Report

Young persons' view on the future in the forest sector
Results from Workshop during Barents Forest Forum 2019

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Table of contents

1. Introduction

Forests are an important source of ecosystem services, and a provider for fundamental support for humans' life on earth, and the importance of forests are currently discussed in relation to transitions to biobased economy around the world. Apart from bioeconomy transition, societies also experience urbanization and digitalization, transitions also affecting the forest sector.

Young people in transition between adolescence and adulthood are the future mangers and facilitators of the future demands in society. Previous studies show that preferences differ from those of adults. Studies show that young person's express themselves differently in relation to forests. Young people typically see the forest as a place for recreation, however somewhat different depending on urban or rural living conditions. Few young person's envision themselves working within forests.[1]

In the Barents region[2] forest sector and universities observe a declining number of young person's educating in forest-related subjects, although there is a good job market for forest educated persons. So why don't young person's choose forestry for a career? During the Barents Forest Forum 2019, a workshop was arranged inviting young persons to share their view on the forest sector, to attempt to unveil challenges of the forest sector connected to attracting young persons. The workshop attracted almost 70 persons, both young and older, including 20 young persons specially invited from Finland, Norway, Russia and Sweden. During the workshop, the subjects of education, equal opportunities and labour supply was covered in discussions.

The purpose of the report is describing the results of the workshop on young person's perceptions of the future forest sector, particularly on education, equal opportunities, and labor supply. The report reflects the participators view in the workshop and cannot be give a representative view of the young generations.

2. Workshop method

The workshop was organized as a part of the conference "Barents Forest forum" 2019, inviting a wide audience of researchers, local and regional policymakers, as well as administrative bodies related to natural resource management, particularly forest. Somewhat 132 persons followed the conference physically in Umeå, and another somewhat 503 persons

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[1] Previous studies referred to are:
- Bayne KM, Höck BK, Spence HR, Crawford KA, Payn TW, Barnard TD. 2015. New Zealand school children's perceptions of local forests and the Montréal Process Criteria and Indicators: comparing local and international value systems. N Z J For Sci. 45: 20. Available from: https://nzjforestryscience.springeropen.com/articles/10.1186/s40490-015-0051-x.
- Flanagan C. 2009. Young people's civic engagement and political development. In: A. Furlong, editor. Youth and adulthood. Routledge; p. 293–301. Available from: https://www.routledge.com/Handbook-of-Youthand-Young-Adulthood-New-Perspectives-and-Agendas/Furlong/p/book/9780415445405
- Kaplan, R, Kaplan, S 1989. The experience of nature: A psychological perspective. Cambridge: Cambridge University Press.
- King K, Church A. 2013. 'We don't enjoy nature like that': youth identity and lifestyle in the countryside. J Rur Stud. 31:67–76. Available from: http://www.sciencedirect.com/science/article/pii/S0743016713000132.
- . Nummelin, T. Widmark, C. Riala, M. Sténs, A. Nordström, E-M, Nordin, A. (2017): Forest future s by Swedish students – developing a mind mapping method for data collection, Scandinavian Journal of Forest Research, DOI: 10.1080/02827581.2017.1287303.

[2] northern part of Finland, Norway, Russia and Sweden

had viewed the conference a month after it's release. One of the themes of the conference was related to understanding young persons' perspectives of the future of forest sector. For this reason, a workshop was organized in relation to the conference.

The pre-conference workshop attracted close to 70 persons, both young university students, and employees in the forest sector, and older persons engaged in forest sector. Out of the 70 participants, 20 young persons were specially invited representing the four Barents countries in the age between 18-35. The invited persons were either master or PhD students at university, or in early career, with forest as a common denominator. A scholarship for traveling costs was made available, and the participants was selected based upon the scholarship application, making sure that both sexes was represented and that there was representation from all countries.

Simultaneous translation to/from Russian was offered during the full workshop.

In the workshop, a group of employees was also participating. There were persons are engaged in the areas and introduced each subject discussed related to the three themes of the workshop.

The workshop was carried out in collaboration with Daresay, a consultant company specializing in e.g., workshop engagement.

2.1 Workshop method

The workshop consisted of three themes: education, equal opportunity, and labor supply. Each of the themes was introduced by a speaker. The young participants were divided into five groups with mixed backgrounds and mixed nationalities. After each introduction speech, they were sent to group discussions. The group of employees was sent to a separate room for discussions, not interacting with the youth.

In the group discussions, the young interacted with each other through discussions, writing on sticky notes, and placing it on a board. Each group had its own board to work with. When voting, sticky "dots" was used.

Each theme discussion followed the same template:

Challenges and solutions:

- a. What is holding us back? Identify challenges, annoyances, or concerns with the topic.
- b. Vote on "what is holding us back" – which of the challenges in a) do each person consider pertinent to solve?
- c. Arrange and select problem. The challenges identified are clustered according to themes. One problem is selected to work further on by the group (see Appendix 1).
- d. Turn the selected problem into a challenge. The challenge is reformulated into "how might we" (HMW) formulation creating a solvable and standardized way to discuss the challenge further.
- e. Create solution. What are the solutions to the challenge (HMW)
- f. Vote on solutions
- g. Choose the top solution (see appendix 2).
- h. Fill in the solutions template, in which the HMW is placed together with solutions and actions connected to the solutions.
- i. Each group briefly presented their solutions to the full group after each theme.

Toward the end of the workshop, each participant was given the opportunity to review the group's work and reflect upon, again by sticky note, the way forward (see appendix 3). Further, lessons from the workshop were further discussed in a panel session during the following conference, reflecting upon some of the major issues discussed during the workshop. This report summarizes the results from the workshop, not reflecting upon the discussions during the conference.

