

## AN ABSTRACT OF THE DISSERTATION OF

Pipiet Larasatie for the degree of Doctor of Philosophy in Wood Science presented on January 20, 2021.

Title: Women in Forest Sector Leadership: A Qualitative, Multi-country Study

Abstract approved:

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Eric Hansen

Generally presented as a preferred social norm based on both ethical considerations and legislative demands, gender equality has been highly encouraged in recent years. For instance, The United Nations Sustainable Development Goals for 2030 call out achieving gender equality and empowerment of women. However, although there are multiple efforts to increase gender equality in the forest sector, the industry maintains an association with a blue-collar masculinity and macho-masculinity workplace culture.

The timing for this study is fortuitous due to a generational transition from a graying workforce to a new generation of leaders and workers. The transition presents a novel and significant opportunity to diversify the workforce to prepare the forest sector to face an unpredictable future. Considering that women in leadership is still perceived as an uncommon reality for much of the forest sector, this study aims to investigate women's perspectives on gender diversity and their leadership experience in the forest sector. The general objective is broken down to four chapters with research questions such as: (1) What are perceptions of women leaders on the current

situation with respect to gender diversity in the forest sector? (2) In what ways do women leaders think the forest sector could be made more attractive to women? (3) In what ways do gender stereotypes and expectations influence the experiences of being a woman leader in the forest sector? and (4) How does mentoring and networking influence women leaders in forest sector?

Utilizing semi-structured interviews, we interviewed two groups of women leaders in the forest sector: (1) 26 women executives in global companies, and (2) 52 women leaders in top world forestry universities (11 administrative leaders and 41 student leaders). Their perspectives complement each other resulting in a deeper understanding of the intersection of gender and leadership dynamics in the forest sector. The objective and research questions previously identified are addressed in the proceeding chapters. Of the four chapters, the first three have been published and the fourth is under review with a peer reviewed journal.

Respondents indicated that although there are positive changes in the forest sector toward more gender diverse and inclusive workplaces, the movement is slow. However, although there is substantial room for improvement in the industry, gender diversity in forestry universities is perceived to be better today. Respondents witnessed an increased number of women in forestry education, both students and faculty members. Nevertheless, this higher number over time does not proportionally increase the percentage of women in the forest industry workforce.

To attract more women to the forest sector, two alternative solutions are proposed by: (1) changing the forest sector image by focusing on the good features of the industry such as its important role in the sustainable future and solutions for the

modern world, and (2) promoting the sector in various platforms, both offline and online. The first solution can be implemented by focusing on the role of the forest sector in mitigating climate change and supporting a more sustainable future economy with providing green jobs and an urban built environment.

Regarding leadership experience, there are two important factors that are mentioned by student leaders: peer relationship and gender stereotypes. Some respondents were less interested in seeking top leadership roles because of a fear of negative evaluation by their peers. This internalized oppression, particularly sexism, is one of the reasons that advance men and hold women back in leadership. Most respondents also mentioned that they obtained their leadership roles by volunteering. They also noticed that women are more likely to take unpaid roles than men.

Most respondents agree that mentoring and networking are important to address gender inequality in the forest sector, however, it is quite challenging to find a woman mentor/role model because women are underrepresented in the sector. When it comes to gender dynamics, respondents emphasize the different benefits of having a woman vs man mentor. In a men dominated field such as the forest sector, women mentors enhance social belonging, confidence, and motivation in relatively alienating environments, which in turn, enhance women's intentions to retain and pursue careers in the forest sector. On the other hand, cross-gender mentorship is favored in career functions. In professional settings, women may reap more benefits from men mentors because men can confer organizational legitimacy and provide resources required for success for their protégés.

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Women in Forest Sector Leadership: A Qualitative Multi-country Study

by  
Pipiet Larasatie

A DISSERTATION

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Dean of the Graduate School

I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Pipiet Larasatie, Author

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And last but not least, to all my mentees, paper co-authors, and research collaborators. Thank you for accompanying me through this journey.

## LIST OF PUBLICATIONS

This dissertation is based on the work contained in the following papers, referred to by Roman numerals in the text:

- I. Larasatie, P., G. Baublyte, K. Conroy, E. Hansen, and A. Toppinen. 2019. “From nude calendars to tractor calendars”: The perspectives of female executives on gender aspects in the North American and Nordic forest industries. *Canadian Journal of Forest Research* 48(8): 915-924.
- II. Larasatie, P., T. Barnett, and E. Hansen. 2020. The “Catch-22” of representation of women in the forest sector: The perspective of student leaders in top global forestry universities. *Forests* 11(4): 419.
- III. Larasatie, P., T. Barnett, and E. Hansen. 2020. Leading with the heart and/or the head? Experiences of women student leaders in top world forestry universities. *Scandinavian Journal of Forest Research* 35(8): 588-599.
- IV. Larasatie, P., T. Barnett and E. Hansen. 2021. Mentoring and networking as the “Silver Lining” of being women leaders: an exploratory study in top world forestry universities. Manuscript is under review.



## CONTRIBUTION OF AUTHORS

The contribution of Pipiet Larasatie to the papers included in this dissertation was as follows:

- I. Data analysis (100%) and writing (100%).
- II. Study design (90%), data collection (60%), data analysis (75%), and writing (100%).
- III. Study design (90%), data collection (60%), data analysis (75%), and writing (100%).
- IV. Study design (90%), data collection (80%), data analysis (90%), and writing (100%).

As major advisor, Hansen has contributed on study design and provided constructive feedback throughout all papers.

In paper I, Conroy and Baublyte conducted data collection. Toppinen, together with Hansen, provided valuable comments.

In paper II - IV, Barnett conducted partial data collection and data analysis. Hansen provided valuable comments.

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## DEDICATION

This dissertation is dedicated:

- To my Savior who makes all things possible.
- To my husband and daughter, my greatest strength.
- To my late mother (1957 – 2018) and late father (1953 – 2019) who passed away while I was pursuing this degree on a different continent. My parents did not have a chance to pursue any higher education degree or to see the world outside their home. Two things that I proudly achieve on behalf of them.

## **I. GENERAL INTRODUCTION**

In North America and Nordic countries such as Finland and Sweden, the forest sector (an umbrella term covering companies producing and using wood and wood fiber as a raw material) is economically important. For example, in the U.S., the industry employs approximately 950,000 workers with a payroll of approximately \$55 billion and manufacturing output of more than \$300 billion (American Forest & Paper Association 2018). Nevertheless, the forest sector has not attracted sufficient young talent interested in a career in the industry and its workforce is rapidly graying (Hansen et al. 2016).

In 2018, the Government of Canada announced a National Action Plan to promote gender equity in the forest sector. Believing that gender diversity is a smart thing to do, the government states that more young women entering the forest sector will increase Canada's economic competitiveness in the global market (Canadian Institute of Forestry 2018). Nearly a half million Canadian dollars has been invested in a three-year project aiming to remove barriers that prevent or discourage women from pursuing careers in the forest sector (P&PC Staff 2018). Targeted obstacles include pay inequity, lack of childcare options, unequal access to training and trades, lack of management opportunities, and general misconceptions about the forest sector (P&PC Staff 2018). In Sweden, gender inequality in the forest sector was a focus as much as three decades ago (Andersson and Lidestav 2016). In 2011, the Government of Sweden launched a strategy for gender equality in the forest sector, called "competitiveness requires gender equality".

However, although there are simultaneous efforts to increase gender equality in the forest sector, the industry has still been associated with a blue-collar masculinity and macho-masculinity workplace culture (Johansson and Ringblom 2017). In early 2018, a few months after the actress Alyssa Milano started a conversation that grew into the #MeToo movement, the U.S. forest sector was shocked with claims of sexual misconduct against the head of the U.S. Forest Service (Flock and Hendry 2018). The chief stepped down after nearly four decades with the agency. At the same time, but in different part of the world, women in the Swedish forest sector started to give individual testimonies about their experiences of assault and harassment utilizing #Slutavverkat (representing #MeToo in the Swedish forest sector) (Larasatie, Barnett, and Hansen 2020). A year later, promotional calendars from one of the major machine manufacturers, produced in Finland and distributed all over northern Europe, featured nearly naked women.

The occurrence highlights many aspects of interest in this dissertation. One of the most important interpretations is that the forest sector is a place of sexist attitudes and behavior even though gender equality efforts have been taking place in the sector, supported by many sector leaders.

The gender inequality phenomenon has affected the leadership environment in the forest sector. Gender-based leadership research has historically associated management and leadership with agentic qualities such as assertiveness and competitiveness that are perceived as masculine stereotypes (Eagly and Carli 2007). Management and leadership are generally associated with a masculinity or “think manager-think male” paradigm (Schein et al. 1996).

Although there is considerable research about women in forestry, there are few comprehensive gender and leadership studies in either profit or nonprofit forest sector organizations. Most gender research in forestry is done in developing countries, related to understanding resource management to support gender equitable policies and practices (e.g., CIFOR, 2018). In developed countries, gender studies in forestry cover topics such as forestry professionals (Lidestav and Sjölander 2007), women's career advancement in the lumber industry (Sibal-Lang 2011), women as entrepreneurs (Appelstrand and Lidestav 2015; Follo et al. 2017), gendered business cases (Johansson and Ringblom 2017; Umaerus et al. 2013; Umaerus, Nordin, and Lidestav 2017), organizational innovation (Lindberg et al. 2016), women's experience with respect to sexual harassment (Johansson, Johansson, and Andersson 2018), and, most recently, the importance of women's networks in supporting women's retention in the forestry profession (Crandall et al. 2020).

Two studies specifically researching gender and leadership in the forest sector are Hansen et al. (2016) and Baublyte et al. (2019). The first is an exploratory study of gender diversity within the boards of directors and corporate executive teams of the top 100 global forest sector companies, and this study finds that a more gender diverse top management team is associated with higher financial performance (Hansen et al. 2016). However, a higher level of gender diversity in boards of directors is not associated with financial performance. The second study reveals that women leaders considered "being one of the boys" to be a norm to adapt to and succeed in the forest sector (Baublyte et al. 2019). Culture-specific issues, such as sauna and hunting traditions, promote exclusion and can be a challenge for women in

their career development. These activities potentially exclude women from participating in discussions leading to crucial business decisions or sharing important information.

### 1.1. Objectives

The timing for this study is fortuitous due to a generational transition from a graying workforce to a new generation of leaders and workers (e.g., Hansen et al., 2016). The transition presents a novel and significant opportunity to diversify the workforce to prepare the forest sector to face an unpredictable future. Considering that women in leadership is still perceived as an uncommon reality for much of the forest sector (e.g., Hansen et al., 2016), this study aims **to investigate women's perspectives on gender diversity and their leadership experience in the forest sector.**

Because perceptions of the forest sector as a men dominated field are related to both workplaces and forestry education, this research is done in both profit and nonprofit forest sector organizations. The general objective is broken down to four chapters with research questions as seen in Table 1.1. This research will contribute to positive social change by raising awareness of people who are working in the forest sector and informing policymakers to support an equitable and inclusive workplace environment.

Table 1.1. Chapters and their research questions.

Chapter # in this dissertation	Research questions
2.	What are perceptions of women executives on the current situation with respect to gender diversity in the forest industry?
	How do women executives think the forest industry could be made more attractive to women?
	What advice do current women executives have for young women entering the forest industry, in order to have a good career?
3.	What are the perceptions of women student leaders on the current situation with respect to gender diversity in the forest sector?
	What motivates women student leaders to enter the forest sector?
	In what ways do women student leaders think the forest sector could be made more attractive to young women?
4.	What are the perceptions of women student leaders regarding the current situation of gender diversity in forestry higher education?
	What are the perceptions of women student leaders on gender diversity changes and efforts that have been done in forestry higher education?
	In what ways do gender stereotypes and expectations influence the experiences of being a forestry student organization leader?
5.	How do mentoring and networking influence women leaders in forest sector universities?

## 1.2. Theoretical framework

### 1.2.1. The forest sector image

The forest sector is generally considered to be a mature industry, characterized by producing mature products (Hansen, Panwar, and Vlosky 2013) with high price volatility of markets (Pätäri et al. 2017), lacking innovativeness (Bull, Hansen, and Jenkin 2015; Crespell, Knowles, and Hansen 2006; Leavengood and Bull 2014), and focusing on a low-cost, production orientation (Hansen, Panwar, and Vlosky 2013; Hansen and Juslin 2011; Toppinen, Wan, and Lähtinen 2013). With respect to gender diversity, the forest sector is generally perceived as a men dominated industry and

this view is supported by global statistics on the forest sector workforce (FAO 2006; Lawrence et al. 2017).

Although there are simultaneous efforts to increase gender equality in the forest sector, the industry has still been associated with a macho-masculinity workplace culture (Johansson and Ringblom 2017). The masculine image and the notion of manual forestry work and physical strength have constituted the general perception that men are the knowledgeable voice on forests, thus making women hesitant to identify themselves with the sector (Lidestav and Sjölander 2007).

A web content analysis found that images on U.S. forestry university websites rarely portrayed women, possibly perpetuating the suggestion of less perceived fit for women in the forest sector (Bal and Sharik 2019). Perceived fit is conceptualized as a direct assessment of compatibility, whether an individual fits well in an organization (Kristof 1996). The rationale behind this construct is that people's perceptions of reality will drive their cognitive appraisals and their reactions to specific circumstances.

In the perceived fit concept, all assessment is done in an individual's head, allowing them to apply their own weighting scheme to various dimensions of the environment (Kristof-Brown, Zimmerman, and Johnson 2005). Due to this holistic assessment of fit and its tendency to be consistent, perceived fit allows a great level of cognitive manipulation. Therefore, the perception of organizational characteristics has stronger effects than actual characteristics, especially for characteristics that are difficult to verify, such as values or goals (Kristof 1996).



The perceived fit theory, together with image theory, may explain that due to a persistent masculine image (Bal and Sharik 2019), women students in forestry colleges/universities were reported less likely to choose a career in the forest sector (Gharis, Laird, and Osborne 2017). Image theory, or naturalistic theory of decision-making (Morrell 2004), is developed to describe decision making processes in which the anticipated benefits are relatively abstract and not easily quantified (Nelson 2004). Images or schemata are representations of information and knowledge that organize people's values and guide people's behavior (Nelson 2004). A situation that people face sets a frame and determines which images will be used in the decision process. The framing which includes assessment of contextual characteristics, sets scenes for decision making by defining context inherent in the situation and derived from the decision maker's knowledge.

### **1.2.2. Leadership and gender equality/diversity**

As one of many highly researched topics, notable advances have been made in the scholarship of leadership in general (Day and Dragoni 2015). However, leadership development is a nascent field in the scientific study, especially its intersectionality with gender, or women in leadership.

Generally presented as a preferred social norm based on both ethical considerations and legislative demands, gender equality has been highly encouraged in recent years. For instance, the United Nations Sustainable Development Goals for 2030 call out achieving gender equality and empowerment of women (The United Nations 2017).

Simultaneously, schools of thought on strategies to enhance gender diversity and equality have been proposed, such as gender mainstreaming as a transformative strategy with three approaches: inclusion, reversal, and displacement (Squires 2005). Accordingly, women should be treated equally to men and have the same right to work and gain promotions.

In media, discussion arose from a best-selling book *Lean In* (Sandberg 2013) to articles in popular magazines, newspapers, and websites such as a section of “ForbesWomen” in Leadership theme (Forbes 2020). Gender diversity in leadership is not only just the “right thing to do”, it is also a smart thing to do. In today’s modern workplace, the work environment tends to be collaborative and cooperative, which creates an advantage for women pursuing leadership opportunities (Eagly and Carli 2003). For example, women directors more consistently make fair decisions in high risk situations such as when competing interests are at stake (Bart and McQueen 2013), which may lead to greater firm performance. The subject is also of great corporate concern in which the companies made a priority out of increasing the number of women in leadership roles.

Much of this interest comes from a glaring disparity: although women make up nearly half of the labor force in North America (World Bank 2020), they only hold 37 - 39 % of management positions (Statistics Canada 2018; U.S. Bureau of Labor Statistics 2016). Furthermore, women’s salaries are 15 - 20 % lower than salaries for men (Moyser 2017; Statistics Finland 2018; Statistics Sweden 2016; U.S. Bureau of Labor Statistics 2017). These demographic trends are similar across the globe; therefore, the gender agenda is a global issue.

Meta-analyses on gender diversity produce conflicting findings on the effect on group and company performance (Bell et al. 2011; Pletzer et al. 2015; Post and Byron 2015). On one side, diversity improves decision-making capacity, but on the other side, it can increase in-group conflicts (Erhardt, Werbel, and Shrader 2003).

Mixed findings in the literature may lead to an assumption that the relationship between increased gender diversity and organizational performance is contextual (e.g., Hansen et al. 2016). There is also a possibility that a work group has a lack of ability to maximize the potential of diversity by not recognizing different perspectives (Webber and Donahue 2001) or by using information based on their common knowledge and leaving out details (Gigone and Hastie 1993). Group composition should draw out the represented different knowledge and skills, and then extract them to arrive at a more creative problem solution. Both group leadership and individual members should develop their capacity to elaborate and exchange information cognitively within groups.

### **1.3. Research methods**

This research is a qualitative study utilizing semi-structured interviews, for giving a flexibility to follow up on interesting points in order to explore the key issues without prejudice (Irvine, Drew, and Sainsbury 2013). To meet the research objectives, we interviewed two groups of women leaders in the forest sector: (1) women executives in global companies and (2) women leaders in top world forestry universities. Their perspectives complement each other resulting in a deeper understanding the intersection of gender and leadership dynamics in the forest sector.

We focused on North America (US and Canada) due to our local situation and the Nordic region (Finland and Sweden) because of their reputation as a forefront in gender equality, indicated by Global Gender Gap Index.

All interviews were thematized in four steps (Miles et al. 2013). First, all research team members discussed and confirmed the steps of analysis approach before two authors engaged in the second step independently. In the second step, each author read and reread the verbatim transcripts. Then, utilizing NVivo software, each author identified themes and sub-themes from significant phrases and sentences based on a codebook established from previous literature and our interview protocol resulting in the first-cycle codes. Some codes were then adapted based on concepts that emerged during further analysis. To ensure reliability, the authors wrote an individual reflexive journal and critically reflected on preconceptions they had about the topic. Since multiple coders may draw different interpretations, the authors proceeded to a third step. By considering inter-rater reliability agreement (Cohen's Kappa coefficient generated by NVivo) from the second step, the authors compared and discussed their emergent themes and subthemes. Second-cycle coding resulted in consolidation of some first-cycle codes identification of newly emerged themes.

#### **1.4. Results**

The objective and research questions previously identified are addressed in the proceeding chapters. Of the four chapters the first three have been published and the fourth is under review with a peer reviewed journal.

We use “man/men” and “woman/women” instead of “male” and “female” (except the direct quotes from respondents) for supporting gender-inclusive language with a purpose to not discriminate against a particular sex, social gender or gender identity, and does not perpetuate gender stereotypes. However, in some parts of this dissertation, the language is inconsistent due to the demand from Journal’s editors and reviewers.

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## **II. “FROM NUDE CALENDARS TO TRACTOR CALENDARS”: THE PERSPECTIVES OF FEMALE EXECUTIVES ON GENDER ASPECTS IN THE NORTH AMERICAN AND NORDIC FOREST INDUSTRIES**

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## **Abstract**

Increasing gender diversity is no longer just the right thing to do, but also the smart thing to do. Although there is general literature about gender diversity and the perspectives of females in top management and leadership, there are, however, very few forest sector specific studies. This exploratory study utilizes interviews to better understand how female executives in North America and the Nordic countries of Finland and Sweden perceive the impact of the situation of gender diversity in the



forest industry. Respondents also provide career advice for young females entering or considering entry into the industry. Female executives in both regions agree that although the forest sector is still seen as a male-oriented industry, there are signs of increasingly positive attitudes regarding industry and company culture towards the benefits of greater gender diversity; however, the described changes represent an evolution, not revolution. Interestingly, despite the status of Nordic countries as leaders in bridging the gender gap, respondents from this region believe that there is significant progress yet to be made in the forest industry, especially at the entry level. With respect to career development, North American respondents suggested that young females should consider sacrificing their social life and leisure time activities, whereas Nordic respondents instead emphasized personal supports or using exit strategy from an unsupportive company or boss.

