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Fem2forests

D.2.1.1

Capacity-building for gender awareness and competences in forestry education

This document is issued by the consortium formed for the implementation of the Fem2forests project by the following partners:

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1 Introduction

The forestry industry is currently facing major challenges, including climate change, socio-political changes and a shortage of skilled labour. More than ever, skilled labour is needed to tackle these issues and promote innovation in the forestry sector. Studies by the Fem4Forest (DTP3-500), project have shown that women are present in the forest sectors of the Danube Region but have rather limited decision-making authority in administrations and almost none in companies. Hence, forestry is still a male-dominated sector where women lack the support to take on leadership roles. However, female professionals bring new perspectives and positive changes to the world of work and therefore have the potential to promote innovation in the forestry sector. The number of graduates in environment and forest related studies has decreased over the last 10 years and female participation has remained below 40 %. This gender gap is also seen in the traditional forest sector workforce. Furthermore, this workforce is aging, and the forest sector has the urgent task of attracting more youth and women to engage in forest related activities.[1]

The Fem2forests project aims to make the forestry labour market more attractive for girls and young women, improve forestry training and create impetus for the recruitment of young talent in the forestry sector. To achieve its goal the project aims to (1) develop innovative career pathways for girls and young women, (2) strengthen the capacity of forestry education institutions through mainstreaming of the gender perspective, and (3) facilitate the framework conditions for efficient involvement of women at different levels and stages in forestry organizations and relevant labour markets.

Fem2forests follows an interactive and multi-stakeholder-driven innovation approach that covers career paths in forestry from early orientation stages to leadership positions. Participative formats along with quantitative and qualitative data acquisition through workshops, surveys, and interviews are the main methods used in the project to identify the needs and interests of girls and young women in the forestry sector. A variety of stakeholder including educational and training institutions and forestry employers among others, will be closely involved throughout the project to help change awareness and create a framework for a more diverse workforce that promotes sustainable

[1] Silva, Emilin Joma; Schweinle, Jörg. (2022): Green Forest Jobs in the pan-European region. FOREST EUROPE, Bonn. 49 p

development, especially in rural areas. Through all these activities, the project aims to increase the proportion of young women in the forestry sector by 2030 and beyond.

1.1 Forest education and the gender perspective

Previous research indicates that numbers and participation of women in forestry institutions is slowly growing, but that the sector is still largely dominated by men. Gender inequalities, harassment and sexism still persist in forest education, and often, specific masculine or feminine qualities are attributed to certain roles, tasks, positions or professions.[2] In recent studies gender inequality including harassment and sexist behaviour has been described in Swedish forestry institutions.[3,4] Similar findings have been documented for the Danube Region in a transnational survey with 9 participating countries.[5] In this study, 43% of female forestry students indicated that they had encountered gender specific challenges or biases during their education. These included the majority of forestry students from Slovenia, Germany, Austria and Czech Republic (ranging from 53 % in the Czech Republic to 69 % in Slovenia). Forestry students described how they often faced scepticism about their choice of a forestry profession and about their physical abilities and technical expertise regarding working in the field. They also stated that they faced condescending and sexist attitudes from instructors, peers and colleagues. Findings of this study also highlighted that misconceptions are widespread, with many believing that forestry offers limited opportunities, involves primarily hard physical labour, and is unsuitable for women. These results clearly indicate an urgent need for action to increase gender awareness in forestry educational facilities and training institutions.

To address this need, the present report examines opportunities and constraints for gender awareness and competencies in educational and training systems for forestry in

[2] Lidestav, Gun (2006) (eds.) Time for action. Changing Gender Situation in Forestry. Report of the UNECE/ FAO Team of Specialists on Gender and Forestry. UN Food and Agriculture Organization (FAO). See: http://www.fao.org/sustainable-forest-management/toolbox/cases/case-detail/en/c/213769/

[3] Maria Johansson, Kristina Johansson & Elias Andersson (2018) #Metoo in the Swedish forest sector: testimonies from harassed women on sexualised forms of male control, Scandinavian

[4] Grubbström, A., Powell, S. (2020): Persistent norms and the #MeToo effect in Swedish forestry education. Scandinavian Journal of Forest Research 35(5-6): 308–318

[5] Foundation for Improvement of Employment Possibilities PRIZMA (2024). Report on barriers and needs for inlcusion of girls and young women. Deliverable D 1.1.1. Project number: DRP02-001-18 Fem2forests.

the Danube Region. The report starts by providing an overview of the forestry educational and training systems in the Danube Region and identifies existing knowledge and experiences on gender awareness in forestry education in the Danube Region and beyond. Based on these findings, the final part of the report describes recommendations for increasing gender awareness in educational and training institutions. The aim of these recommendations is to foster gender equality in the forestry sector by strengthening the capacity of forestry education institutions through the gender perspective.

