Working package 6: Transnational Mobility and Training

An Overview

Sigurdur Björnsson, RANNIS
WP6 Objectives

- Transnational collaboration in research training and mobility
- Gap analysis
- Increased programme collaboration
- Proposals for joint activities
  - To be implemented in WP 7
# WP6 Deliverables

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Description</th>
<th>Code</th>
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</thead>
</table>
| Mapping of existing mobility and training programmes | • A report delivered 4Q 2013  
• On-line mapping | D 6.1 |
| Identification of training needs and knowledge gaps, and collaboration in human resources, mobility and training | • Combined – ref. [Amendments](#)  
• A report delivered 1Q 2015 | D 6.2 |
| Expert exchange scheme | • A report delivered 3Q 2016 | D 6.3 |
WP6 Deliverables

• Mapping of existing mobility and training programmes
  • A report delivered 4Q 2013
  • On-line mapping

• Identification of training needs and knowledge gaps, and
• Collaboration in human resources, mobility and training
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On-line mapping - D 6.1
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  - A report delivered 3Q 2016
A survey of the prospective human resources that could soon enter the geothermal workforce and the educational opportunities available for this group.

Convenience sampling: The list of higher education institution from the inventory report in task 6.1.

- All in all 71 HEIs from 14 countries.
- The list is not exhaustive and results only intended as an indicator of current status and future prospects, as well as a valuable input into further discussion and action planning.
- The link to the survey was sent out by the ERA-NET partners within their own countries. Those countries that are not a part of the net received a link from the working group.
Future Student Prospects

- My institution foresees an increase in the number of students in geothermal courses by 2020.
- My institution foresees a decrease in the number of students in geothermal courses by 2020.
- My institution foresees neither an increase nor a decrease in the number of students in geothermal courses by 2020.
Future Prospects

- Bachelor's or eqv. (ISCED6): 87
- Master's or eqv. (ISCED7): 265
- Doctoral or eqv. (ISCED8): 340

- Current number of students (2013-2014)
- Estimated number of students 2020
What is the trend?

<table>
<thead>
<tr>
<th>Academic Years</th>
<th>Bachelor or eqv. (ISCED6)</th>
<th>Master or eqv. (ISCED7)</th>
<th>Doctor or eqv. (ISCED 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-2014</td>
<td>177</td>
<td>358</td>
<td>24</td>
</tr>
<tr>
<td>2012-2013</td>
<td>173</td>
<td>313</td>
<td>65</td>
</tr>
<tr>
<td>2011-2012</td>
<td>170</td>
<td>185</td>
<td>34</td>
</tr>
<tr>
<td>2010-2011</td>
<td>148</td>
<td>139</td>
<td>61</td>
</tr>
<tr>
<td>2009-2010</td>
<td>151</td>
<td>132</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 3 – The total number of students (headcount) registered in geothermal courses by educational levels during 2009-2014 academic years. n=16.
Remarks

• No one anticipates a decrease in number of students, rather an increase although complaints about lack of EU policy.
• In the last five years there is a considerable increase in number of students in geothermal courses.
• On mobility they make use of Erasmus+ and other EU and national programmes, but they would welcome more specific programmes and/or recurrent summer schools.
Conclusions

• Student numbers on all levels (Bachelor, Master and Doctor) have been increasing for the last five academic years (2009 – 2014)
• Institutions are expecting a further increase in student numbers in the foreseeable future (next five years)
• There is a lack of holistic programmes dedicated to geothermal energy
• There is a perceived need for more opportunities on mobility for students and staff in the field of geothermal studies.
Human Resources in the Geothermal Sector – D 6.2

• Examine the current situation of human resources within the geothermal sector, as well as future prospects.
• An online survey active from June 25th to September 9th.
• The sampling of participants was in fact both convenience and purposive sampling, where appropriate participants are handpicked for the sample.
  • This can be useful when researchers need to reach a targeted sample in a short amount of time and where random sampling proves difficult.
  • The Geothermal ERA-net partners themselves identified “major players” within the geothermal sector in their country. Those parties received an invitation to partake in the survey.
• When viewing the results, it must, however, be noted that this method also introduces possible biases as participants are handpicked using a subjective estimation of various individuals (not a random sample).
Locations of institutions/organisations/business enterprises