Key words: gender diversity, leadership diversity, workforce diversity, female managers, female executives.

## **2.1. Introduction**

*“Change is happening, one funeral at a time”* [during a discussion of gender issues in Finnish forestry - Sari Pynnönen, doctoral candidate, University of Helsinki]

In the society, gender diversity is generally presented as a preferred social norm, based on both ethical considerations and legislative demands; however, the benefit of gender diversity also can be considered based on economic or competitive

benefits. Increasing the proportion of women in the workforce can significantly boost the economy (PwC 2016). From a business perspective, gender diversity in top management positions can enhance corporate performance by improving problem solving due to creativity, innovation, and incorporation of different perspectives (Kakabadse et al. 2015; Daily and Dalton 2003). Greater female representation in top management can indirectly raise the value of a company by having stronger compliance with ethical principles (Isidro and Sobral 2015) and through their real and symbolic representations, women in top management positions may improve the legitimacy and trustworthiness of the company to stakeholders (Perrault 2015).

Continuous efforts to increase gender diversity have resulted in some positive outcomes such as more women in education, paid employment, and top management positions (World Bank 2013). Based on global studies, women hold 15 % of executive board seats (Deloitte 2016) and 24 % of senior roles (Lagerberg 2016). Although these numbers are growing, the rates are too small to reach gender parity, even over a decade (Lagerberg 2016). Women suffer greater economic exclusion, with an average of 15 % -20 % less earnings than men (Statistics Finland 2018; Statistics Sweden 2016; U.S. Bureau of Labor Statistics 2017).

In the forest sector, job and career prospects for young people are extremely positive, especially given the graying phenomenon of the existing workforce (Hansen et al. 2016). Employee turnover through retirement also presents a significant opportunity for the industry to increase the diversity of its workforce. Recently, the government of Canada, through The Canadian Institute of Forestry/Institut Forestier du Canada (CIF-IFC), announced an initiative to create a National Action Plan to

promote gender equity in the forest sector. Believing that gender diversity is a smart thing to do, CIF-IFC states that more young females entering the forest sector will increase Canada's economic competitiveness in the global market (Canadian Institute of Forestry 2018). A more diverse forest sector workforce is believed to positively impact the ability of the industry to move into a more competitive future (Hansen et al. 2016).

Although there is general literature about gender diversity and the role of females in top management and leadership, there are very few forest sector specific studies. Most gender research in forestry is done in developing countries, related to understanding resource management to support gender equitable policies and practices (e.g., Center for International Forestry Research (CIFOR) 2018). Instead, in the more developed countries such as in the Nordic region, gender studies in forestry are varied from forestry professionals (Lidestav and Sjölander 2007) to women as entrepreneurs (Follo et al. 2017; Appelstrand and Lidestav 2015), the gendered business case (Johansson and Ringblom 2017; Umaerus et al. 2013, 2019), organizational innovation (Lindberg et al. 2016), women's networks (Andersson and Lidestav 2016), and men's resistance to gender equality interventions (Johansson et al. 2017) to the most recent, women's experience with respect to sexual harassment (Johansson et al. 2018).

An exploratory study of gender diversity within the boards of directors and corporate executive teams of the largest top 100 global forest sector companies in North America, Europe, and Oceania finds that a more gender diverse top management team is associated with higher financial performance (Hansen et al.

2016); however, a higher level of gender diversity in boards of directors is not found to associate with financial performance. This may be because the real impact of gender diversity on groups often only occurs when the situation is free of tokenism. For example, according to Konrad et al. (2008), three or more female representatives on executive teams is needed to make any difference.

At the individual level, in the Nordic region, a personal support system is identified as important to support female career development in the forest industry (Baublyte 2017). Nevertheless, culture-specific issues, such as sauna and hunting traditions promote exclusion and can be a challenge for females in their career development. These activities potentially exclude women from discussing crucial business decisions or sharing important information.

This exploratory study utilizes elite interviews to answer the following research questions: (1) What are perceptions of female executives on the current situation with respect to gender diversity in the forest industry? (2) How do female executives think the forest industry could be made more attractive to women? (3) What advice do current female executives have for young females entering the forest industry, in order to have a good career?

In the remainder of the paper, we first provide a background, followed by a theoretical background, a description of the methods employed in the study, results, and discussion. We then provide insights regarding potential paths forward.

## **2.2. Contextual background**

### **2.2.1. Current situation**

Although women make up nearly half of the labor force in North America (U.S. Bureau of Labor Statistics 2018; Statistics Canada 2018) and the Nordic region (Statistics Finland 2018), they only hold 37%–39% of management positions (Statistics Canada 2018; U.S. Bureau of Labor Statistics 2016). Furthermore, despite the fact that more women hold college degrees and work full time, women's salaries are 15%–20% lower than men (Statistics Finland 2018; Statistics Sweden 2016; U.S. Bureau of Labor Statistics 2017; Moyser 2017).

Based on the Global Gender Gap Index that measures gender-based gaps in countries every year, Finland has a higher rank than the other three countries of interest in this study: Sweden, Canada, and the United States (US) (World Economic Forum 2018). Surprisingly, the US ranks lower than some of the considerably less economically developed countries such as Rwanda, Nicaragua, or Namibia, each with GDP less than 0.1% of total GDP in the US (World Bank 2018).

There are, however, positive developments regarding gender gap improvement in the US. A national campaign to increase the percentage of women on US company boards to 20% or greater by the year 2020 reported that the 2020 Gender Diversity Index among Fortune 1000 companies was achieved in 2017, three years ahead of the goal (2020 Women on Boards, 2018 Gender Diversity Index Key Findings, <https://www.2020wob.com/companies/2020-gender-diversity-index>). Nevertheless, smaller or more recently established companies, which are not listed on Fortune 1000, may still be less gender diverse.

### 2.2.2. Industry image

The forest sector is generally considered to be a mature industry, characterized by producing mature products (Hansen et al. 2013) with high price volatility of markets (Pätäri et al. 2017), lacking innovativeness (Bull et al. 2015; Leavengood and Bull 2014; Stendahl and Roos 2008; Crespell et al. 2006), and focusing on a low-cost production orientation (Hansen et al. 2013; Toppinen et al. 2013; Hansen and Juslin 2011).

With respect to gender diversity, the forest sector is generally perceived as a male-dominated industry and this view is supported by global statistics on the forest industry related workforce (Lawrence et al. 2017; Food and Agriculture Organization of the United Nations (FAO) 2006). However, there is a lack of research on how the people who are working in the forest sector perceive the industry, except for one study based on the views of Finnish and Swedish female leaders (Baublyte 2017).

Given dramatic changes such as global demand and market shifts because of globalization, digitalization, financial crises, and climate change pressure, the forest industry must find a way to face the issues of increasing production costs, rising environmentalism, and rapid technology transfer. Solutions for these issues have been recognized by several authors to also include diversity management (Table 2.1).

Table 2.1. Recommended solutions for renewal of the forest industry.

<b>Solutions</b>	<b>Authors</b>
Diversity management	Baublyte 2017; Lawrence et al. 2017; Hansen et al. 2016
Innovation management	Hansen et al. 2014; Hansen 2010; Crespell and Hansen 2008; Wagner and Hansen 2005
Innovativeness for competitiveness	Crespell and Hansen 2008b; Hansen et al. 2007; Crespell et al. 2006; Hovgaard and Hansen 2004
Sustainability management	Toppinen et al. 2016; Panwar et al. 2006; Kärnä, Hansen, and Juslin 2003
Technology advancement	Larasatie et al. 2018; Panwar et al. 2012; Meil et al. 2007

Low workforce diversification is a key concern in the transition to a forest bioeconomy, which should be addressed in recruitment (Lawrence et al. 2017). Compared with North America, the forest sector in the Nordic region is often considered more innovative (Hansen 2010) and tends to have a more positive attitude towards the concept of a bioeconomy (Näyhä 2012).

## **2.3. Theoretical background**

### **2.3.1. Gender diversity effects**

Gender diversity has been highly encouraged in recent years. For instance, The United Nations Sustainable Development Goals for 2030 call out achieving gender equality and empowerment of women (The United Nations 2017). Simultaneously, schools of thought on strategies to enhance gender diversity such as gender mainstreaming as a transformative strategy with three approaches—inclusion, reversal, and displacement—have been proposed (Squires 2005). Accordingly, women should be treated equally to men and have the same right to work and gain promotions. Gender diversity in leadership is not only just the “right thing to do”, but also a smart thing to do. For example, female directors more consistently make fair

decisions in high-risk situations such as when competing interests are at stake (Bart and McQueen 2013), which may lead to greater firm performance.

Despite this encouragement, however, meta-analysis on gender diversity studies has resulted in conflicting findings on the effects on group and company performance (Pletzer et al. 2015; Post and Byron 2015; Bell et al. 2011). On one side, diversity improves decision-making capacity, but on the other side, it can increase in-group conflicts (Erhardt et al. 2003).

Mixed findings in the literature may lead to an assumption that the relationship between increased gender diversity and company performance is contextual (Hansen et al. 2016). There is also a possibility that a work group has a lack of ability to maximize the potential of diversity by not recognizing different perspectives (Webber and Donahue 2001) or by using information based on their common knowledge and leaving out details (Gigone and Hastie 1993). Group composition should draw out the different knowledge and skills represented and then extract them to arrive at a more creative problem solution. Both group leadership and individual members should develop their capacity to elaborate and exchange information cognitively within groups. Looking into companies, the CEO or chairperson is considered a pivotal figure to incorporate diverse views into decision-making processes (Kakabadse et al. 2015; Pletzer et al. 2015).

#### **2.3.1.1. The advantages of better gender diversity**

The most commonly mentioned diversity benefit is improved managerial decision-making. Men and women tend to have distinct perspectives and experiences, resulting in different knowledge and information. Therefore, diverse groups tend to



process information in a greater range of ways and more deeply than homogenous groups (Dahlin et al. 2005). Because upper echelons theory (Hambrick and Mason 1984) implies that the idiosyncrasies of top managers are powerful enough to influence strategic planning, it is argued that diverse top management teams (TMT) will result in better company performance and innovation (Talke et al. 2010). Gender diversity is linked with cognitive diversity in which increasing the number of female top managers can result in lower risks and better performance (Perryman et al. 2016). More female representation in the TMTs is also associated with better collective problem-solving skills because of creativity, innovation, and incorporation of different perspectives (Kakabadse et al. 2015; Daily and Dalton 2003).

Furthermore, better gender balance in TMTs promotes a better understanding of the market by reflecting the diversity of the marketplace through a better match between employees and potential customers, thereby increasing companies' ability to penetrate their markets and result in better performance (Campbell and Mínguez-Vera 2008). In addition, the likelihood of voluntary sustainability actions in firms increases when there are more women in the TMTs, which has also been interpreted as a sign that women are more in tune with the marketplace (Ben-Amar et al. 2017).

#### **2.3.1.2. The potential problems of increased gender diversity**

Gender diversity can also trigger more in-group conflicts, as well as social identity salience (Tajfel and Turner 1979) that fosters in-group and out-group formation (Hewstone et al. 2002). This distinctiveness can lead to behavioral disintegration and interpersonal conflicts (i.e., task and emotional conflict) (Li and Hambrick 2005) and breaking groups into subgroups (Lau and Murnighan 1998).

Emerging subgroups may impair communication through biased attention and influence (Bhappu et al. 1997).

For men, gender identity salience is positively related to relationship conflict (Randel 2002), which can negatively impact work performance (Chrobot-Mason et al. 2009). In addition, a male dominated management team may create in-group and out-group distinctions, resulting in disadvantaged treatment for female managers (Schwab et al. 2016) such as less pay (e.g., U.S. Bureau of Labor Statistics 2018) or a situation in which women are less likely to be promoted (Gorman and Kmec 2009; Metz and Tharenou 2001).

### **2.3.2. Critical mass and tokenism**

Interactions in a group depend on the size of the subgroups (Kanter 1977). To have more influence, which can affect changes, a subgroup should reach a certain threshold or critical mass. When it comes to women in management teams, three females are considered as a critical threshold, while one and two females may exist largely as tokens (Konrad et al. 2008). Due to masculine leader stereotypes (Koenig et al. 2011), these token females may be marginalized in TMTs (Kanter 1977), which may hinder team performance. Companies should go beyond tokenism to experience the real benefits of gender diversity (Bear et al. 2010), to have better firm organizational innovation (Torchia et al. 2011), and to improve firm performance (Schwab et al. 2016).

### **2.3.3. Homosociality**

As a theory of preference relations with the same gender, homosociality is initially used to explain why males dominate powerful positions in social institutions (Lipman-Blumen 1976). Despite the critique that homosociality is merely based on sex role theory (Tallberg 2003), this concept is in line with homosocial reproduction theory to describe the belief that managers are selected based on social criteria due to a high pressure for social certainty and conformity (Fawcett and Pringle 2000; Kanter 1977).

To obtain a senior management position, the candidate should have competencies and characteristics that are defined by existing board members (Holgersson 2013). Because the majority of board members are males, this practice naturally gives better chances to men (Holgersson 2013) and may exclude women (Kanter 1977); however, this may not be true for all men in general. The men that do not meet the expected social behavior may also be excluded (Tallberg 2003).

Homosociality is also perpetuated in the TMT hiring process. Usually conducted as an informal process, selection lacks objectivity and relies on personal networks (Fawcett and Pringle 2000) in addition to headhunter services (Baublyte 2017). Based on this argument, men will have more benefits because of masculine senior management cultures and traditional career assessments (Fawcett and Pringle 2000). Men will be more likely to be hired because they have more access to job vacancy information and personal endorsement.

#### **2.3.4. Queen bee phenomenon**

In a male-dominated organization, the challenge for young females not only may come from male peers, but also can be from senior women. Instead of promoting women's development and mentoring young women, these female leaders, who are adjusted to the masculine culture, may distance themselves from other women (Kanter 1977) and give preferential treatment to men (Kaiser and Spalding 2015). This practice is called a "queen bee" phenomenon (Derks et al. 2016).

To be successful in a male-dominated work setting, queen bees disassociate themselves from their gender and have masculine self-presentation, underline dissimilarities, and distance themselves from other women (Derks et al. 2011) by claiming that they are more masculine (Faniko et al. 2016). Interestingly, the queen bees only distance themselves from junior women and not from women who are considered as successful as they are (Faniko et al. 2016). Above all, perhaps the most disadvantageous effect from this phenomenon is that the queen bees legitimize the current gender hierarchy, resulting in gender inequality status quo in their organizations (Derks et al. 2016).

#### **2.4. Methods**

Potential participants were identified from an annual listing by PricewaterhouseCoopers, which includes the top 100 global pulp, paper, and packaging companies. The targeted individuals were female executives in each company in North America (US and Canada) and in the Nordic region (Finland and

Sweden) at the starting time of data collection in the Northern Hemisphere's fall of 2016 to spring of 2017.

Based on company websites, we found 26 female executives in top management teams in 14 US and Canadian forest sector companies and 32 female executives in top management teams in eight Finnish and Swedish forest sector companies. The female executives have professional roles that varied from human resources, communication, and sustainability management to legal affairs divisions. Interview invitations were emailed to potential respondents, followed by telephone calls and (or) additional emails. In total, 14 North American and 10 Nordic respondents agreed to be interviewed, while others declined, mostly due to lack of time.

In our exploratory study, we used semi-structured interviews to allow for the flexibility to follow up on interesting points. Interviews were conducted face-to-face, by phone, or by Skype. Interview questions covered the topics of atmosphere of the interviewee's company and forest industry from a gender perspective, their ideas to make the forest industry a more attractive place to work for females, and their advice for young females to have a good career in the forest industry.

To engage with the female executives, we used a specific type of specialized focused interview called elite interview (Dexter 1970). Before conducting interviews, the researchers reviewed gender diversity related information of each company to have a provisional analysis. This step is beneficial to avoid the possibility of misunderstanding concepts and excessive personal bias as the result of the interview is the respondents' definition of the situation (Berry 2002).

Interviews in North America were conducted during 2016, whereas interviews in the Nordic countries of Finland and Sweden were conducted between April and November of 2017. Interviews were conducted in English and ranged from 15 min to 1 h in length. All interviews were then transcribed and thematized.

Coded analysis was conducted in three cycles (Miles et al. 2013). The first coding cycle focused on three themes (atmosphere, attractiveness, and advice) based on our research questions 1–3. The first theme, atmosphere, aimed to describe the general atmosphere in the respondent's companies and general forest industry with respect to women in the workforce and identify the changes that have occurred in the industry. The objective of the second theme, attractiveness, was to elicit thoughts from respondents on how to make the forest industry a more attractive workplace to women. The third theme, advice, aimed to recognize career advice from interviewees for young females who are entering the forest industry. The second coding cycle was done after we found patterns, grouping the earlier themes from the first cycle into a smaller number of themes for all interview questions. A third cycle was conducted specifically to identify diversity efforts undertaken in the companies (Table 2.2).

Table 2.2. Emerging themes<sup>1</sup>.

FIRST CYCLE CODING		SECOND CYCLE CODING	THIRD CYCLE CODING
PRIMARY THEMES	SECONDARY THEMES		
Atmosphere	1. Diversity and Females/Males ratio in the company and different business divisions/seniority levels 2. Company culture 3. Changes in the industry and company 4. Industry image and characteristics 5. Changes in society 6. Diversity efforts 7. Benefits of diversity 8. Supports 9. Personal stories 10.Exploring opportunity, movement between job positions 11.Behavior, image, stereotypes 12.Characteristics, personality, ambitiousness, goals 13.Issues 14.Education	1. Industry image 2. Changes 3. Diversity 4. Culture 5. Supports 6. Opportunity 7. Personal stories 8. Individual characteristics 9. Stereotypes 10.Perspectives	1. Industry image 2. Changes 3. Diversity 4. Culture 5. Support 6. Opportunity 7. Personal stories 8. Individual characteristics 9. Stereotypes 10.Perspectives 11.Diversity efforts
Attractiveness	1. Culture 2. Opportunity 3. Personal stories 4. Education 5. Environment 6. Supports 7. Perspective		
Advice	1. Education 2. Finding a niche 3. Behavior, image, stereotypes 4. Characteristics, personality, ambitiousness, goals 5. Exploring opportunity, movement between job positions 6. Supports 7. Positive understanding, perspectives 8. Issues		

## 2.5. Results

The results are organized according to the primary themes: atmosphere, attractiveness, and advice. It should be noted that all quotations in the results section come directly from the interviews, with region provided after the quote.

<sup>1</sup> Questions from both regions are similar with minor differences.

### 2.5.1. General atmosphere of forest industry

Respondents frequently claimed that the atmosphere of the forest sector has been historically known as male-oriented and male-dominated, with characteristics of a chauvinistic and masculine culture. At times, the forest industry has not been “female friendly” and women have been “underrepresented”. Examples of male-oriented culture include nude calendars, sexist jokes, and “boys’ club” activities such as hunting, fishing, and golf. One respondent used the word “Neanderthalic” when describing the forest industry.

Nevertheless, almost all of the respondents agreed that there are positive changes in the industry towards more diverse and inclusive workplaces; however, respondents indicated that this change is slow, claiming it to be more of an “evolution, not a revolution.” To “take on less of a male-oriented kind of culture, [there is a requirement of a] critical mass of women” in leadership, suggesting that more women at the management level means a more female-friendly working environment.

I think it’s definitely better [now], A) because there are more women engineers, B) because there’s more that have been recruited, hired, and now in senior leadership positions. (North America).

When I first started the jargon was different, and it was much more acceptable to make sexist jokes, it was much more common that you could find nude calendars when travelling around the country... [now] a nude calendar has been changed to be a tractor calendar. (Nordic region).

Many positive changes towards diversity have happened because of company-level initiatives. The management of respondents’ companies believe that diversity is good for their business, and therefore put strong focus on diversity when they recruit.



By having a more diverse workforce, global companies can have a better understanding of the needs of their diverse customers.

[my company] has probably more diversity because we've actually had it as a very significant focus. It's on our score cards as leaders of continuing to hire and look for the diversity and the goal of trying to match the diversity of our communities. (North America).