2 Methodology

Data about the educational systems in the Danube Region was gathered through a collective effort by all 9 countries in the Fem2forests consortium (Austria, Bosnia and Herzegovina, Croatia, Czech Republic, Germany, Romania, Serbia, Slovenia and Ukraine). The cross-country comparison of the educational systems provided insights into existing gender awareness concepts in the educational institutions of the Danube region. These concepts were complemented by key insights from previous research from the Fem4Forest Status Report (2020) and through secondary data sources like publications on the #MeToo campaign in Scandinavian and North American forestry educational systems, related studies of the International Forestry Students' Association (IFSA) and other relevant literature. Beyond that, the insights derived from D1.1.1 (Barriers and needs for the inclusion of girls and young women in the forestry sector) and results from the Transnational Alumni Study from the Fem2forests project were also included in developing the initial recommendations for gender awareness concepts in forestry educational institutions. To ensure the feasibility and learn more about the possible practical implementation of the initial recommendations, a transnational round table with experts from forestry education and career counseling was implemented. This expert feedback was the final step in order to develop the recommendations for increasing gender awareness in educational and training institutions presented in this report (Figure *1*).

Figure 1: Methodology for Deliverable D2.1.1 Capacity-building for gender awareness and competences in forestry education

3 Educational and training systems in the Danube Region

3.1 Forest education in the Danube Region: a cross-country comparison

Forests cover approximately 31% of the world´s surface and are a critical component of the planet's biodiversity.[6] Therefore, their preservation for future generations is an essential element in achieving sustainable development worldwide. Recognizing this, the European Union prioritizes sustainable forest management and climate adaptation, striving for an equilibrium between ecological integrity, economic viability, and social well-being. Achieving these objectives requires a multi-faceted approach that integrates scientific advancements, policy frameworks, and community engagement. In this context, education and professional training play a pivotal role in equipping future forestry experts with the knowledge, tools, and perspectives necessary to address modern challenges. These educational initiatives must incorporate contemporary practices and embrace gender inclusivity, ensuring diverse contributions to the evolving field of forestry. Forest education, therefore, serves as a cornerstone for fostering expertise in sustainable forest management. Beyond technical skills, it encourages a holistic understanding of forests' ecological, economic, and cultural significance. Rekola et al (2021) define "forest education" as "related to forests, trees outside forests, and other wooded land (i.e., natural forests, forest plantations, woodlands, agroforest systems and urban forests)" and "delivered through programmes on forestry and forest sciences as well as programmes of broader scope such as natural resource

[6] FAO and UNEP (2020): The State of the World´s Forests- Forests, Biodiversity and People. https://doi.org/10.4060/ca8642en

management and environmental science."[7] This broad perspective underscores the importance of interdisciplinary learning, equipping professionals to address emerging environmental concerns with innovative and adaptable solutions.

As global environmental pressures intensify, investing in forest education becomes increasingly urgent. A well-informed generation of forestry professionals, policymakers, and conservationists is essential to drive sustainable forest practices that safeguard biodiversity, mitigate climate change, and support economic resilience. By fostering knowledge-sharing and promoting sustainable strategies, society can ensure that forests continue to thrive for generations to come.