3. Results

To present the results from the workshop, sticky notes for each group is clustered into groups related to the topic. Arguments with votes are given extra emphasis in the result presentation. The individual answers are found in appendix 1.

3.1 Challenges of forest-related education

The five groups started to discuss the subject of education focusing on the challenges for the forest sector, as well as discussing potential solutions to the problems identified. The results of the group discussions can be divided into four categories:

- knowledge of the forest;
- young person's perceptions and prerequisites;
- forest education; and
- forest sector challenges.

The groups discussed that the knowledge exchange on forest-related topics is low in the society. One group note stated that

We are not good at communicating with society what "forestry" is
(group 3).

Other participants stated that there is a weak knowledge of the benefits of forests for climate mitigation or benefits for bioeconomy. The communication in society, in different levels of the school system as well as with public needs to be strengthened to increase the interest in forests in general, and for forestry sector in particular. On group pointed out that the forest sector is lacking a holistic view of how forests may be used, not only e.g., money or biodiversity, and further knowledge on the forest role is missing.

Especially for young persons, the connection to forests is weak, which might relate to urbanizations and that more and more persons grow up and live in cities.

People want to live in the city – still the natural resources are located in
the countryside (group 2).

One group further discussed if there needs to be a change in people's attitudes toward forest to make young generation interested in forests (2), supported by another group stating that young persons need to

[choose] *pathway […] are you saving the forests or destroying them?*
(group 1).

Connected to young person's preferences, the all groups indicate that there are too few students in educating in forest-related subjects, which in turn might affect education. One group asked themselves what we educate for, and what are the goals? Young persons need, to

gain knowledge and possibly connection to forests, get a solid background in forest-related issues during the full educational cycle, guided by knowledgeable teachers. One group pointed out that also teachers need guidance in forest-related subjects, to be able to connect to forests in their teachings. Connected are also the need for student counselling to help guide young persons to understand the potential of the forest sector.

The groups also discussed the university education in forest related subjects. Several groups pointed at the financial system of the universities, perhaps not promoting the best teachers. Many teachers also seem to be challenged by the requirement of finding external funding which compete with the development of teaching material. Motivated teachers, both academic and non-academic are asked for by one group, to improve teaching. However, the quality of teaching comes back to the fact that fewer students apply for forest-based university training, most likely affecting the finance as well as the quality. Connected to quality is further the use of pedagogic techniques, and fieldwork. One group emphasizes that a challenge for education institutions is the use of

Old methods of education; methodologies, programs, etc. (group 4).

Lack of quality prepared and educated teachers and coaches at universities […] (group 2).

The geographical placement of education, or the lack of several education sites was also pointed out as a challenge.

Several of the groups further indicated that a connection between education and the forest sectors should be stronger, offering the possibility for internships and field visits during education, to encourage the student to seek forest-related positions after graduation. One group concluded that the challenge is to

reach the "concrete" generation" […] and successfully compete with other sectors (group 5).

The last common theme that was discussed by the groups relate to challenges for the forest sector. All groups identified that one major challenge for the forest sector is to wash of the conception of being "old", or "old-fashioned" and that strong traditions or conservative mentality is hindering development, indicating that young persons tend to not choose the forest sector in their career choice.

Forestry not that "media-sexy" education route (group 1).

The challenges for the forest sector are thus to, together with reducing gender inequalities, increase the status of forest-related work, although the competition with other sectors is high, to increase young persons' positive perception of the sector in order to attract young persons to forest-related education. There is also a misconception that forest work is a physical line of work, not including science and the need of highly educated specialists.

Stereotype that this sector [is for] losers and people who work by hands (not for scientists and other specialists) (group 2).

3.2 Challenges for equal opportunities in forest sector

Next theme discussed by the groups is the challenges of equal opportunities and working environment within the forest sector. The group discussions may be clustered into 2 main categories:

- Traditions, norms, and stereotypes
- Lack of role-models

A large share of the challenges identified by the 5 groups relates to a strong tradition within the forest sector, a tradition that is promoting men for forest-related work, that forest-related work is physically tough, and the groups identified this tradition to be strong both within the forest sector, as well as in society.

Old way of thinking (group 1).

Tradition of sector and society (group 3).

Thoughts of community that is a men's profession (group 4).

Most groups relate to a lack of respect that each person is unique and should be valued accordingly. For instance, women tend to be valued as the weaker sex, not being able to work within the forest sector, as it is conceived to be physically demanding. Further, women tend to be advised to choose other professions already as young, perhaps based on a conception that female are interested in environment and communication, while male are interested in mathematics and technology. Additionally, teaching tend to describe forestry in a masculine way strengthening the misconception of forestry being only for men.

[…] "work in the forest sphere is for man, if you want to try something go to the plant house" (group 2).

One group pointed out a challenge in job segregation, connected to men and woman tending to end up in different branches of the forest sector, making it difficult to change, supporting stereotypes of different branches devoted to either sex. Additionally, cronyism was also mentioned as a challenge, slowing down the process of equal opportunities, as men tend to hire men, and women hire women, and hiring persons that tend to look like ourselves. This might be connected to a fear of change, or uncertainty, again connecting back to traditions.

Some groups identify a challenge connected a culture of sexual harassment being common within the sector, and a culture of treating female as less valuable, and less knowledgeable. One group also pointed out that there is a "silent" culture, that challenges related to sexual harassment and power structures are not discussed openly. Further, some groups mention challenges for women to be employed in the sector as women give birth to children, and that there is an unwillingness employing women for that reason.