Why diversity? Because diversity is a good business. We are a global company, ... diversity perspective should reflect the society and the diverse customer base we have. So, I think diversity means better business, you make better decisions because you have more diverse thought in the company. (Nordic).

Some companies have encouraged a more diverse and inclusive workplace through trainings and courses for their employees. A company in North America conducts diversity trainings leading to a better understanding that people have different styles to accomplish tasks. A Nordic company has its employees join a gender equality course to raise awareness of a diverse and inclusive workplace.

Over the years we've got more diversity and more diversity training and more opportunity to interact with different levels where there are different styles to accomplish tasks. (North America).

We have recently had a course, everybody went through it, gender equality course, which I think has raised the awareness. It's not just about not making sexist jokes, it's trying to include everybody and accepting our differences. I think that jargon in the company has improved and everyone understands better that both women and men should be included in the conversations and make them feel at home. (Nordic region).

One Nordic respondent suggested that changes in society play a significant role leading to a more diverse workforce. Other respondents mentioned examples of societal changes such as more dual income families and more women as

breadwinners. However, not all respondents were positive about the evolution of the industry. There are some indicators that the upstream value chain of forestry has the most room for improvement.

A lot of companies have stood still as far as women and haven't done anything progressive. (North America).

The business side has changed a lot to positive, but the wood supply and forestry side are not moving ahead. (Nordic region).

Still lagging behind. It [forestry side of business] hasn't changed much and I'm not seeing a lot of light in there. (Nordic region).

Most respondents in both regions agreed that a higher level of gender diversity primarily exists in corporate offices and not so much in manufacturing facilities, due to their remote location and required shift work. Most women are found in office work (administration) and business divisions. Generally, increasing diversity at mills is seen to be more challenging because the plant and mill work is not viewed as appealing to females.

We are recruiting obviously more women than we used to do earlier. The only thing is that we do not have so many female applications for mill positions, for instance, supervisor positions in mills. We also have apprentice programs in some of the pulp mills, and there also we do not have that many female applicants for some reason. (Nordic region).

One of my mentees in the [management development] program started at a mill or a plant and then came to corporate and then did not want to go back to a mill or a plant because the life style change. (North America).

Regarding gender expectations, there were differences between regions. North American respondents expressed their concern that gender still matters in the forest industry workforce, especially when it comes to leadership. An example of this case

is male and female CEOs in the industry functions may be treated differently. In contrast, Nordic respondents considered that the environment in their countries support female leadership.

... when you go to industry functions, ... men interact differently ..., they treat [my female CEO] differently than male CEOs. So, there is definitely, in my opinion, a gender bias in this industry. (North America).

I think we have very good climate for women, especially female leaders. (Nordic region).

### **2.5.2. How to improve forest industry attractiveness for females**

Although views on the atmosphere of the forest industry can be interpreted to be somewhat negative, respondents have positive views regarding the potential for making the industry appear more attractive to young females as potential employees. Considering the fact that “the forest sector is not the sexiest industry”, there is a suggestion to promote the industry by doing a “better job [of] telling [the] sustainability story” and to “focus on the environmental side and social perspectives”. Modernizing the industry image could be done by reshaping company missions to be “future-oriented” and “linked to the bioeconomy”.

Reaching a critical mass of females in leadership positions was discussed by Nordic respondents. Having more women in leadership may attract young females because these female executives break cultural stereotype barriers and tend to have more empathy for women on achieving work-life balance.

When there is a big enough portion of females, critical mass in the management, then it will be so much easier for any other female who wants to do the same path. (Nordic region).

...accept that people have a life, where work is one part and private life is other part. I think the balance is very important. And perhaps female leaders have it easier to see it and respect it. (Nordic region).

Although the forest industry is still perceived to be male-dominated, the respondents mentioned that there is huge potential for women to have a solid career in this industry. In the US, the graying workforce presents a good opportunity for those entering the workforce (Hansen et al. 2016).

There are so many opportunities, there are so many retirements, and [the forest industry] is the core of American business. (North America).

Interestingly, Nordic respondents' thoughts were not as positive as their North American counterparts. Women were often considered to receive different treatment and career path as the male employees in their early career.

...make sure that the young women who enter the sector stay there. And in order to do that we need to make sure that they have the prerequisites and are treated with the respect that they deserve. Because I think that in the lower ranking positions is where you find most sexism. (Nordic region).

[Females] don't have the same path that the guys have. When they got in, they get their "godfathers" that support them to the next level, support for giving the additional education. They [reference to males] seem to have an easier path. (Nordic region).

### **2.5.3. Advice for females entering the forest industry**

In contrast to the general similarity that is found in previous sections, respondents had a variety of views regarding females and their career success after entering the industry. The most common advice by respondents in both regions was having a good boss/leader, mentor, and network. The interviewees also voiced that it

is important to have a good education in order to find a niche to make young females more competitive in the workplace.

... when you have a good boss, he or she will support you and will enable you to have a career. (Nordic region).

Find a mentor that can help you understand the technical side of the industry, as well as general leadership so you can understand the group or team that you work [with]. (North America).

Building a good network of key individuals is really important. (North America).

Educate yourself and do your studies well. But then of course find something special, your niche that would help you find your way in. What I was studying wasn't mainstream back then and it helped me. (Nordic region).

While Nordic respondents focused on the external factors such as the need for good family support systems, their North American colleagues mostly mentioned internal factors such as the importance of personal characteristics in the career journey of a female.

I think my biggest advice would be that home front discussions if you are married, discuss with your husband, how do you go on with double careers, because both going at the same time, then wanting to have a family, it's a bit difficult, then at least you need help. (Nordic region).

... so I have these little initials that I called PIE that is performance, image, and exposure ... performance is what matters, work really hard, make an 'A' ... you need to do whatever you've been asked to do and work hard to meet or exceed those business commitments. The I, is the image of what it is you're aspiring to do, so if you are aspiring to be a leader you need to get a good understanding, what are the unwritten rules of what kind of work looks like and the behavior that is expected ... then the E stands for exposure which is, having people recognize and see you and your work

getting exposed to people so that you get new opportunities ... (North America).

According to one Nordic respondent, at some point in her career she wore only black or blue trousers. She felt that a brighter colored skirt would change the attitudes of male colleagues towards her. Similarly, other respondents stated that “the females cannot be as female as they want to be” and “if they want to get along with the traditional forestry guys, they almost need to grow a mustache.” (Nordic). In contrast, a respondent suggested the young females should represent “who they are, not a gender. And that they don’t perpetuate the stereotypes of gender”. (North America).

In North America, young female employees need to be open minded to exploring the opportunities and willing to relocate, as their male peers would do. Building a career in the forest industry will benefit from moving around, including willingness to work in mills. For women, working in mills could be a hurdle due to their remote location and work shifts. Therefore, several respondents suggested that women should consider sacrificing their social life and leisure time activities to have a good career. However, Nordic respondents felt differently. Instead of making sacrifice, the young females are recommended to change their boss, or jobs, or even their company. Below are some examples of advice for young females entering the industry:

Don’t come with preconceived ideas, have your mind wide open to opportunities. (North America).

If you are going into the forestry business, be willing to relocate, not think that you’re going to get the most senior job to start. You have to be very flexible to start as far as where you are going to live and the ability to take

lateral positions to get ahead. So you can't always be moving up. Sometimes you have to move sideways. We always say that working in the forestry business is more like a jungle gym than a ladder, and sometimes you have to take a side step to get up to the top. (North America).

There are some required sacrifices, but you gotta find what works for you. (North America).

If you have a bad boss, change jobs, don't stick with a bad leader. (Nordic region).

Recognize that the company is very old-fashioned and [if the young females] cannot change it, then [they] have to change the company because [they] are wasting [their] time. (Nordic region).

A contrasting opinion came from North America respondents about the glass ceiling phenomenon. In general, the early stages of a career are crucial because that is when young females are able to move faster from one position to another. Movement will be slower when they reach a later point in their career. This may imply that a glass ceiling phenomenon still exists in the forest industry. However, one respondent disagrees with this statement.

But at the kind of two-three year point, they will begin to slow down a little bit, then at the five year-seven year point they begin to slow down a little bit more because they are getting farther up the food chain. (North America).

[There is] no glass ceiling in forestry anymore, [as long as] you find the right company that fits with your personal values and your integrity and make sure you do the best you can every day. (North America).

## **2.6. Discussion and conclusions**

Based on the interview results, there are three major findings to be discussed: masculine environment in the forest industry and its effects on women; support

systems for work-family balance for attracting young females to the forest industry; and “sacrifice versus exit” strategy advice for young females entering or considering entry into the industry.

### **2.6.1. Masculine environment**

Consistent with global statistics on the forest industry related workforce (Lawrence et al. 2017; FAO 2006), respondents from both North American and Nordic regions perceive the forest industry to be male-oriented and male-dominated. Women have been underrepresented because historically, working in the forest industry has been associated with physical strength and difficult, sometimes dangerous, workplace conditions in remote rural areas. This harsh environment has been perceived “too heavy for women” (and only suitable) “for real men” (Follo 2002, p. 301), and therefore has developed as a blue-collar masculinity and “macho masculinity” workplace culture (Johansson and Ringblom 2017).

At the management level, the absence of women may be because of homosocial reproduction practice when senior managers, most or all of whom are men, hire males as a reflection of their own images (Tallberg 2003). Men’s homosociality has created a masculine environment influencing work organization and knowledge transfer. Gendered construction on forest-related knowledge will recognize men as the voice that imposes exclusion of women in the workplace and may cause the assumption that female professionals lack the technical skills to do their job until they prove otherwise (Johansson et al. 2018; Andersson and Lidestav 2016). To be accepted and earn respect from their male colleagues, female professionals have been socially forced to adapt to male norms (Johansson et al.



2018) and to adjust their behavior and image to match the standards that are set by males. For example, these female professionals may adapt a masculine communication style (von Hippel et al. 2011) and even distance themselves from femininity, including limiting their interaction with other females (Wright 2016).

Although there are positive changes in the industry towards more gender-diverse and inclusive workplaces, the respondents indicated that the movement is slow. These slow changes may be culture-based where traditional perceptions about gender roles and what men or women do in organizations still remain deep. There is a strong assumption that males are the breadwinners and a concern about females' loyalties between their family and job (Kanter 1977). If there is a higher level of gender diversity in the companies, it typically exists in corporate offices where women are found in office work (administration) and business divisions. This finding is similar to a global report from the FAO (2006). It seems that more than a decade later, women are still stereotyped into specific roles in the forest sector. To take a place and avoid being a token, women need to find special niches such as expert and knowledge work (Brandth and Haugen 1998).

The other possible cause of slow changes is women's restricted access to networks in the forest sector (SweGov 2004 in Andersson and Lidestav 2016). Women's networks have been formed within and outside companies, including formal organizations to be acknowledged and addressed by authorities. These networks provide gender-specific social support and private information such as company cultures and attitudes toward women (Yang et al. 2019). However, while women's networks are beneficial to make women visible and counter homosociality

practice, there is an opinion that separate organizations may challenge societal norms (Andersson and Lidestav 2016) and can define women as the outsiders in a male-dominated industry because it may be seen to only represent women's interests (Brandth et al. 2004).

To boost change towards more gender-diverse and inclusive workplaces, respondents suggested that it is necessary to reach critical mass of women in leadership positions, which is believed can create a more female-friendly working environment. Women are typically seen as more empathic. Accordingly, they are often expected to clear the way and to mentor young females in the industry. Nevertheless, because the forest sector is a male-dominated industry, there is a possibility of the queen bee phenomenon that could hinder the career advancement of young females. Women leaders might create distance from their female juniors as a response to gender discrimination and social identity threat in their companies (Derks et al. 2016). In addition, it is argued that a critical mass of women in the forest industry would not make a difference due to the social context influence of professionalism (Storch 2011).

To attract young talent, respondents identified a need to modernize the industry's image. The forest industry needs to focus on its important role in the sustainable future and offer solutions for the modern world. For example, the industry can use its role in the bioeconomy for a more sustainable future economy (Lawrence et al. 2017) and in urban-living innovation such as using engineered wood products for constructing tall wood buildings (Larasatie et al. 2018).

### 2.6.2. Work-family balance

More flexible working hours and place of work to find the balance between work and family life is important for attracting young females to the forest sector. This issue was mentioned because women still tend to bear the bigger burden with respect to domestic household responsibilities (e.g., Duchin et al. 2018). This work–family balance challenge might be a reason why it is difficult to find women to work in manufacturing facilities in rural areas.

North American executives pointed out the importance of family care (childcare and (or) eldercare) availability options and having flexibility in maternity leave and (or) paternity leave. However, Nordic respondents generally placed less emphasis on these topics of childcare and maternity leave and (or) paternity leave, which may be due to differences in societal contexts. The Nordic countries, which are considered to be at the forefront in gender equality, have created a society in which men and women more equally participate in the workforce and sharing the housework and childcare responsibilities. Parental leave in the Nordic welfare state is often considered as the best model in the world. This situation is in contrast with parental leave in the US. With the U.S. Family and Medical Leave Act, new parents are protected to keep their job for up to 12 weeks, but the act does not mandate pay (U.S. Department of Labor 2018).

Women's greater family responsibilities have been identified as the major cause of the gender earning gap in the US (Goldin et al. 2017), with a perception that when female workers become mothers, they will be less engaged at work (Ladge and Little 2019). Although working mothers are socially respected, at the same time, they

may be disliked and stigmatized as selfish because they are perceived as trying to increase their power and status (Brescoll and Uhlmann 2015) and abandoning the “Motherhood Mandate” of child bearing and child rearing (Russo 1976). These females need to justify why they are working outside their home with a socially acceptable reason. When working mothers rise to top management positions and take the breadwinner role, they may be labeled “ultramacho” (Ladge and Little 2019, p. 140) and are more likely to face marital instability (Byrne and Barling 2017).

In terms of the work–family balance, male leaders are generally in a better situation than their female peers. The more successful the males are, the more likely it is that they will find a spouse and have a family (Hewlett 2002). For example, a nationwide survey about the lives of highly educated and high-earning US women reveals that half of these women are childless and nearly 7 out of 10 are unmarried (Hewlett 2002).

### **2.6.3. Sacrifice vs exit strategy**

Despite the status of Nordic countries as leaders in bridging the gender gap, respondents from this region believe that there is significant progress yet to be made in the forest industry, especially at the entry level. However, this might not be the case once women reach top positions. These opinions are in contrast to those of respondents in North America. While they have a more positive view on young females entering the industry because of many opportunities created by the graying workforce, North American female executives indicate that the glass-ceiling phenomenon still exists.

These contextual aspects may affect how female executives in both regions give different advice to young females entering the industry. Interestingly, North American respondents focused more on internal factors such as personal characteristics, while Nordic respondents emphasized external factors such as the need for good family support or using an exit strategy from an unsupportive company or boss. To have a progressive career, North American respondents suggested young females should consider sacrificing their social life and leisure time activities, which reflects “old school” attitudes. In contrast, Nordic respondents felt that instead of making sacrifices, young females should change their boss, their job, or even their company. Moreover, their responses implied that having a good educational background might help to enter the industry and facilitate obtaining a good position, but to succeed, young females should also constantly learn and develop their skills, move between functions, and go abroad to get international experience.

## **2.7. Future pathways for research**

There are limitations to this study because of the relatively small number of respondents, partly due to a very small population of female leaders in the forest industry in the studied countries. It is possible that those female executives declining to respond had a slightly different perspective or were simply less interested in the topic. If the participants are assumed as those who are most interested in gender issues, the findings provide some indication of the thinking of those who are also potentially best informed about these issues.

Because the population in this research is very small, it would be valuable to conduct similar studies covering a wider demographic area and (or) with females in

middle management, not only in the TMTs. Coverage of small- to medium-scale forest sector companies, which may lack formal mechanisms to deal with diversity aspects, could also make a valuable contribution. The nature of the companies, for example, family-owned companies, might also bring different perspectives in the realm of gender diversity than publicly owned companies as in this study.

A potential limitation is related to respondents' experiences and knowledge. We have respondents with varied work experiences in the forest industry from several decades to only a few months that may lead to different perspectives. Limited experience in their position by some of our respondents impacted their responses. Also, their willingness to share their intimate experiences with our interviewers is likely varied.

Based on findings from this study, there is considerable space for gender-related research in the forest sector. One example is in exploring, in more a comparative manner, men's homosociality, which contributes to a masculine environment. Within this kind of environment, what are the male executives' perspectives with respect to working with females as colleagues in the TMT? This context may also shape what employees in this male-dominated industry think of females as their leaders, compared with males. Looking to the bigger picture, this study about gender diversity in leadership in the forest industry can be compared with other similar studies in perceived male-dominated industries such as the automotive or IT (information and technology) industries.

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### **III. THE “CATCH-22” OF REPRESENTATION OF WOMEN IN THE FOREST SECTOR: THE PERSPECTIVE OF STUDENT LEADERS IN TOP GLOBAL FORESTRY UNIVERSITIES**

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## **Abstract**

Although there are continuous efforts aimed at increasing gender diversity, the forest sector is still largely perceived as a male dominated field, indicated by a persistent masculine image. As a result, women are still underrepresented. Utilizing interviews, we found that greater representation of women in the forest sector is considered as one of the best solutions to attract young women to the industry. However, it presents a ‘Catch-22’ in which the solution is denied by a circumstance inherent in the problem. We propose to change the forest sector image by tackling gender issues such as sexual harassment, and by simultaneously focusing on the good features of the industry such as its important role in a sustainable future and solutions for the modern world. For example, the sector can show its role in mitigating climate change and in supporting a more sustainable future economy (e.g., bioeconomy and green jobs) and urban built environment. In addition, changing the forest sector image should be supported with better marketing and promotion in various platforms, both online and offline. The sector also needs to utilize social media to attract younger generations.

**Keywords:** gender diversity, diversity in higher education, women leaders, college women student leaders, college student leadership, perceived fit, image theory

### 3.1. Introduction

The forest sector (an umbrella term covering companies producing and using wood and wood fiber as a raw material) is important to the economies of North America and Nordic countries such as Finland and Sweden. In the U.S., the industry employs approximately 950,000 workers with a payroll of approximately \$55 billion and manufacturing output of over \$300 billion (American Forest & Paper Association 2018). Nevertheless, the forest sector has not attracted sufficient young talent interested in a career in the industry, resulting in a graying workforce (Hansen et al. 2016). Enhancing gender diversity or proportion of women versus men is a reliable solution for filling the workforce gap since women make up nearly half of the labor force in North America (World Bank 2020b), Finland (World Bank 2020a), and Sweden (World Bank 2020c).

The timing for this study is fortuitous due to a generational transition from a graying workforce to a new generation of leaders and workers. The transition presents a novel and significant opportunity to diversify the workforce in order to prepare the forest sector to face an unpredictable future. This paper specifically focuses on gender as one aspect of workforce diversity due to a fact that although there are continuous efforts aimed at increasing gender diversity including in the forest sector, women are still underrepresented in its workforce (Lawrence et al. 2017). There is also underrepresentation of women in top leadership in forest sector companies even in Nordic countries that are considered at the forefront of gender equality (Hansen et al. 2016).

The perception of the forest sector as a male dominated field is not only related to workplaces, but also forestry education. A web content analysis found that images on US forestry universities' websites rarely portrayed women, possibly perpetuating the suggestion of less perceived fit for women in the forest sector (Bal and Sharik 2019). Perceived fit is a direct measure of fit, the degree to which individuals can see themselves fitting into an organization (Kristof 1996). This theory, together with image theory, may explain that due to a persistent masculine image (Bal and Sharik 2019), women students were reported less likely to choose a career in the forest sector (Gharis, Laird, and Osborne 2017).

This paper attempts to address the issues related to forest sector image and the influence of that image on attracting women into the industry from the perspectives of student leaders as future leaders in the forest sector. Here we define the sector image according to the perceptions of respondents regarding the industry. Interviews are utilized to answer three research questions: (1) What are the perceptions of women college student leaders on the current situation with respect to gender diversity in the forest sector? (2) What motivates women college student leaders to enter the forest sector? (3) In what ways do women college student leaders think the forest sector could be made more attractive to young women?