- France: 46%
- Germany: 26%
- Italy: 17%
- Iceland: 7%
- Slovakia: 2%
- Hungary: 0%
- Netherlands: 0%
- Switzerland: 0%
- Turkey: 0%
- Other: 2%
Sector of institution/organisation/business enterprise

- Business Enterprise Sector: 61%
- Government Sector: 17%
- Higher Education Sector: 11%
- Private Non Profit Sector: 9%
- Other: 2%
Types of geothermal activities of institution/organisation/business enterprise

- Research and development: 17%
- District heating: 15%
- Drilling activities: 10%
- Electrical energy production: 10%
- Consulting: 9%
- Education: 6%
- Environmental assessments: 5%
- Operation and management of geothermal fields: 5%
- Operation and maintenance of power facilities: 4%
- Construction of geothermal fluid collection, transmission and distribution systems: 4%
- Equipment supply: 4%
- Construction/manufacturing of power plants: 4%
- Other: 3%
- Other non-electrical application: 3%
My institution/organisation/business enterprise is lacking personnel with specialised skills and knowledge in geothermal activities
In general, the geothermal sector is lacking personnel with specialised skills and knowledge in geothermal activities.
Factors deemed of high importance as contributors to a lack of human resources within the geothermal sector

- Unclear vision on geothermal issues at the European level: 67%
- Lack of commitment to the geothermal sector by national government: 50%
- Lack of collaboration and coordination between stakeholders (e.g. industry, academia and policy makers): 47%
- Lack of continuous education within the sector: 33%
- Too few geothermal training opportunities: 33%
- Unappealing operational environments for companies within the geothermal sector: 28%
- Lack of appropriate trainers: 28%
- Lack of national collaboration and coordination between educational and training partners: 26%
- Lack of training opportunities for individuals within similar sectors that want to relocate to the geothermal sector: 22%
- Too few geothermal courses at the tertiary level: 21%
- Unappealing working conditions of employees within the geothermal sector: 17%
- Unappealing image of the geothermal sector: 17%
- Lack of staff mobility opportunities: 17%
- Lack of international collaboration and coordination between educational and training partners: 17%
- Little variety of geothermal courses at the tertiary level: 17%
- Lack of student mobility opportunities: 11%
- Little variety when it comes to geothermal training opportunities: 11%

Educational factors in blue, policy/sectorial factors in red and industry factors in purple.
Factors deemed of medium and high importance as contributors to a lack of human resources within the geothermal sector

- Too few geothermal training opportunities: 94%
- Lack of commitment to the geothermal sector by national government: 89%
- Lack of appropriate trainers: 89%
- Too few geothermal courses at the tertiary level: 89%
- Unclear vision on geothermal issues at European level: 84%
- Lack of continuous education within the sector: 83%
- Unappealing operational environments for companies within the geothermal sector: 78%
- Lack of training opportunities for individuals within similar sectors that want to relocate to the geothermal sector: 78%
- Lack of international collaboration and coordination between educational and training partners: 73%
- Lack of collaboration and coordination between stakeholders (e.g., Industry, academia and policy makers): 73%
- Too few geothermal training opportunities: 68%
- Lack of national collaboration and coordination between educational and training partners: 68%
- Unappealing working conditions of employees within the geothermal sector: 67%
- Little variety of geothermal courses at the tertiary level: 67%
- Unappealing image of the geothermal sector: 61%
- Lack of staff mobility opportunities: 61%
- Too few geothermal courses at the tertiary level: 61%
- Little variety when it comes to geothermal training programmes: 61%
- Lack of student mobility opportunities: 55%

Educational factors in blue (medium/high), policy/sectorial factors in red (medium/high) and industry factors in purple (medium/high).
Possible Actions for Meeting the Need for Human Resources

