia's natural gas final consumption.

History of relations between Iceland and Croatia in the energy field

- Efla consulting engineers have been involved in geothermal projects in Croatia, e.g. in Križevci.

Current project in Croatia (from last period of the EEA grants)

- Energy Institute Hrvoje Požar (EIHP) and National Energy Authority (Orkustofnun) signed a partner agreement.
- The project is a study and field trip to Iceland and Croatia with the main objective to increase awareness of geothermal options and opportunities in Croatia, by gathering stakeholders for a dialogue and increase the willingness of investors to fund a geothermal pilot project.
- Within this project, not only the potential for geothermal development is analyzed, but also the potential for energy efficiency measures in the form of rehabilitation of the existing district heating systems (pipeline, heating substations, etc.)
- The Croatian delegation came to Iceland on the Iceland Geothermal Conference in April 2016.
- The Icelandic delegation travelled to Croatia in November 2016 and visited many potential geothermal locations.
- Two locations were identified as the most promising for geothermal district heating – Karlovac and Vukovar, In Vukovar there are a number of wells around the city center indicating a geothermal potential. The district heating network in Vukovar is largely refurbished, and is properly managed. In Karlovac, there are two exploration wells located approximately 10 km away from the city center. The research on these wells has indicated a temperature of 140°C for the geothermal water. The district heating network in Karlovac needs rehabilitation.
- The project will end with a report and conference next spring.

GEOTHERMAL ENERGY – Offers Major Opportunities

- Harnessing natural resources
- Economic opportunities and savings
- Improve energy security
- Reducing greenhouse gas emissions
- Reducing dependence on fossil fuels for energy use
- Improving industrial and economic activity
- Growing the low-carbon and geothermal technology industry, and create employment opportunities
- Improving quality of life