Employers are often unwilling to employ young women because they are expected to get children and take a maternity leave (group 1).

"Tystnadskultur" [silent culture] (group 5).

Not only equal opportunities for male/female are mentioned among the challenges pointed out by the groups. Also, age discrimination is mentioned as a challenge, where younger persons have difficulty getting a job in the sector. Experienced applicants are preferred compared to young, freshly graduated persons.

You are too young to do something in this sphere (group 2)

Additionally, immigrants and refugees have difficulty finding work within the sector, and the group is wondering if that has to do with equal opportunities.

The other category discussed by most groups relates to the lack of role models within the forest sector. For leading positions male candidates are more often selected, thus contributing to a lack of female role models. Further, women tend to hit the glass ceiling in trying to make a career, an invisible structural barrier hindering women to advance in an organisation, contributing to both uneven gender distribution within the sector, as well as fewer role models. One group further adds that in teaching there is mostly male teachers, entailing that already at educational levels, there is a lack of role models.

glass ceiling (group 1)

Among the challenges identified by the groups, there is a section of challenges related to societal challenges. For example, several groups point toward societal norms and expectations that forestry is a sector mainly for male.

Traditional mentality in society in general (group 4)

Overall, the benefits of providing equal opportunities for all are not understood, and there seem to be a "correct" way of dealing with equality in society. This is holding back the development in general in society.

The benefits are not described or understood (we still count numbers)
(group 3).

One group put forward the fatigue of fighting for equal opportunities, and that perhaps many have given up.

Mother! Pregnant! Breastfeeding! Top teacher! Top researcher?! –
when do I get my superhero dress??? (group 5).

3.3 Labour supply

The last theme that was discussed by the groups was labour supply. Within this theme, 4 categories of challenges were put forward:

- Development of the forest sector
- Rural vs urban
- Working conditions

Most groups connected to the challenges of the future forest sector and the lack of persons who are interested in working within the sector. The forest industry is considered to have a bad reputation, being very traditional and not future looking. Additionally, competition with other sectors for qualified persons is strong affecting the interest for the forest sector negatively. Yet another aspect affecting the reputation negatively is the norm and stereotype of forestry being traditional and heavy work.

We are not an attractive sector (group 5)

A further challenge is a generation shift that is ongoing in the sector, with a high demand for younger qualified workers. However, there is a lack of persons educated in forest-related subjects and a lack of adult education, enabling the possibility to make career shifts later in

life. One group identified a challenge in today's education in educating specialists while there is a need for generalists in the sector. Some of the groups also discussed the challenges for immigrants and refugees to enter the sector, as they lack necessary training.

Employers don't offer permanent job (group 2)

Another challenge put forward in relation to labour supply is urbanisation and the fact that forests are in rural areas, while more and more people move to city areas. Urbanisation further leads to fewer young persons gaining experience and relationship to forests, leading to less persons educating themselves within forestry, thus offering less qualified persons in the sector.

"dying" rural areas where most of the job is (group 4).

Next group of challenges relate to wage levels and poor working conditions. All groups point out low wages and/or heavy working conditions, or the lack of permanent working conditions as problematic for the forest sector. The relationship between skills and wage level is pointed out as problematic, and that to be able to be a competitive sector, wages need to be competitive as well.

Wages are low comparing the skills needed (group 1)

As an overarching challenge that the groups reflected upon was the need for the forest sector to recognize the development of new activities, like climate change mitigation, and the development of connecting sectors like tourism. The groups also brought forward the challenge of how to communicate with potential future staff, especially the young, but also how to convey the message to public that forestry has a key role in the development of the future society.

We need to show the sustainable forestry is a key for ecosystems in the world and that forestry indication can give anyone the possibility to change (group 3)

3.4 Solutions to challenges

In connection to the challenges presented above, the groups discussed solutions to these challenges/problems put forward. There were five specific challenges that was seen as the most relevant to manage. There were two within education, one within equal opportunities, and two within labour supply. The answers is found in appendix 2.

Education

Of the challenges put forward of the groups, one was related to communication while the other was devoted to increase awareness of the sector. The challenges were, how might we…:

communicate about us in a more holistic way?

spread awareness and opportunities within and outside the sector?

The solutions to the two challenges are to increase communication on the media that attracts the young generations, like social media and attractive platforms. Further, education of

children is vital for spreading awareness of the forest, and the sector, already from young age. Education activities should be complemented with excursions to form connections with forest. An action suggested is to develop books on forest-related subjects for all levels in school.

The perceptions of forests in society are important to communicate a positive and holistic understanding of forests in public discussions and engagements. Interdisciplinary education and research contribute to this.

Finally, the groups indicated that a cross-sectoral cooperation may help increasing awareness and knowledge about the forest in society. A proposed action to support the solutions put forward is to increase social interests to reach out to young persons, e.g., festivals, workshop, advertisements, and to launch marketing campaigns.

Equal opportunities

The theme equal opportunity focuses on how to break the sector's traditions, and on how awareness can be raised connected to problems of old norms and traditions. How might we…:

> *change a traditional sector?*

To showcase good stories and good examples to create equal opportunities within the sector to tell the story of the modern forest sector. Yet another solution is to promote committed and good leadership in companies and organisations to promote role models and to promote equal opportunities in the sector. The actions suggested in connecting with the is to launch promotional campaigns both promoting forests per se, but also the forest sector as an attractive employer. A campaign might also increase the interest for the forest sector and contribute to a possibility to recruit leaders with different backgrounds, promoting multi-disciplinary cooperation.