In the remainder of the paper, we first provide a description of the methods employed in the study, followed by results and a discussion. We then provide study limitations and insights regarding potential paths forward.

### **3.2. Research context**

Due to the complexity of the issues and difficulties to conduct a global study, we utilize The Center for World University Rankings by subject (CWUR 2020) to determine our potential respondents. This approach has two benefits. First, we assume that students from top global forestry universities will be generally able to communicate and express their opinion and perspectives in English. Therefore, we do not need translators (additional person than researchers) for data collection and data analysis. Direct communication is important to build trust between researcher and respondents when dealing with sensitive issues such as gender. Second, choosing these universities allows us to understand how they—as top forestry universities in the world—treat gender diversity, represented from their student perspectives.

Based on The Center for World University Rankings, the top four forestry universities are located in the Global North: the Swedish University of Agricultural Sciences in Sweden, Oregon State University in the US, the University of British Columbia in Canada, and the University of Helsinki in Finland. Two of the locations are considered at the forefront of gender equality in the world, ranking number 3 (Finland) and 4 (Sweden) on the Global Gender Gap, an index that measures gender-based gaps 11. From the same index, Western Europe has reportedly made the most progress on gender parity, followed by North America.

### **3.3. Theoretical background**

#### **3.3.1. Perceived fit**

Perceived fit is conceptualized as a direct assessment of compatibility, whether an individual fit well in an organization (Kristof 1996). The rationale behind this construct is that people's perceptions of reality will drive their cognitive appraisals and their reactions to specific circumstances (Kristof 1996).

In the perceived fit concept, all assessment is done in an individual's head, allowing them to apply their own weighting scheme to various dimensions of the environment (Kristof-Brown, Zimmerman, and Johnson 2005). Due to this holistic assessment of fit and its tendency to be more consistent, perceived fit allows a great level of cognitive manipulation. Therefore, the perception of organizational characteristics has stronger effects than actual characteristics, especially for characteristics that are difficult to verify, such as values or goals (Kristof 1996).

#### **3.3.2. Image theory**

Image theory, or naturalistic theory of decision-making (Morrell 2004) is developed to describe decision making processes in which the anticipated benefits are relatively abstract and not easily quantified (Nelson 2004). Images or schemata are representations of information and knowledge that organize people's values and guide people's behavior (Nelson 2004). A situation that people face sets a frame and determines which images will be used in the decision process. The framing which includes assessment of contextual characteristics, sets scenes for decision making by

defining context inherent in the situation and derived from decision maker's knowledge.

Following this theory, decisions are made if people feel they fit with their personal values, trajectory/goals, and strategies (Nelson 2004). Collectively, these three cognitive structures are called "images" (Beach 1990). Among the three image types, value is considered as the primary motivator of the entire decision-making process, determining what should and should not (Nelson 2004). The second structure, trajectory, consists of the goals which decision makers want to achieve. Varying from abstract to specific, goals form a useful agenda for the future. As the third type of image, strategies consist of plans, tactics, and forecasts.

### **3.4. Methods**

Since our study was qualitative by nature, we utilized interviews to answer our research questions. Before conducting the data collection, study approval was sought from The Institutional Review Board (IRB) at Oregon State University.

We identified potential respondents from the top four forestry universities in the world based on The Center for World University Rankings: the Swedish University of Agricultural Sciences in Sweden, Oregon State University in the US, the University of British Columbia in Canada, and the University of Helsinki in Finland. Targeted participants were currently enrolled students (both undergraduate and graduate students) that identify as women, have experience in forestry-related student organization leadership (e.g., president, vice president, secretary, treasurer), and able to do an interview in English.

Potential participants were identified in two steps. First, identification was done through the available public information on university/college websites and social media. Based on our visual interpretation of the names and/or pictures, we sent an email to the leaders. The introduction email outlined the study, confirmed whether the contacted leaders were eligible (e.g., do they identify as women?), and invited them to participate. Interested students were given a detailed project description that contains all the elements of informed consent and asked whether they know somebody that fits the study. In other words, the second potential respondent identification process was through a snowball sampling method.

We conducted individual interviews, in-person, on the phone, or online (via Skype or FaceTime). Individual interviews can provide a more supportive environment for women, especially when the study is about sensitive topics (e.g., gender-based experience) (Kruger et al. 2019). We employed a semi-structured interview technique to allow flexibility in following up on interesting responses.

The initial interview protocol was designed based on the extant literature (Larasatie et al. 2019). We pre-tested the protocol twice: first, to a group of experienced qualitative researchers in the forest sector at Oregon State University, and second, to a convenience sample of four women who are ex-student leaders in forestry-related student organizations in the targeted universities.

We recruited respondents on a voluntary basis. Respondents were assured that they have the right to withdraw at any time. In total, 41 women student leaders in four universities agreed to be interviewed. To assure anonymity and confidentiality, a number (between 1 and 41) has been randomly assigned to each student participant.

Interviews were conducted in English, based on assumptions that students in top global universities are fluent in English regardless of their nationality. In addition, English ability to do an interview is one of our screening questions to potential respondents. Interviewers were aware of different accent and dialects of English, and therefore, asked for immediate clarification every time encountering a doubt. Interviews ranged from 30 min to 2 hours in length. This wide range may be caused by different interactions that were built between an interviewer and an interviewee due to respondents' characteristics (e.g., extrovert vs introvert) and respondents' mood on the interview day (e.g., good day vs bad day). All interviews were then verbatim transcribed and thematized.

We conducted inductive thematic analysis based on our research questions addressing perception, motivation, and attractiveness. The first theme, perception, aimed to describe the students' perception of the forest sector with respect to gender diversity and identify the changes that have occurred. The objective of the second theme, motivation, was to identify reasons why women student leaders enter forestry education. The third theme, attractiveness, aimed to investigate what ways the forest sector can be made more attractive for young women.

Inductive thematic analysis was conducted by two authors, utilizing NVivo software. By considering inter-rater reliability agreement, the authors compared and discussed their emergent themes and subthemes (Table 3.1).



Table 3.1. Themes and sub-themes.

<b>Theme 1 Perception</b>	<b>Theme 2 Motivation</b>	<b>Theme 3 Attractiveness</b>
Forest sector image	Circumstances	Women representation
Perception	Family	Publication/marketing
Legacy	Role model	Inclusion
Changes	Outdoor/nature	Mentor
	Funding	Role model
	Career	Curriculum

### 3.5. Results

Findings are organized according to the primary themes: perception, motivation, and attractiveness. All quotations in the results section come directly from the interviews, with respondents' random numbers provided after the quote.

#### 3.5.1. Student perceptions of the forest sector

Although most respondents agreed that there is better gender diversity in forestry higher education and government, the forest sector is still perceived to be a male dominated profession into which it is hard to attract women. A leader in North American university mentioned that forestry in government might look more diverse due to diversity quotas that they need to obey. Respondents argued that women do not want to be in the forest sector because they do not see women represented. The forest sector is usually associated with “people out in the woods and chopping down trees” (#3) or “lumberjack stereotype with big bushy beard” (#24), holding a “chainsaw” (#24), “or fighting fires or working for warehouse or cruising plots” (#11). Therefore, to enter the forest sector, there is an expectation for women to be tough and act more like men such as wearing specific apparel.

“This is an industry that we weren't in the first place and we've found our place in it over time.” (#14).

“... a lot of women end up [in the forest sector] coming from other fields. It's not really a career path [that] a lot of young women out of high school or something make up for themselves.” (#24).

Working in the forest sector often means working remotely which brings disadvantages to women such as high risk of “harassment and violence” (#29). Field job postings typically mention physical fitness requirements which are perceived as indicating masculinity. This situation makes some respondents question their belonging in the forest sector as there is also a feeling that “women are not seen as competent or not having any knowledge” (#38).

A respondent warned that there is still a lot of men in forestry who think women should not be doing forestry things. These men are not interested in diversity because they have the privilege of never being in a discrimination or micro-aggression situation. As a result, they do not give credit to women or other underrepresented groups that might need to overcome a lot of hurdles to get where they are.

“Diversity was not a thing. You hired whoever you could hire and if the only person available was a woman you would hire the woman, but you wouldn't actually make any special allowances for them being different. ... I have worked with a bunch of guys who were complete assholes.” (#27)

### **3.5.2. Motivation to enter the forest sector**

The student leaders mentioned that their pathway starts because they enjoy being in the forest, therefore they want to “work outdoors” (#7) and to have a career with an impact on “forests and sustainability” (#39). A leader has grown her interest in forestry since high school when she learned to be “a tree hugger” (#29). Another

respondent realized that forestry could contribute to answering sustainability questions related to “climate change and carbon uptake” (#10)

“I chose it because I wanted to live and work anywhere in our country. I didn't want to have to live in a city. I wanted to live in the countryside. So that is one reason and I also think that forest is one of the solution[s] in the new era of environment ... it includes so much, like the social, the economic, the environmental in the world aspect of biological, air pollutants, that it's so complex.” (#38)

Surprisingly, many of our graduate student respondents did not intend to get into forestry education programs. Before enrolling in forestry, they were studying different fields such as, “wildlife conservation” (#23), “disaster management” (#13), “microbiology” (#30), or even “international business” (#34). These students encountered forestry programs and when they got to know more, they became actively involved. A major factor of this encounter is a financial opportunity. A leader in North American university mentioned that the college/faculty of forestry has more funding support, compared to others.

“I kind of came to it by accident, which is something I actually heard quite a bit ... We'd had a really, big bushfire throughout my state with really significant impacts, including losses of life. ... actually forestry, which I previously thought of is like, destructive native timber harvesting, you know, very political issue like, ‘oh, wow, actually, it includes all of these different components of forest ecology, management, social science and community-based management.’ (#13)

“When grad school comes around, it's really based on funding ... I wasn't really interested in ... taking on more debt to go to grad school.” (#11)

“... and I ended up getting a scholarship into [her major], and so I thought “hey, if I’m on a scholarship, I might as well try it out for a term, and I can always get a term of school at least partially covered.”. Because it was

appealing to get into the major, and then I really enjoyed it, so, I stuck with it. And then, I decided to continue my master's program here.” (#40)

One respondent became interested in forestry after joining a forest summer camp activity, held by one of the Nordic universities. The four-day summer camp was intended for young women participants only. She was impressed with outdoor lectures from people working in the industry and hand-on activities such as planting trees and forest thinning practices.

Five leaders thanked their family for inspiring them to go to forestry. They either grew up nearby forests or have parents/older family members that were working with nature. By seeing on a firsthand basis, they value the benefits of nature to the world.

“... once I actually came to that realization, and I discovered how much forests really do impact [to] everyone's lives, whether it's directly or indirectly, [then I realized] that this was the perfect fit for me.” (#22)

“I was very skeptical in the beginning, if my uncle didn't convince me that [as a forester] wasn't just working in the toilet paper industry, then I wouldn't have applied.” (#41)

### **3.5.3. Making the forest sector more attractive**

#### **3.5.3.1. More representation of women**

Due to a perception of the forest sector as a “male dominated kind of sexist, old fashioned industry” (#6), there is an urgent need to have more gender diversity and create a more gender balanced place. It is important to have more women represented, especially in leadership. In addition, a respondent thinks that there is a need to show women who are successful in the forest sector as their chosen career

path. Another leader thought that encouraging and empowering women to stay will have a snowball effect, attracting other women to enter the sector. However, having more women is considered as “a circular problem” (#39): to attract women, there is should be more women in the field.

“I think just more representation and like seeing many women in these higher positions and these jobs that you want to be in not seeing it as this like impenetrable, like, ‘that’s a lot of men working there’, not seeing it as like a male dominated fields, it’d be more inspiring.” (#25)

“This sort of catch-22, where women don’t want to go into a field because there aren’t women in the field. Well, how do you get women into the field? And so I think from a very young age, cultivating in women ... And I think women often dominate a lot of the social sciences. Not necessarily in like upper level leadership positions.” (#35)

There is an expectation that the women leaders can be role models and mentors for younger women. By having these women in those positions, the respondents feel that there is “a welcoming space” (#11) for them by having people whom they can talk with. However, a respondent warned about the possibility of having women leaders in forestry as tokens who are maybe hired because of their gender.

“Some strong and competent female role models who really kind of show that it’s okay to be a woman in science or the greater number of women in leading positions, not based off the old guys in the offices. (#32)

“I really like it when they have women that are really knowledgeable and really passionate about what they do. And when they’re in a leadership position. It’s great. Because it’s one of my biggest pet peeves when they’re like, ‘Oh, we have this woman in leadership.’ But it’s like, she doesn’t know anything ... it’s really important for women to see that we’re not just tokens

and we're not just a diversity hire and that we actually do have something to bring to the company or community.” (#33)

Since there are not many women in the forest industry, a leader suggested an intentional mentorship program for young women, especially on a one-on-one basis. She continued that the mentor can also be a man who has professional experience with women in their company.

“[Male mentor] who has a personal connection to a female in their company ... to really lift up [the young women] experience and help them be successful on an individual basis, because interacting with one male ... is a lot less intimidating then somehow trying to be in a room with 15 men.” (#16).

Academically, the respondents hope to see more women as lecturers or professors, distributed equally in all forestry majors. A leader noticed that there are a lot of fewer women in technical aspects of forestry and even fewer in “hard science forestry faculty positions” (#16) that are historically perceived more male dominated than social sciences. Another respondent noticed that because women researchers are few in the college/faculty of forestry, they have to take more administration work for gender representative and therefore end up supervising more PhDs and postdocs than their male colleagues.

“... females within academia might not be viewed as skillful as an equally success like as an equal male. Like, for instance if a professor is female, they might have been viewed as getting in that role because [of] their gender, rather than because of their skill. You don't view a male like that. And I think as a female in industry, if they're in a higher leadership role, people might feel that they are worth more.” (#40)

### 3.5.3.2. More publication and better marketing

The forest sector should do better on publicizing all positivity aspects of forestry. The sector should be marketed as more than traditional forestry (e.g., extractive and logging industry), focusing on human dimensions, conservation, and ecology. To attract more women, a leader in North American university suggested that the college/faculty can shift the current curriculum to be broader and connected to global issues. Furthermore, forestry universities should utilize social media such as Instagram or Facebook for advertising their programs, especially for targeting younger generations.

“It always cracks me up when I go to these forestry conferences. And people are just like talking about the latest chainsaw technology and stuff. And I'm just like, can we talk about people? Can we talk about human connections with nature? Can we talk about the ways we interact with space and time and all of these things? So, to me, I feel like that the known discrimination in traditional forestry field is really a turnoff to women pursuing forestry. I think [it's important to] market forestry more inclusively, to include these other perspectives.” (#11)

It is important to raise the diversity issue that women should be treated equally as men. Diversity should be represented visually in publication platforms such as brochures. The visualization can have a huge impact. For example, a leader in a Nordic university raised a concern of a forest machine advertisement with “three women dancing in short skirts [with] barely any clothes” (#38). For her, this advertisement indicates the expected women positions in the forest sector.

“I'm proud of this sector but seeing the kind of thing [advertisement on forest machines], that would be like, oh my place in this forestry sector is dancing in a short skirt.” (#38).

### 3.5.3.3. More accepting environment

For making the sector more attractive, respondents suggested creating a “more accepting environment for women” (#12). While they are still in the university, male students need to have education for accepting more gender equity such as women in leadership. Therefore, if the male students, who then become foresters, see “inequality, [they know] how to speak up” (#23).

“I wish forestry had a quota like ‘we cannot hire more men than women’, ‘we cannot pay more to a male professor than a female professor’ ... to acknowledge [women have] been discriminated, that's the only reason why we have less female[s]. We're not less smart. We're not in any physiological disadvantage. Yet, we're not as present as a male.” (#15)

“Going into forestry as a student is no big deal. Going into forestry in the workforce and staying there may be a bigger deal ... working in a logging camp, washroom facilities, field gear that fits, guys that'll wait for you to catch up in the woods if you're not fast enough ... The studies have shown that if you've got a group of 10 men, and then you put in one woman, it's not going to behave like a mixed gender group, the woman basically has to start acting like a man and fit in with the rest ... they're not going to put in another washroom just for you. You have to suck it up and share with the guys. And if the guys don't like it, well, they have to suck it up too. But of course, ... they're not always going to be happy. They're not always going to treat you well, because they're mad. ... It's sort of upsets the apple cart.” (#27)

Respondents raised some major concerns about sexual harassment, gender pay gap, and clothing size problems. Two leaders in a North American university pointed out the front-page news of sexual harassment that happened in the Forest Service. Therefore, there is a need to have some specialized trainings in forest sector institutions for issues such as sexual harassment, unconscious bias, and micro aggression. It is also important to take “sexual harassment claims seriously” (#11).



“The Forest Service needs to get its act together on sexual harassment, because it's really appalling ... I know that they're trying to address it, but they're probably not doing enough. So I think that there's this issue where forestry work is really often really remote out in the field, the dangers are high for harassment, for violence ... shifting the forestry profession more in the direction of ecological restoration based forestry, I think will be more attractive to women. I think having more women as supervisors as like high up in the ranks of companies and agencies, it's really important.” (#29)

### **3.6. Discussion and conclusions**

Although gender diversity in forestry universities is perceived to be better today than in the past, there is huge room of improvement in the industry. The discontinued paths from women in forestry higher education to workplaces happens due to the perception of an unwelcoming environment, lack of sense of belonging, and lack of career opportunities (Hubbard 2014; McGown 2015). In other words, the women students do not experience perceived fit in the forest sector.

Forestry is still perceived as a profession for men, even in an interdisciplinary field such as urban forestry that is considered more attractive for women among other forestry professions (Kuhns, Bragg, and Blahna 2002). Women in this sector often felt being socially forced to adapt to male norms (Johansson, Johansson, and Andersson 2018) in order to be accepted and earn respect from their male colleagues. In some cases, these women will adapt a masculine communication style (von Hippel et al. 2011) and even distance themselves from femininity traits, including limiting their interaction with other women colleagues (Wright 2016). Because of a strong masculine culture, some women leaders who have been successfully climbing the ladder may give preferential treatment to men (Kaiser and Spalding 2015) over junior

women (Faniko, Ellemers, and Derks 2016); a practice that is called a “queen bee” phenomenon (Derks, Van Laar, and Ellemers 2016).

Although our respondents considered more women in the forest sector as one of the best solutions to attract young women, it is a dilemma. As mentioned by one of our leader respondents, it presents a ‘Catch-22’ in which the solution is denied by a circumstance inherent in the problem. An example of the Catch-22 of representation of women is women will be attracted to enter the forest sector if there is visibility of women in the sector, especially in leadership, but how to get these women in? How to get women into leadership positions in the forest sector? Increasing the number of women should not be tokenism, an unfair practice where these women will be treated only as a symbol of gender representatives, not as individuals (Kanter 1977). If hired only as tokens, women will typically feel excluded and lack support and respect from the rest of the group.

### **3.6.1. Changing the image**

The existing masculine image of the forest sector forms a strong barrier for attracting women into the industry and perpetuates the perception that the industry has less perceived fit for women. The sector is strongly connected with traditional forestry such as logging with big heavy machines in difficult, sometimes dangerous, landscapes. The harsh workplace environment has been associated with physical strength and has been perceived “too heavy for women” (and only suitable) “for real men” (Follo et al. 2002, p.301). These workplace characteristics are frequently seen as causes of gender issues such as sexual harassment (Johansson, Johansson, and Andersson 2018). Therefore, tackling the issue should be the first priority.

Simultaneously, the forest sector should focus on the good features of the industry such as its important role in the sustainable future and solutions for the modern world. For example, the sector can show its role in mitigating climate change (idea 1) and supporting a more sustainable future economy (idea 2) and urban built environment (idea 3).

**Idea 1** - A comprehensive analysis of conservation and restoration efforts show that forests and other ecosystems could provide a chance of holding warming to below 2 °C through the next decade (Griscom et al. 2017). Emphasizing the environmental role of forests as a large carbon sink which help slowing global warming may motivate young women to enter the forest sector. Women and younger people are found to have more ecological and environmental values than men and older people (Tarrant, Cordell, and Green 2003). In forest management, women find it more important to preserve forests and emphasize environmental and human-centered management (Nordlund and Westin 2011).