Usefulness of Transnational Training Programmes

- Not useful: 6%
- Neither nor: 24%
- Useful: 35%
- Very useful: 35%

Usefulness of mutual opening of National Programmes

- Not useful: 6%
- Neither nor: 18%
- Useful: 47%
- Very useful: 29%
Possible Actions for Meeting the Need for Human Resources

Bar chart showing the usefulness of establishing common programmes and dedicated programmes at the European Community level. The chart indicates that the majority consider these actions very useful.
Possible Actions for Meeting the Need for Human Resources

- Transnational training programme collaboration: 24% useful, 35% neither nor, 35% very useful, n=17
- Mutual opening of national programmes: 18% useful, 29% neither nor, 59% very useful, n=17
- Establishment of common programmes: 12% useful, 24% neither nor, 60% very useful, n=17
- Dedicated programmes at the European Community level: 12% useful, 35% neither nor, 47% very useful, n=17
Current supply of HR and meeting the long term goals of geothermal energy use in the NREAPs (National Renewable Energy Action Plan)

The current supply of human resources within the geothermal sector in my country will be able to meet the long term ambitions for the use of geothermal energy, as stipulated in my country’s National Renewable Energy Action Plan. n=32.
Future demands for Human Resources

Demand will be higher in 5 years from now

Demand will be higher in 10 years from now
Future demands for Human Resources

Demand will be higher in 20 years from now
Demand for personnel with specialised skills and knowledge in geothermal activities...

- Will be higher in 5 years from now.
  - Strongly disagree: 3%
  - Disagree: 6%
  - Neither nor: 0%
  - Agree: 59%
  - Strongly agree: 31%
  - Total: 32

- Will be higher in 10 years from now.
  - Strongly disagree: 0%
  - Disagree: 6%
  - Neither nor: 16%
  - Agree: 58%
  - Strongly agree: 19%
  - Total: 31

- Will be higher in 20 years from now.
  - Strongly disagree: 0%
  - Disagree: 0%
  - Neither nor: 0%
  - Agree: 23%
  - Strongly agree: 39%
  - Total: 31
Conclusions?

• There is a demand for more personnel with specialised skills and knowledge in geothermal activities in the nearest future, but there is also too few training opportunities.

• This is in line with a similar survey conducted by the GeoElec project during 2012 and first half 2013.

• There is clearly a lack of vision and leadership, both on national as well as European level.

• It is amazing to see that almost 20% do not know about their own national policy on geothermal – and this is a survey among those working in the sector.

• The response rate was sufficient but some of the partner countries did not reply at all.
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Summary of actions – D 6.3

• Besides partner meetings where experts from the partnering countries were brought together, joint activities and workshops were organised with leading experts from Europe. Seven topics were selected to run as joint activities and three workshops conducted.

• There are 12 European countries participating in the project and 25 experts from partner organizations involved in the project, thereof 12 leading experts. These experts, among others, participated in various activities and meetings during the lifespan of the network. There were a total of 20 activities that took place from May 2012 to May 2016, thereof 13 partner meetings and seven JA workshops and meetings.
Policy and Sectorial factors

Unclear vision on geothermal issues at the European level
- High: 59%
- Medium: 23%
- Low: 14%
- Factor does not contribute at all: 5%

Lack of commitment to the geothermal sector by national government
- High: 55%
- Medium: 36%
- Low: 5%
- Factor does not contribute at all: 5%

Lack of staff mobility opportunities
- High: 41%
- Medium: 36%
- Low: 14%
- Factor does not contribute at all: 9%

Source: Geothermal ERA-NET WP 6.2 Identification of Training Needs and Knowledge Gaps
Conclusions – D 6.3

• To run a traditional expert scheme was deemed to be unreasonable, but partners were encouraged to promote current exchange schemes, also by using the information on existing mobility and training programmes that were identified in previous reports of this work package.

• Besides partner meetings where experts form the partnering countries were brought together, joint activities and workshops were organised with leading experts from Europe. Seven topics were selected to run as joint activities and three workshops conducted.

• In fact, the network has given experts in the field of geothermal to meet and to exchange views. Even though a mobility scheme was not established this exchange of views between experts have led to a much more visibility of the geothermal sector in Europe.
... and that's it!