Another solution put forward is related to education. Equality should be a mandatory part of education and discussions on values and policies should be natural part of the forest-based education.

In relation to society, a general gender and equal opportunity discussion would benefit active changes both in society in general and in the forest sector in particular. Re-educating persons, both within the sector, and outside is a step to increase awareness of the benefits of inclusive organisations and the potential of increase profitability.

Labour supply

In the theme labour supply the workshop participants identified two main challenges that were most important to work with. How might we…:

> *be an attractive sector and attract more than the devoted population?*

> *attract the youth into work in the forest sector?*

Both challenges deal with how to attract more persons to the forest sector. One solution proposes to increase the connection of forests and forestry in school, preferably already in elementary school. Further, connected to education, the discrepancies between forest-sector market needs, and the educational programs needs to be reduced, to synchronise the needs of student's education of that of the forest sector. Additionally, more practical modules should be included in education. Further, a developed internship system within the sector would benefit young persons' possibilities of get practical experience in the sector and network for future work possibilities.

A vital part of increasing the interest and the attractiveness of the forest sector is communication and marketing opportunities. The channels used should be the one young person's find attractive, to spread news on education, job opportunities, but also forest-related topics emphasising the importance of forests and the forest sector, e.g., forest-based solutions e.g., reduce carbon emission, and the forest as a sustainable resource.

The challenges of forest sector typically operating in rural areas, while the main population is living in typical urban areas, is a major structural challenge for forest sector, which has been pointed out by several in the group works. However, how to find solutions to this challenge was not identified by the workshop participants.

3.5 What moves us forward?

As a last task during the workshop, the participants were asked to review the material that was developed in the group work. From the reflections of the developed material, the participants wrote bullet points relating to how we move forward. What is needed to develop the solutions discussed? What challenges remains? The full list is found in appendix 3. From the answers, 5 groups of aspects to consider for future development were identified:

Education and personal development

Forest related education is important to ensure high qualified personnel in the future for high-quality management in the forest sector. As work with forest sector gives opportunities to work in different parts of the country, both urban and rural areas, inspiring and driven persons are particularly important for developing the forest sector further. Motivated educators in the school system are important to lay a good foundation for interest in working in the forest sector.

Working environment

Several answers point out forest sector-related work to give good opportunity for outdoors work, and opportunity to interact with living nature. Solving issues with equal opportunities are a key to develop forest sector further. Good mentors and good role models are essential to create good working environment.

Technologic development

The forest sector is experiencing a fast technological development both in terms of technical tools and product innovation, e.g., replacing fossil-based materials with renewables. Education and infrastructure investments are essential to follow the development.

Forest as a renewable resource

Several of the participants raised the fact that working with forests is a work with renewable resources, and future challenges will continue to be to make trade-offs between economic, ecologic, and social values of the forest.

Societal demands on forests and the forest sector.

Last group connected to the challenges that the forest sector face as part the society. As the forest is renewable, it also carries a substantial role in development of society, through bioeconomy and climate change mitigation. The public awareness and attention toward forests will further affect the future of the forest sector.

4. Concluding remarks

The purpose of this report was to describe the results of a workshop on young person's perceptions of the further forest sector, related to the topics of education, equal opportunities, and labour supply.

The results indicate that the forest sector is facing challenges that potentially may affect young person's view of the sector, and possibly affecting the choice of career. The participants discussed the need for more knowledge on forests and the role of the forest in society, among all generations. A challenge is the disconnect from forests resulting from urbanization, and the workshop participants pointed out that there is a need in to connect to forests, preferably in early ages.

In relation to education, the workshop participants concluded that there is a need to align forest-related education with the needs of the sector. Participants also raised the idea of a well-developed internship program to provide valuable experience and connections to the forest sector.

The workshop participants discussed, in relation to equal opportunities, that forest sector is characterized by strong conceptions of forest tradition, that are difficult to break. For instance, females are considered not suitable for heavy work in the sector, and females in the sector might experience a "glass ceiling" when attempting to make a career. The participant in the workshop suggests that promoting role models in the sector, and to actively try to break down the old traditional views of forestry.

To attract more young persons to consider a career in the forest sector, the participants of workshop emphasis a need to early in young children's life to connect to forests, and to spread knowledge and understanding of the role of forests in the future. Particularly, urbanization bring extra challenges not only to connect to the forest, but also to find persons willing to work close to the forest in typically rural areas.

Appendix 1. Challenges and solutions to the three themes education, equal opportunity, and labour supply.

Each bullet point represents a sticky note, and the number in parenthesis is the number of votes for each bullet point.

