

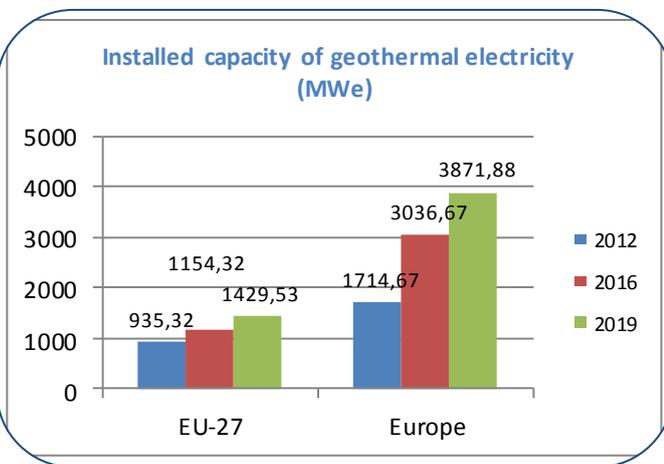
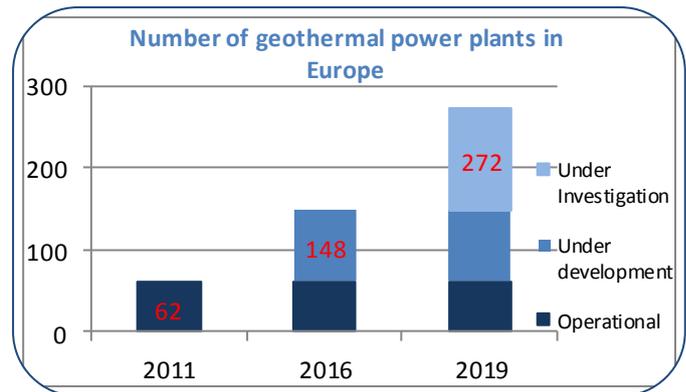
Develop Geothermal Electricity in Europe to have a renewable energy mix

The GEOELEC project has the objective of developing geothermal electricity, to deploy this resource as a central component of the European renewable energy mix.

In order to achieve this, GEOELEC will work to remove non-technical barriers to the deployment of geothermal electricity, giving geothermal the high profile it has in other parts of the world. The project will specifically highlight the potential contribution of geothermal electricity in all EU-27 countries.

Geothermal Power Plants in Europe

At present, geothermal electricity production is witnessing a resurgence in popularity in Europe. The geothermal industry experienced significant growth in 2010 and 2011, and the total installed capacity in Europe now amounts to around **1.7 GWe**, producing some **11.38 terawatt-hours (TWh)** of electric power every year. There are **62** geothermal power plants in Europe, with **48** of these located in EU Member States, namely in Italy where there are **35 plants**; meaning an EU installed capacity of ca. **0.9 GWe**.



According to the **86** planned projects (a geothermal plant typically needs 5-6 years to become operational), additional capacity will grow from **1.7 gigawatts (GWe)** installed in 2011 to **3 GWe** in 2016, with this major increase linked to the rapid growth of the Turkish and Icelandic markets. In addition, **98 projects** are currently being explored, representing an additional capacity of around 1 GWe.

TARGETS WITHIN GEOELEC PROJECT DURATION

4 MORE EU COUNTRIES WITH GEOTHERMAL POWER PLANT PROJECTS

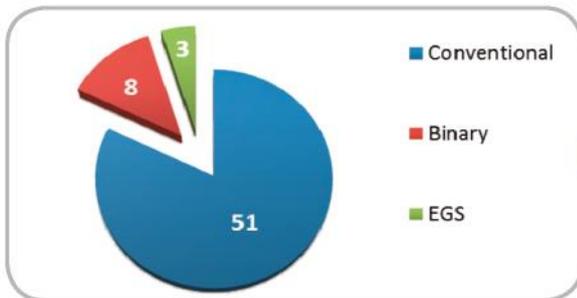
CORRESPONDS TO **100 MWE** NEW CAPACITY INSTALLED

TYPES of GEOTHERMAL POWER PLANTS IN EUROPE: Looking to the future...

There are 3 types of geothermal power plants operating in Europe: Conventional (hydrothermal), Binary and EGS. Currently, there are more conventional plants in operation, but with development on going of the other technologies, as well as the geographical flexibility of EGS plants, there will be a increase in both of these types in the future.

As is demonstrated below, EGS plants will grow strongly in number, from only 3 today, to possibly 49 in a decades time. Over the last few months we have seen applications coming from very different locations, in addition to 'traditional' EGS countries (Germany, France).

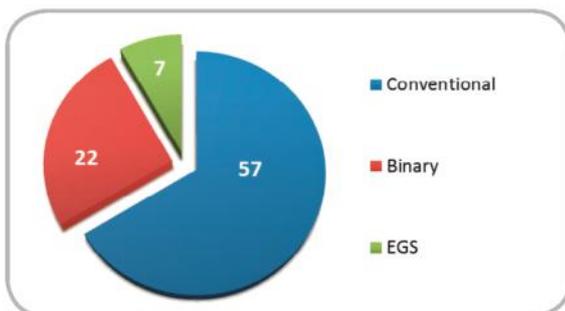
Existing Geothermal Plant Projects in Europe



NOW

Conventional = 82%
Binary = 13%
EGS = 5%

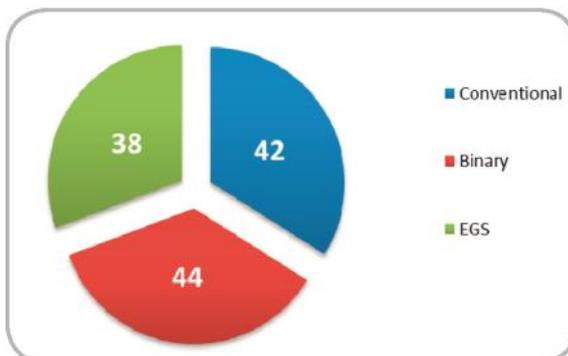
Geothermal Power Plant Projects in Europe



SHORT-TERM

Conventional = 66%
Binary = 26%
EGS = 8%

Ideas for Geothermal Power Plants in Europe



LONG-TERM

Conventional = 34%
Binary = 35%
EGS = 31%