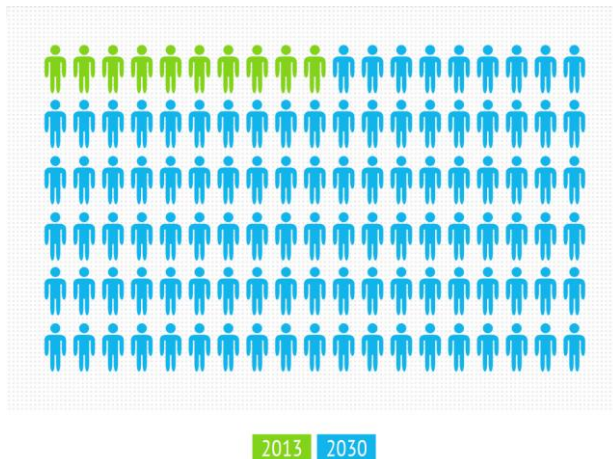


# Employment and Training

In 2013, there were 2500-3000 jobs directly related to geothermal electricity in the EU-28. Geothermal energy jobs can be broken down into different types, from engineers, drillers and workers in equipment factories to project managers. Geothermal power also generates indirect jobs, for example with suppliers of raw materials and induced jobs. The estimated total number of geothermal power jobs in 2013 is 10.000 jobs.

Job Creation



Based on the projects under development and under investigation as well as new installed capacity, job creation is expected by 2020 in Italy, Hungary, Greece, Portugal, France, Germany, Spain, UK, Iceland, Turkey, Belgium, Slovakia and Switzerland. By 2030, more than 100 000 people should be employed in the sector.

Over the last few years little new installed capacity has caused a concentration of jobs mainly in O&M, traditionally requiring only a few workers. The development of a significant number of new projects will trigger a real boom in labour-intensive activities such as exploration, drilling, construction and manufacturing.

Job opportunities are provided for people with different types and levels of skills. Scientists and engineers are needed to explore new geothermal fields, and skilled technicians are required for construction and operation of the new geothermal power plants.

Job Categories

Some of the main areas in which the geothermal power industry which can have an impact regarding economic activity and job creation are:

- Suppliers of mechanical equipment and raw material;
- Consultants and contractors searching for geothermal resources;
- Drilling and well service firms;
- Environmental services managing permits and sample testing;
- Geothermal developers, regarding project development, construction, security etc.;
- Power plant operators and maintenance staff;
- Scientists for ongoing research and development.



## Local jobs



As geothermal technologies are site specific (the geology is different all over Europe and knowledge of the local conditions is essential) and capital-intensive, the needs regarding exploration, resource development, construction and O&M are covered by the local workforce. Manufacturing jobs may be created internationally, depending on where the industries manufacturing the particular equipment are located.

It is estimated that 85% of the geothermal value chain in Europe is European. In the future, this is unlikely to change as most of the geothermal-related jobs cannot be exported.

## Training & Education

Employment in the geothermal power industry is expected to increase, while skill gaps and labour shortages may occur.

Enhancement of the educational and training process is the factor that can have the largest effect on the long-term needs regarding certain job specialities and skills. Ensuring the existence of necessary skills in the sector requires action at all levels of education and training, meaning technical and scientific education, training and continuous learning. In order to achieve the proper education reforms, cooperation between all organisations involved is required.



Cooperation between education and training institutes and companies is necessary to create a network allowing for a faster and more efficient satisfaction of the needs generated in the labour market, while students are provided with the appropriate skills and knowledge.

## Employment action plan

The potential of the geothermal power industry can be achieved only through the attraction, retention and renewal of the workforce. Companies and organisations need to adopt a range of measures which will allow them to have access to the highly skilled workforce they need.

- Establish the framework for ensuring geothermal power development with simplification of the regulations and proper financial incentives
- Create Networks for Geothermal Energy Education and Training involving industrial platforms, universities and research centres with competences in geothermal energy-related disciplines – geosciences, material sciences, mechanical engineering, computational sciences, economic and legal sciences.
- Develop courses on geothermal with existing university courses in fields such as engineering, bio-sciences, earth sciences, business administration and finance and launch of new courses combining Geoscience and Mechanical Engineering
- Absorb workforce of declining industries
- Promote mobility of workers in Europe
- Launch international cooperation especially on EGS