Education – challenges and solution

Group 1	Group 2
Challenges	Challenges
- Education possibilities located only in few cities/geographic areas (2)	- Lack of motivation (1)
- Location of schools	- big responsibility scare some people on forest economy work (selling, buying, planning)
- Better guidance of specializing to some part of bioeconomy after basic studies (1)	- different values of generations (2)
- Not enough knowledge about forestry occupations/opportunities (2)	- lack of internship
- Unknown amongst society	- relying on someone or something that will decide everything for us
- No knowledge exchanges	- we don't think enough about the future
- Students don't have a broad view about forests sector/how bioeconomy works (2)	- ignorance in younger students (1)
- Lack of early forest relationship (2)	- too specific targets (3)
- Spreading information and understanding of forestry to the public (the forest sector is quite closed up) (1)	- popularity of subjects necessary for applying in this sector (biology and chemistry) among pupils because of bad studying in school
- Lack of (ambitious) students	- forestry is a very "specific" topic => less interesting (1)
- Lack of attractive	- some people are afraid of physical work in forestry and don't want to have work on that sector
- Wages not large enough => future prospects after graduating	- there is a myth that forestry job is hard an underpaid
- Choice of pathways are you saving the forests or destroying them?? (2)	- stereotype that this sector for losers or people who work by hands (not for scientists and other specialists) (4)
- Lack of networking within industry	- the still sort-of an equal forest industry sector that not encourages people enough (1)
- Inequality within the sector (1)	- simple ways of teaching (lecture style) (1)
- Lack of internship	- what is holding us back? Lack of quality prepared and educated teachers and coaches at universities, who can share with students updated data about ecology, the worldview to the way of solving such questions (6)
- Forestry not that "media-sexy" educational route (3)	- The forest sector education is <u>not developed</u> at all or not fully using old technologies
- The field is seen as "old-fashioned" and not very agile	- People want to live in the cities - still the natural resources are located in the countryside (3)
	- forestry is not trendy
Solutions	- new technologies
- Improve multi-disciplinary cooperation to attract people from other fields	- not "advertising" the benefits of studying forestry (and the broad knowledge you get) (3)
- Create a special institute (e.g., EFI) for meetings, actives which will work as facilitator (6)	
- Learn from others – good examples and role models	
- Promotion in high school with inspiration from people from forestry (5)	
- Start education about forestry education + opportunities already in the kindergarten	
- Implement more forestry related examples and bioeconomy knowledge to the secondary schools	
- Include forestry as compulsory topic in national schooling programs (lobbying needed) (7)	
- More information about forestry-based solutions, e.g. reduce carbon emission (1)	
- Vocational guidance lectures in school (2)	
- Fieldtrips/special classes for kids => inspire young children (4)	
- Interest students in the specialty (1)	
- Increasing the social acceptance (3)	
- Open up for exchange studies between different universities and countries (2)	

Group 3
Challenges
- Lack of awareness career possibilities
- Career development for young people – attractive jobs (4)
- To communicate that forest education => many different opportunities to get interesting work (1)
- Poor systems for education funding (3)
- Low prioritization of education/teaching on the university (4)
- Poor study culture / environment
- Field courses have been decreased
- Difference between studies in universitates of applied sciences and the scientific universities
- Mentoring the students to make good combinations of studying entities (1)
- We are not good at communicating with society what "forestry" is (4)
- Youth alienated from forests
- Low "basic knowledge" on forest and forestry
- To make young people interested in forest education => positive attitude (1)
- Urbanization
- "Downhill" Low number of applicants => no "bars" for entering=> poor quality of both student and education
- Forestry is old fashioned (3)
- Strong traditions/norms that hinder development (1)
- Image of what working in the sector is about (1)
- Culture – it does not look "modern" to today young people
- To go in line with the changes in society (2)
- Change the view on forestry (use of forestry) from negative to positive
- Sectoral thinking – we are still missing a holistic view in the use of forests - only C, - only €, - only BD
- Forestry sector is a small sector – competition with other sectors (1)

Solutions

- Better books in small libraries and school libraries
- Forest not forestry or forest sciences
- Too much simple ways of teaching lack of quality prepared and educated teachers at university, who can share with students updated information

Group 4	Group 5
Challenges	**Challenges**
- Lack of practices in education	- Just one place for education (1)
- University funding situations – not always the best teachers	- Educate the teachers (education on news method of teaching)
- Inefficient mechanism for retaining young specialists	- Solid time to devote for teaching (need to write many research applications during the year. When do I prepare my lectures?)
- A low % of graduates remaining to work by professions	- A clear education goals. What role we educating for?
- Old methods of education; methodologies, programs, etc.	- Support from the faculty
- Lack of use of the international study environment	- Need more motivated teachers (1)
- Land ownership structure (2)	- [no]academic teaching career (2)
- How can we better communicate about forestry to the youth?	- Too little contract with forest/forestry at young age
- Problems to reach city populations	- Polarization scares students away
- Poor communication about what forestry is	- Reach the "concrete" generation (4)
- Lack of knowledge what forestry is (2)	- More and more people living in cities (1)
- Too little knowledge about the many options in forest sector (4)	- Too few students
- Work opportunity where you live	- How might we reach the "concrete" generation and successfully compete with other sectors?
- Status /low paid sector	- Marketing "norm" scientific challenge missing
- Payment level	- Cannot explain how interesting it, what jobs is to work in work in the sector (1)
- Salary level	- To be relevant on education – to the young – to enterprise (3)
- Lack of reputation (2)	- Lack of knowledge of forest's role (2)
- Decline in the prestige of the profession (1)	- Competition from other sectors (2)
- Views as non-technological sector (3)	- Forests and forestry are "old" sectors (1)
- Prejudice about forest work being old-fashioned	- History
- Perceived conservative forest sector (1)	

- Improving, but bound to traditions (resist change) (1) - Too much "tradition" - Old industry **Solutions** - Promote cross-sectional collaboration - Include forestry with other degrees => promoting cross sectoral collaboration	**Solutions** - To go big – international students (when we do already excellent research)