**Idea 2** - The forest sector has a central role in the bioeconomy that is currently a dominant concept in the political discussion on global sustainability transformations (D'Amato et al. 2017). In a bioeconomy, the sector has a role as both a provider of biomass and as a manufacturer of higher-value products (Kleinschmit et al. 2014). Focusing on the global role of forest-based bioeconomy in creating a more sustainable future will interest and attract young talent (Hodge, Brukas, and Giurca 2017; Lawrence et al. 2017).

Forests are also considered to have important roles for achieving Sustainable Development Goals (SDGs). Anchored in a green economy, global experts have

introduced the concept of green jobs, that are defined as decent jobs that contribute to preserving or restoring the environment (Kacprzak 2019). In the forest sector, green forest jobs refer to forest based economic activities and therefore being a part of a forest-based bioeconomy (Kacprzak 2019). Green forest jobs have expanded traditional forestry jobs as a core to seven thematic areas and 19 fields of activity (Table 3.2).

Table 3.2. Green forest jobs thematic area and fields of activity (Kacprzak 2019).

<b>Seven thematic area</b>	<b>19 fields of activity</b>
Wood and energy production	Wood production
	Energy production
Agroforestry and mountain forestry	Agroforestry
	Mountain forestry and soil bioengineering
Social and urban development	Urban forestry and arboriculture
	Culture and forests
Forest management, inventory and planning	Forest inventory and forest monitoring
	Planning, governance, sustainable forest management
	Pests, disease and forest fires
	Risk management and contingency planning
Biodiversity and ecosystem functioning	Biodiversity conservation and nature protection
	Climate change
	Forests and water
	Mycoforestry
Health and recreation	Forest ecotherapy
	Recreation, leisure and sports
Education and research	Education, further training and knowledge transfer
	Forest research

**Idea 3** – The forest sector can help make the urban built environment a more sustainable space by providing wood as an alternative to steel and concrete construction (Milaj et al. 2017). With innovations in engineered wood products (e.g., cross-laminated timber), it is now possible to construct buildings over 40 stories tall made primarily from wood (Bowyer et al. 2016). The public believes that tall wood buildings are more aesthetically pleasing and create a positive living environment (Larasatie et al. 2018). Growing interest in using wood in advanced manufacturing will attract more diverse talent to the forest sector workforce.

### **3.6.2. Promoting the sector**

Changing the forest sector image should be supported with better marketing and promotion in various platforms, both online and offline. One way to promote gender diversity is to highlight diversity in forest sector organization websites, pamphlets, and other media (Bal and Sharik 2019). In higher education, emphasizing diversity on university websites is a central strategy for attracting new student populations. Diversity represented on the university websites will increase perceived person-organization fit (Greguras and Diefendorff 2009), and in turn, increase enrollment commitments (Ihme et al. 2016).

Similar with applying for universities, people will be more attracted to apply for jobs in an environment where they can see themselves fitting in (perceived fit) (Chapman et al. 2005) and where they feel welcomed. When it comes to applying for jobs, women are more interested than men to find positions that will minimize conflicts with their other social roles (e.g., spouse and/or parent) (Chapman et al.

2005). Therefore, to attract more women, forest sector companies can inform about their organizational attributes (e.g., flexible hours, family-friendly benefits, on-site daycare) in their job advertisements.

The forest sector should also utilize social media to attract younger generations. Generally, people who attend university and are entering the workforce nowadays were born after 1990 (Booz&Co. 2010). Since this generation is born in a digital era, they are frequently referred to as digital natives (Prensky 2001) and a major part of ‘Generation C’. The capital letter of ‘C’ refers to an English word of ‘connected’ symbolizing the generation connection with the internet (Solis 2012). In addition to attracting younger people, promotion through social media may also attract more women as they are reported to use social media more than men (Solis 2009).

### **3.7. Study limitations and future pathways**

A potential limitation of this study is related to respondents’ experiences and knowledge. We have respondents with varied interactions with the forest sector from having work experiences and being forestry students for multiple years to just only enrolled for a few months. These differences create different perspectives. Limited experience in their leadership positions by some of our respondents may impact their responses. In addition, the respondents’ willingness to share their personal experiences with our interviewers is likely varied. Those variables may result in different time length of interviews. Moreover, since this study’s site selection is large

universities in predominantly white and developed countries (the Global North), we did not aim to generalize the findings to the global forest sector.

Attracting more women should be balanced with retaining women that have been in the sector. Based on a recent study about the importance of women's networks on supporting women's retention in the forestry profession (Crandall et al. 2020), future research can be directed at developing a comprehensive understanding of what is needed to retain women in the forest sector. There is also a need to do research addressing complex gender issues in the forest sector such as sexual harassment and gender pay gap. With regard to a consideration that the studied universities may have great resources including funding availability, further research can be done at different types of organizations (e.g., profit-oriented companies), different scale of organizations (e.g., small to medium), and different locations (e.g., less-developed countries).

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# **IV. LEADING WITH THE HEART AND/OR THE HEAD? EXPERIENCES OF WOMEN STUDENT LEADERS IN TOP WORLD FORESTRY UNIVERSITIES**

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## **Abstract**

Women have been historically underrepresented in the forest sector. Given a graying workforce, there is a significant opportunity to diversify the sector via a younger generation entering the industry. To a large extent, the gender situation in the forest sector is influenced by the education of employees in the sector. Therefore, it is beneficial to know the perceptions of women student leaders, as future industry leaders, about gender diversity and equality in forestry universities. Utilizing interviews, we found that although our respondents perceived increase in the proportion of women students in forestry higher education, this is not proportionately reflected in the forestry workforce. Our respondents emphasize that women can be good leaders utilizing skills of listening, collaboration, and organization and it is not necessary to show agentic qualities to be considered a good leader.

**Keywords:** Gender diversity; leadership diversity; diversity in higher education; women leaders; college women student leaders; college student leadership; student organizations.



#### 4.1. Introduction

*“We make this statement because we want to take the opportunity to influence future students’ experiences during their study time, but also our own future in the forest industry. When we enter the forest industry, we expect strong leadership from our employers, where behaviors such as those described in #Slutavverkat are not accepted. We will work hard for the change we want to see and expect the same from SLU and the forest industry.”* (Translated by Felicia Lidman from an open letter from women students in forest science at the SLU/Swedish University of Agricultural Sciences and the forest sector (From hashtag to action 2018)).

The forest sector (an umbrella term covering companies producing and using wood and wood fiber as a raw material) has been long perceived as a men-oriented and men-dominated industry. Historically, employment in the forest sector often meant working in difficult workplace conditions, a harsh environment that needs physical strength, and in remote rural areas. Therefore, the sector has been associated with a blue-collar masculinity and macho-masculinity workplace culture (Johansson and Ringblom 2017), creating a dilemma where it is difficult to attract young women into the industry (Larasatie et al. 2020). Even today in the Nordic countries, women leaders considered as “being one of the boys” is a norm to adapt to and succeed in the forest sector (Baublyte et al. 2019).

To a large extent, the gender situation in the forest sector is influenced by the education of employees in the sector (FAO 2006). More women studying forest sector education will provide more educated women working in the forest sector.

Moreover, education also has an important role to educate men, who are historically dominating the forest sector workforce, to work together for achieving gender equality in the forest sector.

Universities have been long been a source for company recruiting across numerous industries seeking future leaders/managers. Women executives of top global forest sector companies advise young women entering the industry to obtain a good education, find a good boss/leader/mentor, and establish a good network (Larasatie et al. 2019), each of which can be developed during university/college (Zekeri 2004). Therefore, it is beneficial to know the perceptions of women student leaders, as potential future industry leaders, about gender diversity and equality in the forest sector.

At the end of 2017, women in the Swedish forest sector, started to give individual testimonies about their experiences of assault and harassment. Utilizing Instagram as a platform, the stories using #Slutavverkat (representing #MeToo in the Swedish forest sector) has launched more than 100 testimonies. Women students in the forest science program at the Swedish University of Agricultural Sciences wrote an open letter to both forest sector companies and their university, representing a strong gender equality and diversity effort by student leadership (From hashtag to action 2018).

Gender-based leadership research historically associates management and leadership with masculine stereotypes of agentic qualities such as assertiveness and competitiveness (Eagly and Carli 2007). Management and leadership are generally associated with a masculinity or “think manager-think male” paradigm (Schein et al.

1996). Stereotypical expectations are pervasive among men and women, including in educational settings (Coleman 2003).

Given the layered dynamics of these various phenomena, it is no wonder that progress toward workplace equality follows a glacial pace. Essentially, we know that the deck is stacked against women reaching leadership positions in many organizations, though the situation has improved in recent decades. With this understanding of the current context and the challenges that women face, we chose to explore the views and perceptions of student leaders in top global forestry higher education institutions. This study, aiming to explore how gender stereotypes and expectations influence women in forestry student leadership, contributes to ongoing debates concerning underrepresentation of women and gender diversity benefits in leadership.

Utilizing interviews, this study explores the perceptions of women regarding their experiences as student leaders in forestry higher education. Specifically, our research questions are: (1) What are the perceptions of women student leaders regarding the current situation of gender diversity in forestry higher education? (2) What are the perceptions of women student leaders on gender diversity changes and efforts that have been made in forestry higher education? (3) In what ways do gender stereotypes and expectations influence the experiences of being a forestry student organization leader? Gender in this study is investigated as something that is “done”, a routine accomplishment embedded in interactional work. As an ethnomethodological approach, the concept of “doing gender” means conceiving gender as socially constructed rather than individual features (West and Zimmerman

1987). This study uses “gender diversity” as not only a concept which refers to numbers or proportions of gender, but as an umbrella term to describe gender identities that demonstrate diversity. Here, we recognize that gender is not binary (male and female) but have chosen to focus exclusively on women-identifying leaders. The term of “gender atmosphere” is used to describe the general atmosphere in the respondent’s college and student club/organization with respect to gender diversity.

In the remainder of the paper, we first provide a theoretical background, followed by a description of the methods employed in the study, results, and a discussion. We then provide author positionalities and insights regarding potential paths forward.

## **4.2. Theoretical background**

### **4.2.1. Women in college student organization leadership**

Although perceived as a more protected environment than the real world (Winston et al. 1997), college student organizations are still beneficial for developing competencies and skills in for workplace such as teamwork, problem solving, and the skill to plan and execute projects efficiently and effectively (Pascarella and Terenzini 2005). Student organizations and workplace environments are argued to have similarities in organizational structures, mission-driven goals, and group dynamics (Wagoner 2017).

Students who pursue leadership roles in student organizations are more successful in developing leadership skills (Cooper et al. 1994). For women entering

college with a lower self-confidence than their men peers (Sax and Arms 2008), taking a leadership position in student organizations helps to gain self-confidence (Andrews 2011). To encourage leadership by women, some universities in the U.S. have organized specific leadership programs for women. The most common program is professional development with career preparation oriented as a way of teaching leadership to young women (Snyder 2018).

In a mixed-gender campus environment, having women role models, mentors, and advisors easily accessible will be beneficial in order to minimize the impact of gender leadership stereotypes (Howard-Hamilton and Ferguson 1998; Adjorlolo et al. 2013). Peer acceptance and support are important for women student leaders (Romano 1996; Eagly et al. 2003; Duckett 2006). Therefore, women prefer to emphasize relationships in their leadership styles (Romano 1996), stressing the importance of relationship building and helping organizational members to develop and grow (Haber-Curran 2013), characteristics of transformational leadership (Eagly et al. 2003) and democratic leadership (Duckett 2006). However, some women student leaders feel intimidated by men leaders and therefore, feel a need to tailor their leadership style to the gender of people that they are working with (Adjorlolo et al. 2013). Women student leaders experience challenges in balancing between being more task oriented and more relationship oriented; too direct or too nice. This is particularly evident for women whose desire to be communal diminishes their agentic ability, resulting in a lack of authority within the organization.

Studies on college students' leadership identity development reflect progress to leading for social change (McKenzie 2015; McKenzie 2018). At first, women

students considered gender as irrelevant to their leadership identity, although they recognize that society perceives women leaders as weaker or less capable. Later, they understood how gender matters and recognized a need to take a stand on societal issues related to gender and race. The finding is in line with two studies that specifically compare men and women student leaders (Montgomery and Newman 2010; Shim2013). Women students are reported to have more social change leadership values (Shim 2013) and rate themselves higher on a measure of caring (Montgomery and Newman 2010).

A study exploring the experiences and future leadership aspirations of undergraduate women who serve as presidents of the student body in their university shows that these women feel tremendous responsibility to execute their presidential duties (Polson 2018). As a result, they sacrifice their personal life to be able to perform well, at a high level. These women presidents practice other-oriented leadership by prioritizing other people and enacting change for the good of the surrounding people. The study participants develop leadership aspirations to be able to support and encourage other women in pursuing leadership opportunities.

#### **4.2.2. Barriers to women in leadership**

A study of gender-based leadership in higher education and religion found many barriers that limit women from reaching top leadership (Diehl and Dzubinski 2016). In the following, we outline six general categories of barriers likely to manifest themselves in higher education settings.

#### **4.2.2.1. Glass ceiling, glass cliff and leadership labyrinth**

The glass ceiling is a term to explain a phenomenon of an invisible barrier that women face in advancing to top management positions in organizations (Hymowitz and Schellhardt 1986). The metaphor suggests that organizational context and organization member beliefs and attitudes about the capability of women as leaders, partially explain why women may struggle to advance their careers. Based on the 2017 glass ceiling index, Sweden is the best country in the world to be a working woman with Finland and Canada in the top 10 (The Economist 2018) while The U.S. scores slightly below the Organization for Economic Co-operation and Development (OECD) average (The Economist 2018).

Extending the glass ceiling metaphor, there is a “glass cliff” form of gender discrimination (Ryan and Haslam 2007). Glass cliff refers to a predicament where women are placed in a high-risk leadership position with a greater likelihood of negative consequences (Ryan and Haslam 2005). When failure happens, these women leaders rather than their men colleagues, will be blamed and criticized.

Due to societal dynamics, the glass ceiling metaphor is often seen as having lost its relevance. Therefore, the concept of leadership labyrinth is introduced to acknowledge gender-based challenges and obstacles that women encounter (Eagly and Carli 2007). Women often must take more circuitous paths than their men colleagues, with a variety of expected and unexpected twists and turns, as they ascend to top management leadership (Eagly and Carli 2007).

#### **4.2.2.2. Perceived role incongruity and double bind**

Culturally, women are frequently seen as lacking what it takes for effective leadership roles (Koenig et al. 2011). This cultural mismatch, or role incongruity of prejudice toward women leaders, explains why it is more difficult for women to obtain leadership positions (Eagly and Karau 2002). To succeed, it is often said that leaders must possess agentic or instrumental leader behaviors such as being assertive and competitive (Eagly and Carli 2007), that are ascribed more to men than women (e.g. Spence and Buckner 2000). Therefore, leadership is generally associated with a masculinity or “think manager-think male” paradigm (Schein et al. 1996).

Women must work harder to climb the career ladder or to gain the same respect as their men colleagues (Eagly and Carli 2007). Once these women become leaders, their position and reputation are precarious and vulnerable to failure (Czarniawska 2008). Thus, particularly in a men-dominated sector, women leaders often adopt a masculine leadership style (Baublyte et al. 2019) and dress in a masculine way (Pini 2005). Nevertheless, in educational organizations, leaders are portrayed as less masculine (Koenig et al. 2011).

Because of perceived role incongruity, women are often stuck in a double bind dilemma (Catalyst 2018). Women are perceived as going against the societal norms of leadership. If women display communal qualities such as being nice and compassionate, that society expects from women, they are often not seen as competent leaders. In contrast, if women leaders exhibit expected leader traits such as agentic qualities, they may be viewed as competent leaders, but also be disliked (Catalyst 2018).



#### **4.2.2.3. Implicit bias/unconscious gender bias and second-generation gender bias**

Implicit or unconscious gender bias occurs when there is a lack of knowledge or awareness that gender plays a role in the workplace, including in leadership (Diehl and Dzubinski 2016). People are found to, “consciously reject gender stereotypes but still unconsciously make evaluations based on stereotypes” (AAUW 2016, p. 24). Referred to as second-generation gender bias (Madsen and Andrade 2018), this bias is argued to be one of the strongest, yet invisible, barriers to women’s advancement in leadership, due to cultural beliefs about gender that inadvertently favor men (Ely et al. 2011). For example, in an organization with men dominated hierarchies where leadership practices are perceived to be more common or appropriate in men, there is a powerful if unwitting communication that women are ill-suited for being leaders. Such biases maintain the status quo of men as leaders and interfere with the ability of women to see themselves, and be seen by others, as leaders (Ely et al. 2011).

#### **4.2.2.4. Male gatekeepers and homophily**

Gender is argued to be implicated in gatekeeping, a crucial networking practice in leadership recruitment, including in academia (Van den Brink and Benschop 2014). Since gatekeeping pertains to the decisions on shortlisting, interviewing, and nominating leader candidates, it implies the power of elites as the absolute decision makers. If these elites are predominantly men, women have difficulty gaining access to leadership.

The mechanism of male gatekeepers is often associated with homophily (Vanden Brink and Benschop 2014) in which communication and relationship between similar people occurs at a higher rate than among dissimilar people (McPherson et al. 2001). A related phenomenon is called homosociality, a theory of preference relations with the same gender (Lipman-Blumen 1976), and “similar-to-me” effect (Rand and Wexley 1975).

#### **4.2.2.5. Queen bee phenomenon**

In some cases, women leaders distance themselves from other women (Kanter 1977) and give preferential treatment to men (Kaiser and Spalding 2015). The practice is called “queen bee” (Derks et al. 2016) and is particularly evident in men-dominated organizations. Queen bees underline dissimilarities and disassociate themselves from their gender to be competitive in a men-dominated work setting (Derks et al. 2011). They are adjusted to the men-dominated culture and claim that they are more masculine than their junior women (Faniko et al. 2016). These women fail to help other women and hesitate to promote women’s development or mentor young women (Diehl and Dzubinski 2016). Queen bees legitimize the current gender hierarchy in their organizations (Derks et al. 2016).

#### **4.2.2.6. Tokenism and critical mass**

As a minority gender of a proportionally skewed workgroup, women leaders can be considered as a symbol or token (Kanter 1977). Due to masculine work culture and leader stereotypes (Koenig et al. 2011), these token women are marginalized in

the group (Kanter 1977) and become categorized, stereotyped and ignored by men in the majority group (Konrad et al. 2008). To have more influence, women leaders should reach a certain threshold or critical mass. While there is no consensus number, three women in management teams are considered as a critical threshold (Konrad et al. 2008). It is argued that less than three women are not enough to eliminate tokenism practices (Torchia et al. 2011).

### **4.3. Methods**

Potential participants were identified from the top four forestry universities in the world based on The Center for World University Rankings: the Swedish University of Agricultural Sciences in Sweden, Oregon State University in the US, the University of British Columbia in Canada, and the University of Helsinki in Finland. Targeted respondents were women-identifying students that have experience in forest related student organization leadership (e.g. president, vice president, secretary, treasurer) via clubs or other organizations officially sanctioned by the universities. We recognize that gender is not binary but have chosen to focus exclusively on a women-identifying sample. Furthermore, when asking questions about gender diversity, we did not define this term for respondents. Their answers are based on their own interpretation of the term which can cover a range of gender aspects.

In addition to public information about forestry-related student organizations on university/college websites and social media, we also identified our potential participants through snowball sampling, relying on the networks of previous

respondents. All respondents were recruited on a voluntary basis. Identified students were contacted via email, outlining the study and inviting them to participate. Interested students were asked to complete a demographic questionnaire to gauge their leadership experience and a detailed project description that contains all the elements of informed consent. To assure anonymity and confidentiality, a number has been assigned to each student participant.

We conducted individual interviews using a semi-structured interview protocol to allow flexibility to follow up on interesting points. When discussing sensitive topics (e.g. gender related experience), individual interviews can provide a more supportive environment for women (Kruger et al. 2019). The initial interview protocol was designed based on the extant literature. The protocol was pre-tested twice: first, with a group of experienced qualitative social researchers in the forest sector, and second, with a convenience sample of four women who are ex-student leaders in forestry student organizations.

