Global Outlook on Forest Education
Joint IUFRO-IFSA Task Force on Forest Education
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Introduction
Forestry and forests are changing under several drivers such as globalization, climate change, political instability, aging societies, new technology, and increasing demand for greener economies. All these have challenged forest education in many ways (Arevalo et al. 2010, Sample et al. 1999, 2015, Schuck 2009).

The Global Outlook on Forest Education (GOFE) is a research project of the Joint IUFRO-IFSA Task Force on Forest Education. IUFRO and IFSA have a long history of cooperation on educational matters. This is a first report presenting the results of global study made from 2016-2017 using a competency analysis method that is novel to the forest education context.

Objectives
To produce a scientifically-based policy report on global forest education concerning mainly university level education.

By means of:
• Identifying and studying the competencies required in current working environments
• Conducting a comprehensive gap analysis between what was included in the curriculum and competencies required in the workplace

Methods
Competencies were analysed using the Behavioural Event Interview (BEI) methodology, developed originally by McClelland (1973). These interviews of recent graduates aimed to reveal threshold and differentiating competencies relevant to their current working life. The interviews focused on three particular successes and three failures in workers’ professional lives. Second, expert analyses were used to execute a gap analysis where existing study programs were contrasted with the competence results from the conducted interviews. The research data consisted of 231 graduate interviews, executed in nine different countries on five continents.

Results
Most of the 231 respondents were male (61%); however, the percentage of males varied by country, ranging from 40%-82% of the sample. The United States and China were the only countries where the majority of respondents were female. The earliest year of the interviewees’ graduation was 1990 and the latest 2014, with the average age of respondents being 29 years.

Preliminary results from BEI studies showed that the most frequently observed threshold and differentiating competencies were related to generic skills, such as leadership and management, human interactions, and communication. The subject-specific competences were not frequently observed in BEIs and the variation was also high among countries. The fact that forest-specific skills were not among the most frequently mentioned threshold or differentiating skills suggests that graduates have been satisfactorily prepared in these skills for success in working life.

Conclusions
The study was able to identify and explore the competences which have been crucial for recent forest science graduates. There seems to be a strong positive correlation between the results of the gap analysis and those of the BEI. The lacking competencies identified in the BEI seemed to appear also as underrepresented in the gap analyses of current curricula. The most widely observed need was to increase the role of generic competencies such as leadership and management skills, social relations, and communication. The need for subject-specific competencies was not so urgent; however, the most widely observed need was to increase the role of entrepreneurship, economics, and management.

Results show that gaps in generic competencies were more often related to failures in working life after graduation than subject-specific competences. What this shows is that while graduates present sufficient knowledge of specific competences, they seem to lack the generic competencies required to fulfill their duties and thus feel as though they are not fit to do their jobs. Finally, good practices and models are needed on how to integrate generic competences into forest education.

Frequency of Generic Competences in Success and Failure cases

<table>
<thead>
<tr>
<th>Code</th>
<th>Competence category</th>
<th>Success*</th>
<th>Failure*</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1</td>
<td>Skills related to human relations</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5.2.2</td>
<td>Leadership and management</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Communication skills</td>
<td>3</td>
<td>2</td>
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<tr>
<td>5.2.4</td>
<td>Research skills</td>
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<td>1</td>
</tr>
<tr>
<td>5.2.5</td>
<td>General academic skills</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*Numbers are produced as a result of aggregation across the summary tables from the country

References
Arevalo, J., Rodríguez, S., Gimeno, F., & Abrahamson, E. 2011. Market-relevant competencies for professional forestry in European higher education
International Forestry Review, 13(2), 360-368