Equal opportunities challenges and solutions

Group 1	Group 2
Challenges - Fear of change, the unwillingness to change (2) - Competition about sciences (eg labour) - Not the equal amount of participants (differences of interests) who are making decisions - Lack of social skills who of people who recruit people (2) - Employers are often unwilling to employ young women because they are expected to get children and take a maternity leave (4) - " this is how we always done" (1) - Old way of thinking / traditions (3) - Old methods of proving ability - biased attitude to woman - People (often men) not aware of the problems and their own behaviour (norms) - Lack of female representatives to "look up to" in the sector open (1) - lack of female examples/"role models" (2) - The stigma (?) to talk about inequality open (3) - not enough soft values in forestry - Glass ceiling (2) - Men choosing men for open positions (especially for high-rate jobs) (2) - Negative norms (4) - men's world! (4) - Strong stereotypes(4) Solutions - HMW raising awareness of problems with the old ways of thinking and negative norms - involving young people with "different" thinking in decision-making	Challenges - Lack of understanding disabilities and assistance in work (1) - not respecting each other as unique individuals with different values/perspectives (3) - not enough knowledge about minorities/indigenous peoples that are affected by forestry (2) - school budget differences - urbanisation (rule vs urban area opportunities) (2) - preferring experienced applicants instead of young freshly graduated (5) - the idea that forest sector "always requires" significant physical abilities - looks like dangerous job (4) - physical differences of gender (psychological as well) - misconception on forestry: symbol of physical work (may affect to disabled people) - stereotype that the forest sector includes <u>only</u> hard work - "old traditions" that favour men over women - Male-dominated working environment - should women be encouraged to choose different kind of forestry work and education (1) - All thoughts still remain about "forestry work is mancy work" - gender stereotypes - gender stereotypes => "women are weak" or "men are masculine but not social enough" - stereotypes come from older generations since childhood - stereotypes that the forest sector is only for men - for a some reason men are still more often chosen to leading tasks in bigger organisations (1) - age inequality "you are too young to do something in this sphere" (4) - gender inequality "work in the forests sphere is for man, if you want to try something go to the plant house" (4) - HMW [how might we] social option has a great weight on the way of choosing EW sphere for work cause "it's not for you" (4) Solutions - to create more internship programmes with a benefit at the end of the best interns - place in the company - also we need to create a spectacular web page for all companies and students among the barrens region

	which will present all the working/internship opportunities in the region

Group 3

Challenges

- Strong traditions/norms (4)
- culture sexual harassment is still accepted in the sector (4)
- Traditions of sector and society (4)
- "hidden" perceptions male and female roles in society
- traditional stereotypes
- "facit" education - most of the teaching teachers are male or describe forestry in a masculine way (1)
- females interests towards environment and communications tasks (1)
- male interests toward mathematics and technology
- job evaluation job segregation - men and women end up in different jobs (3)
- lack of communication/education on this topic
- gender equality as a plastic word (definition) (1)
- the tradition of focusing on "forest" and technologies not people (3)
- Measures for safeguarding equal opportunities not integrated in organisational policies and management process is
- respect that you play different roles in different situations
- the benefits are not described or understood (we still count numbers) (6)
- physical competence at the field level forestry operations
- That takes a lot of difficulties to get this through we are able to change but we may not do so for political reasons
- low self confidence of the male gender
- evolution has always made men and women different the modern society has the" correct" idea of equality (1)
- too much focus on including/attracting women
- two little focus/problematization of power/masculinity (1)
- too often seen as an interaction challenge
- "lilla gumman" attitude
- a lot of pressure to prove that one actually can do things
- cronyism slows down process "vänskapskorruption" (men hire men) (women hire women)
- different rewarding/feedback depending on male/female

Solution

- research is needed
- best practises
- prioritise within an organisation on management levels

Group 4	Group 5
Challenges	**Challenges**
- Lack of flexibility in small companies (2) - lack of creativity in planning of work environment (2) - financial structures - making it possible for immigrants and refugees to contribute in forest sector - inequality in society (5) - general gender discussion (5) - traditional mentality in the society in general (5) - thoughts of community that is a men's profession (5) - Hard handle work - overcome prejudice an bad treatment against women in education and work (1) - convincing young women that forestry is an attractive career	- "Tystnadskultur" - Structures, - education, work environment - that need change - terrified boys (5) - Rädsla för förändring (5) - Poor over aged, outdated attitudes still (1) - still a bad view from some in the sector - macho culture - mother! pregnant! Breastfeeding! top teacher! top researcher?! when do I get my superhero dress?? - yet a man dominated environment one gets tired of trying - still a male dominance - lika villkor who is holding us back - lacking definition of "competence" (So it's up to "gut feeling" who's competent) - Vi anställer och preminerar de som liknar oss (7)

- reaching equal gender representation in forest business management - male dominated sector (5) - leadership (1) - convincing urban/sub urban young people that for a sector is attractive - inabilities to reach out to "new" people - rural/urban polarisation (3) - how we describe forest sector - stereotyping - conservative sector – e.g. you have to be strong (like a mum) - traditions in forest sector (8) - traditions in choice of education (8) - family traditions - historical image **Solutions** - General gender discussion - creative solutions within work environment (4) - advocate, technologies and options we have - support new ideas(5) - we have to work on all "levels" and together - share a successful practise in community and industry - salary incentives - salary levels - equal gender representations in boards of companies and schools (1) - re-education of workforce about gender and diversity issues (3) - proof profitability from inclusiveness - inform a broader public - give a full and truthful information about - and + in the field - active change process is - self confidence measures (1)	- Lack of role models (both male and female) - lack of problem-insight in the sector as a whole - same opportunities? But, ... I am a woman. existing opportunities are designed for men… um aahh… ???? I do not get it!! - old structure (2) - tradition (2)