In total, 41 women college student leaders in four universities agreed to be interviewed. Individual interviews were conducted face-to-face, by phone, and by Skype. Interviews were conducted in English and ranged from 30 min to 2 h in length. All interviews were then transcribed and analyzed.

Inductive thematic analysis was conducted in four steps. First, we discussed and confirmed the steps of analysis approach before two authors engaged in the second step independently. In the second step, each author read and reread the verbatim transcripts. Then, each author identified themes and sub-themes from significant phrases and sentences based on a codebook established from previous

literature (e.g. Larasatie et al. 2019) and our interview protocol resulting in the first-cycle codes in Table 4.1. Some codes were then adapted based on concepts that emerged during further analysis. To ensure reliability, the authors wrote an individual reflexive journal and critically reflected on preconceptions they had about the topic. Since multiple coders may draw different interpretations, the authors proceeded to a third step. By considering inter-rater reliability agreement from the second step, the authors compared and discussed their emergent themes and subthemes (Table 4.1). Second-cycle coding resulted in consolidation of some first-cycle codes identification of newly emerged themes.

Table 4.1. Themes and sub-themes.

Primary themes	Secondary themes	
	First cycle (based on codebook)	Second cycle (including emerging themes)
Atmosphere	-	Forest sector image
	Gender proportion/ratio in the college	College image
	College culture	
	College image	
	Gender proportion/ratio in the student organization	Student organization image
	Student organization culture	
	Student organization image	
	College activities	Activities
	Student organization activities	
Changes	Changes in college	Changes
	Changes in student organizations	
	Opportunities in college	Opportunity
	Opportunities in student organizations	
	Diversity efforts by college	Diversity efforts
	Diversity efforts by student organizations	

Experience	Voluntarily	Getting leadership roles
	Acclamation	
	Nomination	
	Election	
	Listening	Good leadership traits
	Collaboration	
	Organized	
	Visionary	
	Individual characteristic	Reaction
	Interaction	
	Internal reaction	
	External reaction	
	Stereotypes	Stereotypes
	Expectations	Expectations
	Supports	Supports
	Opinion about leadership	Circumstances
	Personal stories	
	Others	

The themes were based on our research questions 1–3: atmosphere, changes, and experience. The first theme, atmosphere, aimed to describe the general atmosphere in the respondent's college and student club organization with respect to gender diversity and identify the changes that have occurred in the higher education settings. The objective of the second theme, changes, was to identify gender diversity changes and efforts in forestry education. The third theme, experience, aimed to understand the ways gender stereotypes and expectations influence the experiences of women student leaders.

#### 4.4. Results

The results are organized according to the primary themes: atmosphere, changes, and experiences. All quotations in the results section come directly from the interviews, with respondents' number provided after the quote.

#### **4.4.1. General forest sector atmosphere**

Responses to questions about general atmosphere with respect to gender diversity are divided into college or faculty of forestry and student organizations.

##### **4.4.1.1. College/faculty of forestry image**

Although most respondents agreed that college/faculty of forestry is an old school that is dominated by white men, gender diversity is perceived to be different among majors and between undergraduate/graduate levels. The graduate level is described as more equal and has a more inclusive environment than the undergraduate level. Some respondents mentioned that the undergraduate level is more industry and extractive focused. Undergraduate studies in the Nordic region are pictured as mostly attracting two groups: young boys from countryside families who are going to inherit their father's forests and older students who have been working in the forest sector.

I think that during my life in undergraduate studies, it was kind of a bad atmosphere...I think that the bachelor was the worst and the master is a little better...But now as a PhD student, I feel that it's a totally different atmosphere. (#19).

Looking at major preferences, some respondents felt that there is still a segregation between men and women. For example, more men are working with technology, math, and statistics, and more women are working in administration, and in ecology, economics and pathology. Some fields, such as firefighting, are still considered to have a macho culture. In contrast, a major such as environmental science is perceived more appealing to women because women are more likely to aspire to make the world a better place and conserve animals, plants, and habitats.

However, although most graduate students in forestry, including PhD students, are now women, most professors are men. One of the explanations is because in the past, forestry was not available for women so the older generation in the forest sector and university are mostly men. This old boy network is described as a gatekeeper, men have each other's back and therefore, make it difficult for a woman to make a career and become a professor. In fact, a respondent claimed to hear that women professors in her university saying that they were paid less than their men professors.

Gender diversity is considered to be improving in colleges/faculties of forestry, but there are still some challenges, especially with older faculty. There are inherent biases even if mostly subconscious or not knowing any better or not having been taught since these older faculty like to keep the norm. For example, some terms and names are still associated with “men” or “boys”.

One respondent mentioned that women professors have more difficult classes than men. These women are perceived to be harder on women students. This is may have happened because these older women leaders got into the profession when it was extremely men dominated, possibly illustrating the queen bee phenomenon.

But I have experienced that with one female professor here, which was surprising to me. I was preparing for an interview. And she told me that I should take my wedding ring off before going through the interview, because she said, as a woman, you're going to be discriminated against. And you don't want to give them any reasons to not hire you. And I was like “wow! Oh, my gosh”. That's so surprising to hear it coming from a woman when you would think that she would be supportive of that kind of stuff. (#11).



#### 4.4.1.2. Forest sector student organization image

Reflecting the gender diversity situation between undergraduate and graduate levels, most student organizations designed for graduate students are dominated by women. Some of these organizations have also been led by women presidents. Greater representation of women, which possibly exceeds the critical mass, may result in less gender discrimination and increase the sense of belonging.

It's not as intimidating as if I was like the only female in a leadership role and it was all males. I'm sure that would be a different dynamic. (#15).

A good environment in student organizations may be a result of college/faculty or university that is very supportive of women. A Nordic respondent who is an international student mentioned that the open environment is due to the country culture. However, for a specific activity such as wildfire fighting, once it is outside of school, it will be activity dominated by men.

Another respondent explained that her organization is men dominated because she felt that there are less women in forestry to begin with. These men will tend to vote for other men because of their presumption that men are better than women in some fields such as hunting. Historically, one of the four universities had a gender quota rule for leadership positions. Nevertheless, the quota was removed because the university were thinking that people would perceive it as women were just chosen to those positions because of their gender or as tokens.

Men still dominate the leadership roles. However, since there are more women at the graduate level, a respondent hoped that this will open an opportunity in ten years, when more women will take over leadership positions. A unique and

interesting opinion came from a graduate student respondent with no educational experience in forestry from a previous degree. She observed in her organization that most men in her student organization are shy and quiet all the time and inactive. In addition, she explained that the organization definitely has strong women personalities that might override other opinions or might be intimidating to others to speak. This power dynamic may be because some of these men are either undergraduates or the first year of masters, and the women are either PhD students or second year of masters. Therefore, she thought that there is a need to have more men in her student organization to achieve gender balance.

A respondent that is a leader in women-dominated organization was thinking why there is more women than men. Furthermore, she questioned what is so interesting in the board that is more appealing to women than men. She assumed that it may be because participation is voluntary, and the students do not get paid. The women student leaders only get nice marks on their CV and a lot of networking opportunities.

#### **4.4.2. Changes and diversity efforts**

Most of our respondents agreed that there are gender diversity changes in forestry education. Nevertheless, this is a slow process and more of an evolution rather than revolution. A graduate respondent, who has been in the forestry university for some years, mentioned that now is better than before, but still far from good. For example, some traditions are still kept in a student organization with a tendency of inappropriate jokes.

We had like in settings [that] we cannot go to the bathroom during the whole evening. The sitting is the festivity with three meal dinner and then it's party afterwards. This is like the typical thing [in] industry and [student] organizations. It was only like three hours later, they were guiding the men out first, outside the house and they went to the bathroom in the forest outside the house. And then they told a lot of jokes. The men started to have sexist jokes, homophobic, and racist jokes. It's a super weird tradition. But that is one of the things that keeps the tradition going and the norm keeps going. Because we're supposed to act without thinking. (#27).

During respondents' relatively short time in the university, they noticed that there are more women faculty members and students, also in leadership positions. Even in some specific programs, the situation has been flipped where only women are in charge.

The historical legacy of the school was a silvicultural school. It was about maximum board feet. And traditionally, that was a field that was occupied by older white men. So I think, 10 or 15 years, the college has sort of been transitioning from what was a very heavily male dominated field, to one that is potentially a little bit more inclusive of women, and is more interdisciplinary, looks more at ecological forestry, and sort of social and economic and political impacts, not just how much can we harvest? (#4).

When asked about her student organization, a respondent mentioned that gender is not usually a main focus of the group, but another respondent agreed that gender diversity changes the atmosphere of the club because people act differently around women or men, depending on what they identify as their own gender. For example, a respondent described that her organization had a lot more men a couple of years ago. These men still come to the organization meetings and she found that there is a power shift to this older cohort of much more experienced and strongly opinionated people, but the core leadership group is leaning towards more women.

Respondents have witnessed and experienced gender diversity and equality efforts which are started from leadership level, either from President of the University, Dean or Department Head of the College/Faculty. Structurally, two universities have a vice/assistant dean that is specifically dealing with diversity, equity, and inclusion. Respondents felt that the organizations they lead are pioneers of diversity and inclusivity in the college/faculty of forestry, not only for gender diversity, but also other diversity such as privileged/unprivileged and race/ethnicity. Nevertheless, although there are more efforts to recruit women into academia, women are still a minority, especially in leadership positions.

The department head raise this question at one of the department meetings saying that all the guys also have to take their responsibility and make the [school] a nice place to hang around. (#28).

#### **4.4.3. Experience as women student leaders**

This section shows how women students obtain their roles, what they think is good leadership, what reaction they get as a woman leader, and their perception of how gender stereotypes and expectations influence their leadership experiences.

##### **4.4.3.1. Getting leadership roles in forest sector student organizations**

When respondents were asked how they obtained their leadership roles, most said that they nominated themselves and were chosen by acclamation, not by election. Some became involved in leadership by chance. The respondents volunteered to be leaders because of their personal network connection. A respondent mentioned that to get a leadership role in her student organization was an easy process. In fact, she continued, if it had been a difficult process, then she does not know if she would have applied.

I got involved because there were a lot of people in my lab group who are involved and then, eventually, as the old leadership was getting too busy or didn't want to continue in the following year, then I volunteered to step up and become the new president. (#8).

The easy process to obtain a leadership role, without a sign of glass ceiling or leadership labyrinth, may be because of the nature of student organizations in which these clubs need somebody to run, mostly without being paid. A lot of student organizations find it hard to recruit people and are strapped for leadership. The leadership selection was highly based on who was in the meeting when the organizations did the elections. In most of the cases, there will be only one who stood up for one position, so the organizations did not have much choice.

When it comes to leadership roles, a couple of respondents prefer administrative role to support her men friend who is a president. These women leaders are inclined not to take positions with high responsibility and prefer to stay in the shadow. An interesting statement coming from a respondent who did not want to be president because she is quite headstrong and has strong opinions which she thought would not be good characteristics to be the number one leader.

And so I was like, I could do Vice President [since] we already work well together. It's not a huge responsibility to do that. So, I'd say [the reason is] a mixture of him, and other people like, "Oh, yeah, you should do it." And also the fact that no one else wants to do it which I feel like is honestly how club officers go most of the time. (#10).

A leader mentioned that she initially wanted to run for Secretary but ended up being President because no one else was running for it. Another leader that has a

similar situation mentioned that she was the only woman that stepped up to do it and she did not see any men stepping up. There is an opinion that women feel more responsible to take over certain positions and they should do it because it is their duty. While men students easily say that it is not their responsibility and they do not have time since they want to focus on their own stuff.

#### **4.4.3.2. Good leadership qualities**

Several respondents felt that there are a lot of times when people get frustrated because they feel the leaders are not approachable and are inaccessible since the leaders do not really care about what people feel or what people are experiencing. Therefore, it is important for a leader to be an active listener who understands what people want and what people mean, to be available to have conversations, and to show respect although there is disagreement. If leaders ignore other people's ideas, they are going to be missing something.

Good leadership is associated with a diversity and inclusion value. Being a leader also means cultivating a team of people and collaborating with individuals. Leaders need to be open to other people's perspectives, to equally value and hear people's voices, and to recognize all peoples' needs. Leaders also need to be able to make sure that everyone who wants to be involved, is involved.

A leader is someone who knows and acknowledges their strengths, their own strengths and weaknesses, so that they can work with a team and build on everybody else's strengths and weaknesses. So not pretending like they're better at everything than someone else. But knowing like, what they can do well, what they need other people for, and having everybody feel a sense of ownership together. So that everybody is motivated to step up and work hard and really take ownership with the effort. (#3).

I recognize that I can't always do things on my own. I'll also recognize [that] I can't plan this whole thing on my own. I have other officers who can help me, and I'll try to allocate tasks to different people. And kind of try to know their strengths and be like, oh, this person's really good at this thing that maybe I'm not as good at, I'll let them handle that part. (#8).

Good leaders should have diplomatic skills, able to control themselves, cool and calm, and try to handle the situation without dominating conversations or workloads. Leaders should not only be willing to listen and be flexible, but also know when to make a decision and get things done. It is also important for leaders to have a vision and give positive feedback to people, explaining how much these people are worth.

Some respondents thought that women are better listeners. Women leaders connect more and care more than their men colleagues. Compassion, listening, and empathy are seen as feminine traits and are not necessarily associated with being strong. In other words, women leaders who possessed those traits are good leaders, but not necessarily perceived as strong leaders. Other respondents felt that in men leadership, there is more hierarchical structure, while women leaders tend to be more horizontal and humbler. Therefore, for these women students, women leadership is better.

Women [leaders] in forestry are considering everybody's input. Being accommodating is critical when you're talking about forest collaboration, which is obviously the way that forestry has headed. I think females are perfect for those kind of positions because we're able to consider all the stakeholders and consider everyone's opinions and make calculated decisions, accommodating those opinions, to get a result that allows everybody to kind of have a say in whatever that decision is. I think that's like a really

awesome way that women are contributing to the forest sector. And women are very passionate. And I think in terms of clubs and organizations, like we're gonna put our heart into everything we do. (#7).

In contrast, a couple respondents warned that it is not easy for women leaders to get people to listen and take them seriously. In this case, it is perceived to be important to have men allies to open opportunities for their women colleagues.

Sometimes as a woman you have to have a man standing there and saying you should be sent to her because she's actually quite a good smart door [connection]. Maybe if you don't have that, it can be hard to get people to listen to you. (#19).

Although most respondents agreed that a good leader should be able to listen and to collaborate with other people, when the respondents were asked what qualities make them good leaders, most mentioned organizational skills including administrative and financial work. A couple respondents were aware that being structured and organized are associated with women, however these are an important strength to have as a leader regardless of gender. Interestingly, a few respondents found difficulties to talk about why they think they are good at or whether they possess the characteristics of a good leader. One respondent did not see herself as a leader, but as a facilitator, team builder, and convener. Furthermore, she explained that there are different concepts of leadership that range from very authoritarian to grassroots. She hopes to be on the grassroots side of convening and facilitating people and providing them with the space to be productive.



#### 4.4.3.3. Reaction to women student leadership

Many respondents felt that they have had positive reactions and recognition from organization members. Nevertheless, a respondent noticed that reactions greatly differ depending on age group and gender. Another leader echoed by saying that there were times when she felt respected and valued, and there were other times when she felt like she was not being taken seriously. A leader gained more criticism from her own men colleagues than the higher bodies.

I would say maybe it would have felt a little bit different, just being one of the only girls in the club, and then additionally being in that kind of historically male leadership position, I would probably feel less confident in that position and people maybe listen to me less. Whereas the position that I've been in has been one where I send out emails and rent the rooms and do some of that more logistical work. So I would say, it's kind of playing into gender stereotypes a little bit, but I would say, it's been really good. But I could see a different flip side where maybe it wouldn't be as good, if that makes sense. (#10)

A respondent that is a president of an acclaimed student organization expressed that her men colleagues view her as threatening toward their internal hierarchical structure. Another respondent told that her past president who was a woman received a fair amount of criticism that she does not think would have received if the president was a man. The criticism was coming internally from organization members. There are also a few respondents that felt their leadership has been questioned because they are women.

Males are much less likely to follow my task directives than females. Males typically feel that females should be below them and that also comes back to if someone is older in age, I'm quite young for where I am in my college career, and I would say males are much less likely to view me as a leader than an older female. So, I think they view me as not having the life

experience to be able to do the role that I'm in, and so that makes them question my experience and my ability to bring the group together. (#12)

Last year I was a vice chair [and my advisor] reacted, "Oh, really? You are doing this?". I'm not sure if it was because I'm a woman but I didn't like his reaction and I felt a bit offended; I have to say. I mean, it was his first reaction and nothing more. But I had the feeling he thought because maybe I'm a woman and I'm not sure if this really was the reason that it was surprising. I was thinking why he doesn't believe that I could take this position. (#25).

#### **4.4.3.4. Stereotypes and expectations of being women leaders**

There are some stereotypes that have been perceived to be associated with women leaders. Women leaders are more empathetic and can see things from other perspectives. In addition, women are seen to be more organized, more methodical, and better at planning. Emotionally, women are expected to be kinder and gentler, calmer, less loud, less confrontational, and better at handling a conflict with dialogue.

Women are seen to be better with social relationships. They are expected to do thoughtful work, to be more tactful and more able to connect with people on personal matters so people would feel more comfortable coming to them. A respondent claimed that she is a people pleaser as she likes to accommodate people and make sure that people are happy. Furthermore, she said that she thinks about other people more than herself.

A respondent thought that women tend to be more lively, bubbly, and happy, which can be good leadership characteristics. One leader confessed that she is actually an introvert, but in her professional life she acts extroverted. As soon as she gets home, she will close the door and be the introvert again.

Since women are seen to be more emotional and men are seen to be more aggressive, there is a perception that women are incapable and cannot work as hard as men, especially if a woman physically looks small and young. People might suspect that women obtaining leadership roles because of their gender rather than because of their skill. Therefore, a couple of respondents observed that women in leadership positions feel a need to show masculine traits such as being more straightforward and pointing with whole hand and able to handle jokes about women including sexist jokes, or feel like they have to be stricter, because any time that they are loose on something, they will be perceived as soft and are not good leaders. Another respondent noticed that women leaders are expected either to be really nice and sweet or kind of emulating more of a man role such as assertion. However, there is a double standard in which if women leaders are assertive, they are viewed as not nice and mean, but a man viewed as assertive is viewed as a leader.

Due to a higher standard for women in leadership roles, a respondent thought that women have to work harder to gain societal acknowledgement as a leader. Since women leaders have struggled to overcome challenges, they are even more driven to continue to be overachievers and take on more and more opportunities and try and work harder. Another respondent is constantly self-critiquing and reflecting on her behavior, which made her more conscious of how she behaves and more considerate of people around her. This respondent, who felt that she looks relatively small and young, found herself working really hard to survive and to overcome gender stereotypes.

## **4.5. Discussion and conclusions**

### **4.5.1. Gender proportion and the leaking pipeline**

Respondents witnessed an increased number of women in forestry education. However, most professors are still men which may be because forestry was not available for women in the past, so the older generation in the forest sector and university, including in leadership, are mostly men. This old boy network is associated with male gatekeepers and homophily, making it difficult for a woman to make a career and become a professor. There is also a testimony that some women professors have more difficult classes than their men colleagues and are perceived to be harder on women students. This is may have happened because these older women professors got into the profession when it was extremely men dominated, possibly illustrating the queen bee phenomenon.

Reflecting the gender proportion between undergraduate and graduate levels, most student organizations designed for graduate students are dominated by women and led by women presidents. A leadership role is relatively easy to obtain, without a sign of glass ceiling or leadership labyrinth, due to the voluntarily nature of student organizations. Greater representation of women, which exceeds the critical mass, may result in less gender discrimination and increase the sense of belonging. The women presidents are no longer considered only as tokens, or chosen to the leadership positions because of their gender.

Nevertheless, the higher number of women students over time does not proportionally increase the percentage of women in the forestry workforce, including in universities (e.g. Sample et al. 2015). A web content analysis found that images on

US forestry universities' websites rarely portrayed women (Bal and Sharik 2019). It seems that forestry is still perceived as a man's world or what is referred to as "think forestry, think men". Due to this persistent image of forestry as a men dominated field (Bal and Sharik 2019), women students were reported less likely to choose a career in forestry (Gharis et al. 2017).