Labor supply

Group 1	Group 2
Challenges	**Challenges**
- Low standing - the sector has a bad reputation (1) - no interest to forest related work (4) - too few interested to work with forest (4) - high level of responsibility on the duty - seasonal jobs with low salaries with hard working conditions - poor (heavy) working conditions (2) - unappealing working conditions => in actual forest work - not development the works areas as a result lack of attractiveness - very physical sometimes - difficulties to hire foreign labour with needed knowledge (1) - lack of foreign labour - lack of connections with different parts of sector	- Lack of industrial work training (4) - employees have too big expectations: most have experienced, fresh education, language skills, knowledge about everything … (1) - employers focusing on employees experience too much (4) - employers want young people with lifelong experience (4) - employers don't offer permanent job, only part time or temporary agreements (2) - urbanisation leads to less people gaining experience of forestry => less people graduating => less workers (1) - lack of thoughts that industrial work matters a lot (2) - lack of motivated workers (2) - "basic forestry work" is not interesting => two big responsibilities, too long and hard days, too low salary

- how to get people to relocate / stay where the forest and forestry jobs are? - rural location vs urban location for where to work - "dying" ruler areas where most of the job is (5) - weak development of rural areas - difficult to find trainee/internship as a result a lot of potential labour to move to other sectors - people change line of business (1) - lack of possibilities to move forward "climb up the stairs" - too low salary on to low position - low salary - wages are low comparing the skills needed (4) - wages are not competitive? How might we (HMW) - make rural areas great again	- workers want good salaries but don't want to develop themselves (1) - need for lower priced employees in the basic forest works - lack of communication with youth on the youth platforms: social media, websites, apps and so on (5) - absence of centralised employment system (5) - employers want <u>universal workers</u>, but we study specific skills (4) - unrealistic qualification ex experienced for five years - encourage people from different fields and with varied backgrounds to consider a job within the forest sector How might we (HMW) - Lack of communication with youth on the youth platforms, social media, websites, apps. Usage of all online marketing opportunities Not my education group too Labour supply

Group 3

Challenges

- Too much focus on labour-supply and too little on the labour/jobs (2)
- better label with different skills and background
- image of forest sector - very traditional not future looking
- more quantitative goals/aims then qualitative
- more research on labour and organisation
- ageing workforce
- employee population is ageing (4)
- generation shift (4)
- outsourcing tendency requires support from entrepreneurship (2)
- we need to show the sustainable forestry is a key for ecosystems in the world and that forestry indication can give anyone the possibilities to change (6)
- mechanisation of forestry works requires continuous training (1)
- workforce not prepared for transition. Needs upgrade (1)
- we are the good guys, a part of the solution for a sustainable world
- demographic change, nationality, foreigners, are young
- current education system matching new green jobs?
- Lack of -full time - decent salary jobs in forests (7)
- better integration of social sustainability (2)
- salary/possibilities to make a living on earnings very limited (2)
- job status is low
- downstream sectors (2)
- tradition (2)

How might we (HMW)

- need to look beyond traditional forest work for employment possibilities, eg tourism environmental
- to retain/upgrade and train
- to raise awareness that forests are a sustainable resource
- decent working conditions

Group 4	Group 5
Challenges	**Challenges**
- Both the next two including immigrants and refugees in workforce - payment level/status (6) - low salary (6)	- We miss the potential of "new Swedes" (4) - Låt studenter möta yrkesverksamma genom hela utbildningen "alla branscher" (2)

- at university career paths (6)
- status of forest work (salary)
- Industry work tasks that not need long education (6)
- new technologies asking for high skilled workers
- demographics
- seasonal work
- old fashioned profile of education institutes
- lack of adult education (2)
- lifelong education possibilities (2)
- possibilities to enter forestry "later" in life (2)
- competition with other sectors (5)
- ergonomy/technical development RD
- visibility of new jobs
- new activities in forestry: climate change, genetics etc (5)
- rural jobs
- lack of imaginations - what profile to employ

Solutions

- Can we better communicate about forestry to the youth

how can we raise the status of work in the forest sector?

- Fast changing market what is the right competence? (2)
- Arbetsmarknaden i vid mening, hand I hand med utbildningen och dess utforming => horizon scan
- Old "truths" about what kinds of jobs in the sector (1)
- we are not an attractive sector (6)
- only attracting "half" of the population (6)
- omsätt god forskning till undervisning
- "Rätt" generiska kompetenser för sammanhanget
- Less are needed! welcome robotics!
- Urbanisation (2)
- high quality demanding an interesting jobs
- we have no data of the workforce
- not relevant working conditions for the younger generations
- career possibilities
- the gap in "the sector needs" vs "people expects"
- profitable for a sector => competitive wages (1)
- lack of connexion between "higher purpose" and forestry

How might we (HMW)

- HMW: How might we reach the "concrete" generation and successfully compete with other sectors
- HMW: how might we change the fact that we recruit people that remind us of ourselves?

Solutions

- Will to improve
- Innovation
- trends in society
- innovation
- climate change
- go back to drivers
- create new opportunities visionary approach!
- "This is what we believe and what we can offer" (direction and definition)
- Refine "attractive"
- go back to the driving forces behind people's choice in career - what common between our "sought after" + traditional recruits? (2)
- ask "them"(+ be genuinely curious)
- remove unequalites (4)
- make for a sector be sustainable, equal and attractive to all (4)
- dig into what is the purpose of working in the forest sector
- broaden education to more than SMP & JMP, make other specialists "greener"
- formulate excellent science to education and relevant learning goals with enterprise
- conduct market analysis what are needed? What are we lacking?
- Demands from the sector matches education (7)
- educate international and multidisciplinary
- TV show: "Forrester seeks partner"
- collect data of current skills/workforce (1)
- put more money in the same TV commercial! (1)

	- much more contact between students and people already working in the sector (3) - in the "story" of the sustainable society where do we from the forest sector fit in? - Need to be more open minded when recruiting - understand, reach, and attract generation Z (4) - train our students in critical thinking most of a new ideas =new start ups! =New markets! - What is important to people? - Today? - Tomorrow? - Support incentivise small and large business, both are important.