A smaller proportion of women taking jobs in the workplace compared to their proportion in academic programs (both academic and non-academic careers) is referred to as leaking pipeline. The leaking pipeline was first used to describe underrepresentation of women in neuroscience (Barinaga 1992). In academic careers, the pipeline is used to picture the ideal linear progression from being undergraduate students to tenured professors. This pipeline is considered leaky as women choose to leave in various stages of their academic career. It is said that the most difficult transition is a retention after completion of a doctoral degree (Shaw and Stanton 2012). Women PhDs are very concerned about family friendliness of an academic career and this often hinders them from applying for tenure-track positions (Mason et al. 2009). The tenure system may have strong disincentives for women who choose motherhood (Ceci and Williams 2011) since the early academic career often overlaps with the natural life stage for having children. To retain women in academia, universities must support work and family life balance such as providing affordable daycare options (Holmes and O'Connel 2003).

#### **4.5.2. Leading with the heart and/or the head?**

Gender studies research catalogs myriad barriers that can constrain leadership development by women. A number of theories, often with overlapping elements, have been proposed to explain why there is a shortage of women leaders in many industries and why women's careers often stall out in leadership progression. Although most barriers are based in the professional/workplace settings (Diehl and Dzubinski 2016), our respondents have also experienced the barriers in higher education settings, especially based on perceived role incongruity and double bind dilemma.

Our respondents are women-identifying students that have experience in forest-related student organization leadership. Holding leadership roles (e.g. president, vice president, secretary, treasurer) in student clubs or other organizations that are officially sanctioned, means that these women leaders have enhanced organizational status and more authority to influence major decisions in their college/faculty.

There are two important factors on respondents' leadership experience: peer relationship and gender stereotypes. Many respondents became involved in leadership opportunities through encouragement from their peers. This finding confirms that peers, together with other actors such as advisors, educators, faculty, and administrators, have critical roles in student leadership development (Komives et al. 2006). On the other hand, some respondents were less interested in seeking top leadership roles because of a fear of negative evaluation by their peers (also seen in Boatwright and Egidio 2003). This internalized oppression, particularly sexism, is

one of the reasons that advance men and hold women back in leadership (Eagly and Carli 2007).

Most respondents also mentioned that they obtained their leadership roles by volunteering. They also noticed that women are more likely to take unpaid roles than men, similar to previous findings where gender norms pressure women to do voluntary work, while men are expected to be a breadwinner and, therefore, must do paid work (Taniguchi 2006).

Gender role norms in society intertwine the expectation of women's behavior in leadership (Eagly and Carli 2007). Due to patriarchy norms, current theories of leadership are still embedded with masculinity (Storberg-Walker and Madsen 2017), resulting in a negative perception of women who occupy leadership roles (Cummins 2019). Women leaders are associated with being “emotional”, “bossy”, and “too nice” (Ibarra et al. 2013). Men are considered rational and objective and, therefore, are leading with their head (Brescoll 2016). On the other hand, women are believed more emotional and thus, leading with their heart (Brescoll 2016).

The negative perception of women leaders is explained by perceived role incongruity theory which makes women are often stuck in a double bind dilemma (Catalyst 2018). However, in contrast with this theory, in a men-dominated sector such as forestry, women who adopt agentic leadership strategies may not be considered effective leaders (Yoder 2001). For example, assertive women leaders with a task style are seen as less influential, less likeable, and more threatening than men (Carli et al. 1995). Our respondents emphasized listening, collaboration, and organization as keys to good leadership. This perception is different from gender

stereotypes of emotions in gender and leadership theories. Women leaders are more likely to be penalized than men, for expressing emotions that convey power or dominance (e.g. anger and pride) (Lewis 2000), even in minor or moderate display (Brescoll 2016). The differences between our respondents' perceptions and the literature may be because of past diversity efforts of their forestry universities/colleges. A more inclusive environment in the university/college may result in more fair perceptions and treatment of women leaders.

Being able to listen, collaborate, and organize are consistent with findings that women, tend to be more inclusive than men by adopting a more democratic and participative style (Eagly and Johnson 1990). Women strive to accommodate more voices in the decision-making processes. Compared to men, women are more likely to display transformational leadership behaviors (Eagly et al. 2003; Vinkenbunrg et al. 2011) and a relation-oriented style (Romano 1996; Haber-Curran 2013; Polson 2018). Some respondents sought to empower other students and to observe their strengths to be best utilized through organizational works.

#### **4.6. Positionality statement**

The authors are aware that our positionality in gender, social class, ethnicity, and age affect data collection and the subsequent research interpretation (Creswell 2009), and therefore acknowledge the limits of objectivity. The first and the second author are cisgender women, college students, and have had leadership roles in forestry student organizations. As interviewers, the first and second authors may have biased results via choice of follow-up questions or interpretation of data. Having the



third author, who is a cisgender man and an experienced faculty member, helps to mitigate positionality bias in the research.

#### **4.7. Future pathways for research**

There are limitations to this study because of the site selection (top four forestry universities in the world). This study only has participants from large, research-focused universities in predominantly white and developed countries with greater resources compared to support provided at smaller institutions. Therefore, this study should not be considered an accurate reflection of the current state of global forestry higher education.

Future research can be done to explore what universities have done to successfully encourage not only women but also transgender (having different gender identity from the gender they were thought to be when they were born) students as leaders in forestry. These students deserve more individualized attention to better understand their experiences and to provide them with appropriate support. Additionally, it is also interesting to see if the successful programs result primarily from University-level leadership (top down approach) or do they come from student actions (bottom up approach). Research also can be done to investigate the leaking pipeline in forestry. Where do the women and transgender students go after finishing their studies in forestry universities?

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## **V. MENTORING AND NETWORKING AS THE “SILVER LINING” OF BEING WOMEN LEADERS: AN EXPLORATORY STUDY IN TOP WORLD FORESTRY UNIVERSITIES**

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## **Abstract**

Although there are simultaneous efforts to increase gender equality in the forest sector, women are still underrepresented in the forest sector workforce, even more so in top leadership of forest sector companies. The underrepresentation is also found in higher education, and many forestry undergraduate programs still struggle to matriculate and graduate women. A way to attract and retain women is through mentoring and networking. Utilizing interviews, we found that it is quite challenging to find a woman mentor/role model in the forest sector because women are still underrepresented. To find a good mentor, young women are encouraged to be proactive in utilizing different channels, both formal and informal. When it comes to gender, our respondents emphasize the different benefits of having a woman vs man mentor. In a men-dominated field such as the forest sector, women mentors enhance social belonging, confidence, and motivation in relatively alienating environments due to “been there-done that” experiences. Same gender role models might also protect women from negative stereotypes and show how women can advance despite existing gendered barriers. However, in professional settings, women can, at times, reap more benefits from men mentors because men have long been advantaged in the forest sector. Therefore, men can confer organizational legitimacy and provide resources required for success for their protégés.

Key words: gender diversity, gender equity, leadership diversity, diversity in higher education, women leaders, college leadership, college women leaders

## **5.1. Introduction**

In North America and Nordic countries such as Finland and Sweden, the forest sector (an umbrella term covering companies producing and using wood and wood fiber as a raw material) is economically important. For example, in The U.S., the industry employs approximately 950,000 workers with a payroll of approximately \$55 billion and manufacturing output of more than \$300 billion (American Forest & Paper Association 2018). Nevertheless, the forest sector has not attracted sufficient young talent interested in a career in the industry and its workforce is rapidly graying (Hansen et al. 2016).

In 2018, The Government of Canada announced a National Action Plan to promote gender equity in the forest sector. Believing that gender diversity is a smart thing to do, the government states that more young women entering the forest sector will increase Canada's economic competitiveness in the global market (Canadian Institute of Forestry 2018). Nearly a half million Canadian dollars has been invested in a three-year project aiming to remove barriers that prevent or discourage women from pursuing careers in the forest sector (P&PC Staff 2018). Targeted obstacles include pay inequity, lack of childcare options, unequal access to training and trades, lack of management opportunities, and general misconceptions about the forest sector (P&PC Staff 2018). In Sweden, gender inequality in the forest sector was a focus as



much as three decades ago (Andersson and Lidestav 2016). In 2011, the Government of Sweden launched a strategy for gender equality in the forest sector, called “competitiveness requires gender equality”.

However, although there are simultaneous efforts to increase gender equality in the forest sector, the industry has still been associated with a blue-collar masculinity and macho-masculinity workplace culture (Johansson and Ringblom 2017). Women are still underrepresented in the forest sector workforce (FAO 2006; Lawrence et al. 2017), even more so in top leadership of forest sector companies (Hansen et al. 2016; Larasatie et al. 2019). The underrepresentation is also found in higher education, and many forestry undergraduate programs still struggle to matriculate and graduate women (Sharik et al. 2015).

Although increasing women in the workforce is considered one of the best solutions to attract more young women to the forest sector, it is a “circular” dilemma in which the solution is denied by a circumstance inherent in the problem (Larasatie, Barnett, and Hansen 2020). Attracting more women should be balanced with retaining women who have been studying and/or working in the sector. A way to support women in the forest sector is through mentoring and networking (Crandall et al. 2020). Utilizing personal interviews, this study aims to understand how mentoring and networking influence women leaders in forest sector universities. We chose to focus on higher education institutions due to their role providing an educated workforce and future leaders/managers. We believe that with better understanding of how to support women in the forest sector, this study can contribute to the

implementation of gender equity initiatives including the Forestry National Action Plan in Canada.

In this article, we use “man/men” and “woman/women” instead of “male” and “female” (except the direct quotes from respondents) for supporting gender-inclusive language with a purpose to not discriminate against a particular sex, social gender or gender identity, and does not perpetuate gender stereotypes. In the remainder of the paper, we first provide a theoretical background, followed by a description of the methods employed in the study, results and a discussion. We conclude with limitations and potential paths forward.

## **5.2. Theoretical background**

### **5.2.1. Gender and mentoring**

As a developmental relationship, mentoring is frequently associated with positive work-related outcomes such as psychological and material benefits (Allen et al. 2004). Compared to their non-mentored counterparts, protégés are more likely to be satisfied with their careers, believe that they will advance in their careers, and are more committed to their careers. In this relationship, a mentor has been identified as having three functions (Kram 1988; Scandura 1992). The first function is instrumental/career-related support including sponsorship, exposure, visibility, coaching, and protection. With career mentoring, protégés may be provided opportunities to develop job-related skills through challenging assignments given by their mentors. The second type of support is psychosocial - interpersonal aspects of the relationship - including acceptance, confirmation, coaching, counseling, and

friendship. Through psychosocial mentoring, mentors help their protégés deal with job anxieties. The third function is role modelling including appropriate attitudes, values, and behaviors.

When it comes to the effects of gender composition on mentoring, findings in the literature are mixed and often controversial (Flaherty 2020), which may lead to the conclusion that the relationship is contextual, such as depending on the type of mentoring function (Kao et al. 2014). For example, same-gender mentoring is associated with greater interpersonal comfort, leading to psychosocial mentoring (Sosik and Godshalk 2005; Allen, Day, and Lentz 2005). This is more common when a woman mentor is involved, especially with a woman protégé (Ragins and Cotton 1999). The pattern has resonated with social role theory, pertaining to sex differences and similarities in social behavior (Eagly 2013).

On the other hand, cross-gender relationships are often favored in career mentoring (Kao et al. 2014), particularly in man mentor-woman protégé relationships (Ragins and Cotton 1999). Furthermore, in men dominated cultures, women mentors may not feel confident competing with man counterparts to provide career-related support for their protégés (Allen and Eby 2004).

### **5.2.2. Mentoring and networking for addressing gender inequality**

Mentoring is viewed as an important instrument to dismantle persistent glass ceiling and enable more women to progress to senior leadership and management positions (Dashper 2019) through more effectively overcoming career obstacles, understanding organizational politics, and accessing information and resources

(Linehan and Walsh 1999; Ragins and Cotton 1999). Despite its importance, women have often struggled to access the informal mentoring necessary to provide this progression (Ragins and Cotton 1999).

Homosocial practices, a preference for relations with the same gender (Lipman-Blumen 1976), may cause informal mentoring is less accessible for women. For example, women may lack access to places frequented by potential men mentors (e.g., golf, fishing, hunting, and sauna) (Ragins and Cotton 1996; Larasatie et al. 2019). Depending on societal and organizational culture, women may be reluctant to approach men mentors as their actions may be misinterpreted as aggressive and even misconstrued as a sexual advance (Ragins 1989), creating problems such as jealous spouses and resentful coworkers (Bowen 1985).

Acknowledging this constraint, many organizations have sponsored formal mentoring programs to support career development of their woman employees (Phillips-Jones 1983) and overcome gendered barriers (Elliott et al. 2006). However, many of these efforts focus provide a narrow approach to “fix” women rather than to challenge the underlying gendered structures that continue to marginalize and exclude women (Meyerson and Fletcher 2000; de Vries, Webb, and Eveline 2006). Therefore, gender equality projects such as woman mentoring can be paradoxical: while these programs empower women, they are at the same time high risk since women can be perceived as receiving special treatment to progress in their careers. Although these woman-oriented programs can show success, their inherent challenges may lead to failure in fully reaching their gender equity goals.

In a men dominated sector, women frequently face heightened career obstacles due to stereotype thinking regarding competencies needed for success (Ramaswami et al. 2010) which are invariably, and usually invisibly, constructed to associate the ideal worker as a man (Bruni, Gherardi, and Poggio 2004; Heilman 2001). This masculine standard has mostly been unacknowledged, resulting in a situation where it is difficult to recognize and challenge gender inequality (Dashper 2019).

Women entering a men dominated sector are in particular need of sponsorship and legitimacy, and it is often suggested that they access a recognized and powerful senior man mentor (Ramaswami et al. 2010). As a part of the dominant power structure, the senior man mentor can help women break perceptual and structural barriers for attaining career achievement, resulting in high career progress and satisfaction (Ramaswami et al. 2010). Furthermore, men who mentor women can establish enhanced knowledge of gender issues and subsequently have a positive impact on the organization culture (de Vries, Webb, and Eveline 2006).

In addition to mentoring, gender equality initiatives can be boosted by networking. As a critical factor for individual career progression and success, networking has advantages on exchanging information, acquisition of tacit knowledge, developing alliances, collaboration, visibility, and support (Linehan and Scullion 2008). Individuals who excel at networking generally excel within their organizations. However, the concept of organizational networks is too often associated with old boys' club or old boy network (Ibarra 1992) that effectively excludes women, thus limiting their potential (Ehrich 1994). As a result, there is a

need to form a woman-inspired network, to address the experiences of women with the aim for increasing perceptions of belonging and engagement (Crandall et al. 2020).

### **5.3. Methods**

Our respondents are college leaders in the top four global forestry universities based on the Center for World University Rankings: the Swedish University for Agricultural Sciences, Oregon State University, University of British Columbia, and University of Helsinki (CWUR 2020). We divide college leaders into two groups: (1) administrative leaders such as dean, vice dean, and department head, and (2) student leaders of student led organizations such as president, vice president, secretary, and treasurer. Respondents were identified from public domain college websites and social media platforms (e.g., Facebook Pages).

We contacted potential respondents through email, in which they were asked to participate if they identified themselves as a woman and a leader and if they able to be interviewed in English. Those who volunteered to participate were sent a demographic questionnaire gauging leadership experience, along with a document explaining informed consent.

Semi-structured interviews were utilized to gain a comprehensive understanding of complex experiences, enriched by contextualization (Galletta 2013). Before finalizing the interview protocol, we conducted two pretests, one with a group of forest sector-related social science researchers, and one with four women who are ex-student organization leaders in the targeted universities.

In total we obtained 52 respondents (11 administrative leaders and 41 student leaders). Interviews were conducted in English through Skype, phone calls, and in-person. Respondent experiences with mentorship and networks were explored by two open-ended questions: (1) If they had a mentor, and to identify their gender if applicable, and (2) If they had a network of women with whom they are close to. At the end of the interview, participants were assigned a random number. For privacy purposes, we do not differentiate regions (e.g., North America vs Nordic), but only differentiate the hierarchy: administrative leaders (1-11 A) and student leaders (1-41 S).

All interviews were then verbatim transcribed and, utilizing NVivo software, were thematically analyzed. Coded analysis was conducted in two cycles (Miles et al. 2013). The first coding cycle focused on two themes (“mentorship” and “networks”) based on our interview protocol. In this stage, we found “role model” as a third theme which was not explicitly addressed by the protocol questions but emerged organically during interviews. Therefore, we conducted the second coding cycle for analyzing interview results under three themes: Mentorship, Role Model, and Networks.

#### **5.4. Results**

Twenty-seven of 41 student leaders and six of 11 administrator leaders have a mentor, ten gave an ambiguous answer indicating that they do have a mentor but they may not readily identify them as such, four gave an ambiguous answer suggesting that they are not sure, and only five lack mentors. The leaders who do not have mentors currently explain some type of guidance relationship that they have

experienced in the past and/or in a very specific context. Examples include a mentor program that one participates in while volunteering, and another explains her relationship with an advisor which she describes as similar to mentorship, but only specifically in a task she must complete to earn her degree.

#### **5.4.1. Mentorship**

In this study, student leaders define a mentor as a person whom they can lean on and is actively involved with what they are doing on a regular basis. An administrator leader considers mentorship as something that is personal and individual as she needs to find someone whom she feels confident to talk to. Another administrator leader defines a mentor as someone who helps her to do and/or understand something better. Therefore, in her opinion, mentors are not necessarily associated with someone who is older or in a better position than her. A respondent describes the difficulty of finding one person who has sufficient qualities to be a “*fully integrated mentor*” (1 A) as every individual has their own strengths and weaknesses.

Although there are similar opinions about mentorship, some respondents associate mentors with role models. An administrator leader mentions “*coach*” (6 A) as a term to replace mentor, referring to senior women who help her in a variety of situations. Another administrator leader in the same university explains that her institution provides access to professional coaches which is helpful for improving her time management and decision-making skills. Interestingly, a student leader with extensive experience in mentorship gives insight differentiating between mentor and champion.



“[A mentor is] someone who, I guess is invested in your kind of personal development, but also someone who you can go to for kind of advice, whether it's personal advice [or] professional advice. And you kind of have quite personal checking in relationship. They will also support you in providing opportunities, but maybe it's more than that, whether you have kind of an intellectual connection, a personal connection, professional connection. Whereas champions, I would think of as people who really support you and will champion you in whatever situation that might be ... kind of like facilitating opportunities and championing your development. And I think both [mentors and champions] are really important.” (11 S).

Most student leaders who claim a mentor indicate that there is more than one person that they have a mentor-relationship with. Student respondents identify family members such as parents (particularly mother), friends, or colleagues as mentors along with academic advisors, thesis advisors, and professors. A North American undergraduate leader, who is a student worker, considers her boss as her mentor. She also implicitly looks up to her mentor as her role model. A few other respondents, both student and administrator leaders, consider their colleagues as their peer mentors. Interestingly, an administrator leader refers her book group members as her mentors, benefitting her on diverse perspectives.

To the participants in this study, mentoring includes many types of relationships falling into two general categories: formal and informal. Formal mentors are described using the terms professional, academic, and industry. Some formal mentorships are endorsed by respondent affiliated organizations such as their university and professional society. Informal mentors are described as a personal mentor, such as friends and family.

When it comes to criteria to be a mentor, student leaders wish for a woman who is a hard worker, doing extraordinary things, or “*a powerhouse*” (27 S). Another

student respondent testifies that having women mentors would be really encouraging and would help her stay in a forestry career. Similarly, since there were no women mentors available in her initial institution, an administrator leader felt isolated and decided to leave for another university.

Reasons for looking to one gender rather than the other for mentorship involve contextual differences in lived experiences for some participants. An example is a student leader who specifically looking for woman professors as her advisors/academic mentors since she thinks that she “*would work better with women*” (39 S) than men. An administrator leader states that she trusts her women mentors more than her men mentors because she can ask questions “*from the standpoint of [expecting] more holistic answers*” (2 A). Another administrator leader tells that she had a man professional mentor when she was a PhD student, but it did not work well because “*he could not understand what [she] was doing and [vice versa]*” (4 A). Women mentors “*probably understand better because they have experienced it themselves*” (6 A), and are, therefore, able to discuss career issues as well as family issues such as marriage and having kids. A student leader who happens to have both men and women mentors, relates differences in relationships that they have.

“I would say with the female mentor, we talk much more about kind of things she has encountered as a female in a leadership role within the forest products industry, what she did to mitigate that, and what she did to be perceived as a leader. While [with] males, I gain a lot of differing skills. I would say that both are actually really useful because we’re trying to gap this difference between males and females in leadership. I would say it really is important to have a female mentor in leadership, but I would say it’s also really important to get those differing views and differing opinions of a male.” (30 S).

Student leaders express concern regarding a lack of women professors in colleges/faculties of forestry making it difficult for them to find a woman academic mentor. The difficulties also happen when these women student leaders try to find women mentors in the workplace. Two administrator leaders also stress these difficulties when they were students decades ago. Therefore, one of those two leaders chooses to be a mentor and act as a role model to young women.

#### **5.4.2. Role models**

A particular note is that a few student leaders and an administrator leader use “mentor” and “role model” synonymously. The criteria to be a role model is similar as a mentor as the persons are usually older (senior), have a good career, or hold a high position in leadership.

“I have a mentor who was a graduate of the program like six or seven years ago, and she works [in] the Department now. And she's just kind of a kick ass scientist. She has her PhD. She's also a registered professional engineer. So, she's accomplished a lot at a pretty young age. But she's also a great listener, really eager to help as many people as she can. And she also has two kids under the age of four. So, I think she's definitely a role model for me. And she's definitely helped me out with my research showing that in that sense, she's a mentor.” (24 S)

Having a role model helps a student leader to be more confident, especially as a young woman in a men dominated field. Another respondent says that having a role model gives her an idea of a career path in forestry that she wants to take by seeing representation of a woman like her. It also helps her to fight imposter syndrome and feel like she can meet the expectations that people have for professionals in this field. It also increases comfort with balancing personal and professional life.

A student leader considers that it will be good to have women role models already before the university. This is particularly important since there is a lack of women role models in the forest sector, due to its perception as “*a male profession*” (37 S). Therefore, a respondent mentions that she intentionally seeks women role models and keeps them in her circle.

“It's tricky because there are not that many [female professors]. There are more male professors, so you have to be very picky. But if you pay attention, you can find them. They won't come to you. If you do that, then you will only have male role models. So, you have to go seek out for other female role models, not only your niche, you have to go out like you have to, you know, with the internet or whatever. You have to do the homework.” (9 S)

#### 5.4.3. Networks

A student leader mentions that women's networks are beneficial since there is a strong culture of old boy network in forestry. For this old boy network, having women is “*sort of upsets the apple cart*” (6 S). Another student respondent mentions that it is important to have women networks in forestry as she has an impression that a lot of women in forestry actually feel that they do not have enough knowledge compared to their men colleagues. A network is considered a support system for some student leaders. Similarly, a senior administrator respondent considers her network as support to move forward as there are times when she has imposter syndrome. Having a network also helps an administrator leader to go through hard times when she receives criticism.

Being in a network gives a student respondent a sense of belonging due to similar experiences among network members including “[*a*] potential of being

*discriminated*” (21 S). A student leader mentions it is very important to have an all women network in her career and study and therefore, intentionally formed an all women graduate committee.

“I did not want a man on my committee because I just wanted to be empowered by badass women researchers.” (41 S).

An administrator leader who does not have a forestry background mentions her women in forestry network as a form of informal mentorship. In the network, she feels a “*kinship*” (1 A) with its members based on similar world perspectives. An international student appreciates her network as “*an emotional net*” (9 S) for helping her to successfully adapt to a new culture and navigate her academic life.

A Nordic student leader mentions a women’s network initiated as a Facebook Group. It’s a convenient way to reach people when she has a question. The network is inspired by the “Me Too” campaign and formed for student and professional women who are working or will work within the forest industry. Within this network, the members contact each other, have social events and impromptu meet ups when they travel for business.

A postgraduate student leader in a Nordic country mentions that since there are not many women in her department, they maintain a close relationship. Another respondent feels more comfortable with a small group as her inner circle. She thinks that in a large group, there will be someone who takes over more conversation.

“Because there's only like four of us in the [whole] department who are girls, we’ve become really close. That's been a really big benefit, kind of a silver lining of having not a lot of girls, just because you are kind of forced to become friends.” (32 S).

Some leaders find that it is difficult to separate between personal and professional networks. Interestingly, another student leader mentions that for her, a women's network is only beneficial for her personal development, not professional, because forestry is not women driven. This statement is in contrast with an administrator leader's statement where she only has a network in her professional life as she feels that she does not have much other life outside academia.

### **5.5. Discussions and conclusions**

Although most of our respondents agree that mentorship and networking are important to address gender inequality, it is quite challenging to find a woman mentor/role model in the forest sector because women are underrepresented. To find a good mentor, young women are encouraged to be proactive in utilizing different channels, both formal and informal. For example, a student leader found a mentor/role model through a conference where she approached one of the speakers whom she admired and followed up with more personal communication.

With respondents' different leadership experiences, it is natural to have a variety of perspectives on the effects of mentoring and networking. Student leaders generally stress the need for having a mentor, both in personal and professional life. Administrator leaders, due to their multiple decades of life experience, feel that they have passed the stage of looking for a mentor and even position themselves as a mentor. However, half of our administrator leaders emphasize the importance of having a specific mentor in their leadership journey, particularly for providing career development, advice, guidance, and support.

When it comes to gender, our respondents emphasize the different benefits of having a woman vs man mentor. Referring to the theoretical background, in a men dominated field such as the forest sector, women mentors provide psychosocial mentoring (Sosik and Godshalk 2005; Allen, Day, and Lentz 2005), enhancing social belonging, confidence, and motivation in relatively alienating environments due to “been there-done that” experiences. Same gender role models might also protect women from negative stereotypes and show how women can advance despite existing gendered barriers, which in turn, enhance women’s intentions to retain and pursue careers in the forest sector. For example, having a woman mentor is particularly important for young women who plan to balance their career with motherhood/starting a family (e.g., Raddon 2002).

In professional settings, women can, at times, reap more benefits from men mentors because men have long been advantaged in the forest sector. Therefore, men can confer organizational legitimacy and provide resources required for success for their protégés. This finding is in line with a statement that cross-gender mentorship is favored in career function (Kao et al. 2014).

### **Study limitations and future pathways**

We recognize a few potential limitations of this study. For example, student leaders were a mix of undergraduate and graduate students and may have different concerns and job trajectories. Another limitation is related to varied respondent experiences and knowledge, from having work experience for decades to students

who are just recently enrolled. This different exposure creates different perspectives and may impact their responses.

Future research can be directed to explore mentor relationships in different settings such as in group vs out group, peer mentor vs senior mentor, or education vs workplace. It is also beneficial to explore mentorship benefits for minority/underrepresented groups in the forest sector (e.g., First Nations, Asian American, African American, and Latinx students in the North American settings), and whether our findings would generalize to these groups.

We believe that our findings and the future research identified above have important implications for university leaders and policy makers to increase gender diversity, equality, and inclusion in the forest sector higher education and workforce. Particularly in Canada, this study is beneficial to support implementation of the Gender Equity in Forestry National Action Plan.

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## VI. GENERAL CONCLUSIONS

Consistent with previous studies and global statistics on the forest-related industry workforce (Lawrence et al. 2017), all respondents perceive the forest sector to be men oriented and men dominated. At a leadership level, an explanation of the absence of women is homosocial reproduction practice when senior leaders, most of whom are men, have a tendency to hire other men as a reflection of their own images (Tallberg 2003). Men's homosociality has created a masculine environment influencing work organization and knowledge transfer. Gendered construction of forest related knowledge recognizes men as the "voice" that imposes exclusion of women in the workplace and may cause the assumption that women professionals lack the technical skills to do their job until they prove otherwise (Andersson and Lidestav 2016; Johansson, Johansson, and Andersson 2018).

In Article 1 (Chapter 2), respondents indicated that although there are positive changes in the industry toward more gender diverse and inclusive workplaces, the movement is slow. These slow changes may be culture-based where traditional perceptions about gender roles and what men/women do in organizations still remain deep. If there is a higher level of gender diversity in the companies, it typically exists in corporate offices where women are found in office work (administration) and business divisions.

The other possible cause of slow changes is women's restricted access to networks in the forest sector. Therefore, nowadays there are more women's networks in the forest sector that have been formed, including formal organizations to be

acknowledged and addressed by authorities. These networks are beneficial to make women visible and counter homosociality practice by providing gender-specific social support.

Results in Article 2 (Chapter 3) shows that although there is substantial room for improvement in the industry, gender diversity in forestry universities is perceived to be better today. Respondents witnessed an increased number of women in forestry education, both students and faculty members. Nevertheless, this higher number over time does not associate with the increased percentage of women in the forestry workforce. The phenomenon, referred as the leaking pipeline, is discussed in Article 3 (Chapter 4). The pipeline is considered leaky as women choose to leave in various stages of their career. Women do not experience perceived fit in the sector due to a persistent image of the forest sector as a field dominated by men, an unwelcoming environment, a lack of sense of belonging, and a lack of career opportunities.

To achieve better gender diversity and inclusivity, respondents in Article 1 (Chapter 2) suggest it is necessary to reach a critical mass of women in leadership positions, which is believed can create a more woman-friendly working environment. Women are typically seen as more empathetic. Accordingly, they are often expected to clear the way and to mentor young women in the industry. Mentoring, together with networking, is seen as important ways to attract and retain women in the forest sector (Article 4/Chapter 5).

However, having more women in the forest sector to attract young women is a dilemma. As discussed in Article 2 (Chapter 3), this phenomenon presents a ‘Catch-22’ in which the solution is denied by a circumstance inherent in the problem.



Increasing the number of women should not be tokenism, an unfair practice where these women will be treated only as a symbol of gender representatives, not as individuals (Kanter 1977). If hired only as tokens, women will typically feel excluded and lack support and respect from the rest of the group.

Two alternative solutions proposed in Article 2 (Chapter 3) are: (1) changing the forest sector image by focusing on the good features of the industry such as its important role in the sustainable future and solutions for the modern world, and (2) promoting the sector in various platforms, both offline and online. The first solution can be implemented by focusing on the role of the forest sector in mitigating climate change and supporting a more sustainable future economy with providing green jobs, and a healthier urban built environment.

One way to promote gender diversity is to highlight diversity in forest sector organization marketing and promotion platforms. In higher education, emphasizing diversity on university websites is a central strategy for attracting new student populations. Similar with applying for universities, people will be more attracted to apply for jobs in an environment where they can see themselves fitting in (perceived fit) and where they feel welcomed.

The forest sector should also utilize social media to attract younger generations. Generally, people who attend university and are entering the workforce nowadays were born after 1990. Given that this generation is born in a digital era, they are frequently referred to as digital natives (Prensky 2001) and a major part of ‘Generation C’. The capital letter of ‘C’ refers to the English word ‘connected’ symbolizing the connection of the generation with the internet. In addition to

attracting younger people, promotion through social media may also attract more women as they are reported to use social media more than men.

When it comes to applying for jobs, women are more interested than men in finding positions that minimize conflicts with their other social roles (e.g., spouse and/or parent) (Chapman et al. 2005). Therefore, to attract more women, forest sector companies can emphasize non-monetary benefits such as flexible hours, family-friendly policies, on-site daycare, and related issues in their job advertisements. This is in line with findings in Article 1 (Chapter 2). Respondents stressed that the work-family balance with more flexible working hours and place of work (e.g., working from home) is important for attracting young women to the forest sector. This issue was mentioned since women still tend to bear the bigger burden with respect to domestic household responsibilities. This work-family balance challenge might be a reason why it is difficult to find women to work in manufacturing facilities in rural areas.

Women's greater family responsibilities have been identified as the major cause of the gender earnings gap with a perception that when women become mothers, they will be less engaged at work (Ladge and Little 2019). Due to these gender stereotypes, companies tend to hire men than women. Although working mothers are socially respected, they need to justify why they are working outside their home with a socially acceptable reason. When working mothers rise to top management positions and take the breadwinner role, they may be labeled "ultramacho" (Ladge and Little 2019, p. 140) and are more likely to face marital instability (Byrne and Barling 2017).

In terms of work-family balance, men leaders are generally in a better situation than their women peers. The more successful the man, the more likely they will find a spouse, and have a family. For example, a nationwide survey about the lives of highly educated and high-earning U.S. women reveals that half of these women are childless and nearly 7 out of 10 are unmarried (Hewlett 2002).

Article 3 (Chapter 4) discussed two important factors regarding student leadership experience: peer relationship and gender stereotypes. Most respondents became involved in leadership opportunities through encouragement from their peers. This finding confirms that peers, together with other actors such as advisors, faculty, and administrators, have critical roles in student leadership development (Komives et al. 2006). Some respondents were less interested in seeking top leadership roles because of a fear of negative evaluation by their peers. This internalized oppression, particularly sexism, is one of the reasons that advances men and holds women back in leadership. Most respondents also mentioned that they obtained their leadership roles by volunteering. They also noticed that women are more likely to take unpaid roles than men.

Gender role norms in society intertwine the expectation of women's behavior in leadership. Due to patriarchy norms, current theories of leadership are still embedded with masculinity (Storberg-Walker and Madsen 2017), resulting in a negative perception of women who occupy leadership roles. Women leaders are associated with being “emotional”, “bossy”, and “too nice” (Ibarra, Ely, and Kolb 2013), whereas men leaders are considered rational and objective (Brescoll 2016). However, in contrast with these theories, respondents in Article 3 (Chapter 4)

emphasized listening, collaboration, and organization as keys to good leadership. The differences between respondents' perceptions and the literature may be because of past diversity efforts of their forestry colleges. A more inclusive environment in the university/college may result in more fair perceptions and treatment of women leaders.

Being able to listen, collaborate, and organize are consistent with findings that women tend to be more inclusive than men by adopting a more democratic and participative style (Eagly and Johnson 1990). Women strive to accommodate more voices in the decision-making processes. Compared to men, women are more likely to display transformational leadership behaviors (Vinkenburg et al. 2011; Eagly, Johannesen-Schmidt, and van Engen 2003) and a relation-oriented style (Polson 2018; Haber-Curran 2013; Romano 1996). Some respondents sought to empower other students and to observe their strengths to be best utilized through organizational works.

In Article 4 (Chapter 5), most respondents agree that mentoring and networking are important to address gender inequality in the forest sector, however, it is quite challenging to find a woman mentor/role model because women are underrepresented in the sector. Therefore, to get a good mentor/role model, young women are encouraged to be proactive in utilizing different channels, both formal and informal.

When it comes to gender dynamics, respondents emphasize the different benefits of having a woman versus man mentor. In a men dominated field such as the forest sector, women mentors provide psychosocial mentoring, the interpersonal

aspects of the relationship (Sosik and Godshalk 2005; Allen, Day, and Lentz 2005). For the respondents, the women mentors enhance social belonging, confidence, and motivation in relatively alienating environments. Same gender role models might also protect women from negative stereotypes and show how women can advance despite existing gendered barriers, which in turn, enhances women's intentions to retain and pursue careers in the forest sector.

On the other hand, cross-gender mentorship is favored in career function (Kao et al. 2014). In professional settings, women may reap more benefits from men mentors because men have long been advantaged in the forest sector. Therefore, men can confer organizational legitimacy and provide resources required for success for their protégés.

### **6.1. Limitations and future pathways**

There are limitations to this study. First, I am aware that my positionality in gender, social class, ethnicity, and age affect data collection and the subsequent research interpretation and therefore acknowledge the limits of objectivity. Another potential limitation of this study is related to respondent demographics. For example, student leaders were a mix of undergraduate and graduate students and may have different concerns and job trajectories.

Generally speaking, respondents have varied experiences and knowledge, ranging from having work experience for decades to students who are just recently enrolled. This different exposure creates different perspectives and may impact their responses. Limited experience in their leadership positions by some of the

respondents may also impact their responses. In addition, the respondents' willingness to share their personal experiences with interviewers likely varied. Those variables may result in different time length of interviews. Moreover, this study's site selection is in predominantly white and developed countries (the Global North).

Based on findings from this dissertation, there is considerable space for gender-related research in the forest sector. One example is exploring men's homosociality that contributes to a masculine environment. Within this kind of environment, what are the men executives' perspectives with respect to working with women as colleagues in the top leadership level? This context may also shape what employees in this men dominated industry think of women as their leaders, compared to men. Looking to the bigger picture, this study about gender diversity in leadership in the forest industry can be compared to other similar studies in perceived men dominated industries such as automotive or IT (Information and Technology).

Attracting more women should be balanced with retaining women who have been in the sector. Based on a recent study about the importance of women's networks on supporting women's retention in the forestry profession (Crandall et al. 2020), future research can be directed at developing a comprehensive understanding of what is needed to retain women in the forest sector. Research also can be done to investigate the leaking pipeline in forestry. Where do the women students go after finishing their studies in forestry universities? There is also a need to do research addressing complex gender issues in the forest sector such as sexual harassment and the gender pay gap.

With regard to a consideration that the studied universities in Article 2, 3, and 4 may have great resources including funding availability, further research can be done at different types of organizations (e.g., private), different scale of organizations (e.g., small to medium), and different locations (e.g., less-developed countries). Future research can also be done to explore what universities have done to successfully encourage women students as leaders in forestry. These students deserve more individualized attention to better understand their experiences and to provide them with appropriate support. Additionally, it is also interesting to see if the successful programs result primarily from University-level leadership (top down approach) or do they come from student actions (bottom up approach).

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## **APPENDICES**

### **Appendix 1. Interview protocol of Article 1/Chapter 2: “From nude calendars to tractor calendars”: The perspectives of female executives on gender aspects in the North American and Nordic forest industries.**

1. How would you describe the general atmosphere within your company with respect to women in the workforce?
  - Has this changed during your time at the company?
2. How would you describe the general atmosphere within the industry with respect to women in the workforce?
  - How has this changed during your career?
3. Are there advantages to being a woman manager within the sector?
4. Are there disadvantages to being a woman manager within the sector?
5. How do you think your presence as a woman executive impacts the performance of your company?
6. From your perspective, what are the primary benefits to a forest sector company of having women in top management?
7. What would make the sector a more attractive place to work for woman managers?
8. What advice would you have for young women entering the industry?

**Appendix 2. Interview protocol of Article 2/Chapter 3: The “Catch-22” of representation of women in the forest sector: The perspective of student leaders in top global forestry universities.**

1. Why did you choose your current major?
2. Are there advantages of women leadership to student forest sector clubs/organizations?
  - How about advantages of being a woman leader in forest sector clubs/organizations?
  - From your perspective, what are the primary benefits to a forest student club/organization of having women leaders?
    - ◆ How do you think your presence as a woman leader impacts the performance of organization that you lead?
3. Are there disadvantages of women leadership to forest student clubs/organizations?
  - How about disadvantages of being a woman leader in forest sector clubs/organizations?
4. What would make the college/faculty of forestry a more attractive place for young women?
  - What would make the forestry industry a more attractive place for young women?



**Appendix 3. Interview protocol of Article 3/Chapter 4: Leading with the heart and/or the head? Experiences of women student leaders in top world forestry universities.**

1. How would you describe the general atmosphere within your college with respect to gender diversity?
  - Has this changed during your time at the college?
2. How would you describe the general atmosphere with your organization with respect to gender diversity?
  - Has this changed during your time at the organization?
3. How did you get this leadership role in your club/organization?
  - What qualities do you think make you a good leader?
4. Reflecting on your time in leadership, how do organization members react to your leadership?
  - How about other campus leaders, organizational alumni, and/or campus administrators?
5. What do you think makes a good leader?
  - Do you think there are certain expectations of you being a woman leader?
  - Do you find certain behaviors generally associated or assigned to women for effective leadership? Please explain.
  - Taking your ideas of an effective leader and behaviors associated with being a woman, how do you see those interacting if at all?