Appendix 2 – How might we – solutions to identified problems

Each bullet point represents a sticky note, and the number in parenthesis is the number of votes for each bullet point.

Chosen HMW with solutions

Education

How might we (HMW):

Communicate about for us in a more holistic way (education Group 3)

Solutions

- Alternative "new" social media => attractive on other platforms? * Wikipedia* podcasts/YouTube * Facebook/Instagram * upcoming
  - o integration and inclusion => include onto official integration programme - analyse target groups for communication
  - o positive and holistic communication on forest in society => interdisciplinary education and research - public discussion and engagement

Group A – Employees

How might we (HMW)

spread awareness and opportunities within and outside the sector (education Group 1)

Solutions

- education for children
  - o actions: forestry is a topic in National School at low levels. Fieldtrips with forestry theme
- increasing marketing and new coverage
  - o increase in social interests (eg festivals, workshops, advertising). marketing campaigns. improve news coverage (social media, print media) (4)
- cross sectoral corporation

Group B – students

Equal opportunities

How might we (HMW)

how might we change a traditional sector

Solutions

- showcase good stories
- communicate sharing role models (12)
- tell the story of the modern forest sector
  - o actions promotional campaigns
- enlightened, committed leadership
- good leadership in companies and organisations (11)
  - o actions: recruit different backgrounds
- equality mandatory part of educations
- including discussions on values and policies in forest education (6)
  - o actions: upgrade programmes

Group A – employees

Labour supply

How might we (HMW)

be an attractive sector and attract more than the devoted population?

Solution

- forest/forestry in school (4)
  - o actions: in the curriculum of elementary school more resources to educate the teachers
- show that it's advanced jobs for all (2)
  - o actions: TV show more outreach
- synchronise students'education with the market needs (part of it)
  - o Actions: sector set demands/validity. Of all the education more practise

Group A – employees

How might we (HMW)

it's hard to attract the youth into work in the forest sector

Solutions

- create the internship system with a benefit for best-getting a job
  - o actions 1) putting the internship programmes into the company's strategy 2) create the programme for the internship 3) start to advertise their opportunities
- communication with users on the used platforms
  - o actions: 1) taking part as a speaker and facilitator in the youth forums 2) using social media instead of post mails in the way of communicating with youth 3) collaboration with universities
- usage of all online marketing opportunities (inst, FB, telegram, linked in osv)
  - o actions: 1) Create account of the company in the social media 2) create a touchable and pretty modern design for account to make it attractive 3) create the blog system (put not only advert in the blog but also education posts)
  - o spread news on forest-related subjects – why is forestry and forest sector important?

Group B – students

Appendix 3 What moves us forward – reflection of all participants in the workshop.

Each bullet point represents a sticky note, and the number in parenthesis is the number of votes for each bullet point.

- High qualification/high qualified personnel
- eco friendly practises
- finding solutions for climate crisis an inequality
- mentors
- funding
- great working atmosphere
- driven people that wants a change
- renewable
- high level of knowledge
- travel grants
- developing technology
- international cooperation
- willingness to learn
- fast technology development
- inspiring persons
- good research
- concern about future generations
- innovative
- reducing of forests amount
- societies' demand on forests' different roles
- new markets
- motivation to decrease climate change
- improved mental health by working outside
- doing as good as possible
- friendly peoples
- demand for forest products
- innovations, product development and trade
- knowledge and practised understanding
- new possibilities in bioeconomy
- creating new knowledge
- working with the environment
- many needs of forest
- wish to make the world better (saving and growing of our forests)
- jobs in a large area
- requests for forest products
- sustainable industry
- need for development
- development and traditions
- learning new things
- interest to develop new ways to do things (for example new processes)
- making societies a better place to live
- money
- large opportunities
- important under communicated sector
- complex issues/challenges
- international family of foresters
- today's challenge to protect the future life and a huge desire to make impact being a youth kind of "no name game" on imperfections
- Broad field - fits many
- global experience + network
- freedom
- increasing information amounts
- talented colleagues
- future forestry will be determined by the level of public attention
- the forest is basically a fantastic resource – renewable - possible to manage in different ways to increase different values (economic, social, biologic)
- new technologies require education and infrastructure investments
- knowledge
- possibility to solve problems/challenges
- curiosity possible/not possible
- solution to climate change
- possibility to influence climate change
- need to take part in "world politics"
- Develop Sweden's largest nature resource
- affects us all in different ways
- take part in making sustainable future for children
- forest sector in Sweden provides job opportunities to rural population
- creation of a sustainable world
- new products that replace traditional materials eg plastic
- giving job to people out in the general society
- capacity to combat climate change
- passion forest owners
- passioned colleagues
- forest + wood for the next generation
- shaping forest for the use of future generations
- contributing to the greater good
- forest sector in Sweden provides 10% of timber pulp and paper that is traded in the global market
- workplace in many parts of the country
- working with living nature
- chances to work outdoors
- talented colleagues
- big organisation with multiple professions
- forest interested youths' taking the matter into their own hands
- new approaches
- personal development
- creating values for others
- chances to travel
- exchange of knowledges
- creating new concepts
- good education, research, practise opportunities, meetings with different subjects of forest sector, corporation, technology
- forest kids clubs => were telling about occupations and opportunities start
- motivated teachers in all school levels.