3.1.1 Overview of educational systems and career paths

In the Danube Region, forest education can be divided into the following educational systems: primary and secondary education, vocational education and training, university/college education and professional development programs (lifelong learning) and non-formal trainings.

a) Primary and secondary education

In the European Union, environmental education is well established in primary and secondary education.[8] Some of the main approaches used in primary schools related to forests are forest kindergarten and pre-school as well as forest pedagogy. Another common approach for sensitizing children at a young age for forest topics are learning experiences outside of the classroom like forest walks, forest days, school rallies in the forest or excursions. In some countries of the Danube Region like Germany and Croatia these outside of the classroom activities form part of the teaching curriculum of elementary schools. In most countries of the Danube Region the path to obtain a professional degree in forestry already starts with secondary education. In Austria,

[7] Rekola , M , Nevgi , A & Sandström , N 2021 , Regional Assessment of Forest Education in Europe: Creation of a Global Forest Education Platform and Launch of a Joint Initiative under the Aegis of the Collaborative Partnership on Forests. FAO , Rome, Italy. https://www.fao.org/3/cb6736en/cb6736en.pdf

[8] Stokes, E., Edge, A. & West, A. 2001. Environmental education in the educational systems of the European Union. Synthesis report. Commissioned by the Environment Directorate-General of the European Commission. http://ibdigital.uib.es/greenstone/collect/cd2/index/assoc/ue0002.dir/ue0002.pdf

Croatia, Serbia, Romania, Slovenia, Bosnia and Herzegovina and the Czech Republic students can enrol in forestry high schools after completing their primary education. These schools provide knowledge and practical skills necessary for employment in the forestry sector. The high school programs range between three or four-years, and allow students obtain a variety of qualifications such as forestry technician and forester among others. In most countries students who obtain a professional degree from a forestry high school can also pursue an advanced specialized degree at higher forestry schools or specialized training centres. Numeric data for the comparison of student numbers in forestry high schools throughout the Danube Region is scarce and therefore does not allow a cross-country comparison.

b) Vocational Education and Training

Vocational Education and Training for forestry professions is well established in several countries of the Danube Region. The length of vocational schooling is mainly three years, where young people learn a forestry profession through work during apprenticeship. Apprenticeship systems vary among the countries in the Danube Region. In those countries that do not offer high school programs to obtain a forestry degree (Austria, Germany and Ukraine) students can enrol into vocational schools after completing their secondary education. In other countries like Slovenia, graduates from forestry high schools enter vocational training centres to pursue a specialized degree. Higher forestry schools also offer theoretical and practical training for young people who do not wish to enrol in a university program to enter the forestry workforce. Higher forestry schools can be found in the educational systems of Ukraine and Austria. While the share of women in vocational Education and Training for forestry professions has been traditionally rather low, the evidence presented in the Fem4Forest country reports from 2021 shows a growing interest in forests and forestry among women in the Danube Region. Strongly in Czech Republic and Romania but also in Slovenia, girls participate to a considerable extent in vocational training programs for forestry.[9] The current report shows that also in Austria the share of women pursuing forestry training programs has been growing since the 1980s reaching a peak of 20% graduates in 2022 and 15 out of 46 teachers at forestry schools being female. In Bavaria, we can also observe a rise of female graduates from vocational forestry schools in recent years.

c) University and college education

[9] Böhling, Kathrin. (2021). Report on current situation and position of women in forestry in Danube region. Deliverable D.T1.1.1. Project number: DTP3-500-1.2 Fem4Forest

The basic framework of university and college level forest education in Europe consists of three levels of higher-education qualifications: three-year bachelor's, two-year master's and doctoral degree cycles. This framework can be found in all countries of the Danube Region. Data from the Fem4Forest project shows that the share of women in higher forestry education in the Danube Region is significant with a rise of women entering academic programs in forestry universities. Furthermore, the share of women with doctorates in forest sciences in the Danube Region is considerable, ranging between 27% and 44% in 2021. [10]Data from this report confirms the findings of the Fem4Forest study showing an increase of female students in most Danube Region countries. The share of women pursuing university degrees in forestry ranges from 20-50 % of overall students among compared countries and degree programs with focus in forest ecology and sustainable forestry display a larger number of enrolled women. Several countries also showed a significant presence of women in the staff of academic forestry facilities, yet some countries like Serbia point out that there are only few women in leadership positions.

d) Professional development programs (Lifelong learning)

Most countries in the Danube Region offer professional development programs for graduates in the field of forestry who want to specialize in a certain area or improve their expertise. These can include courses in a variety of areas such as silviculture, sustainable forestry, timber marketing, new technologies in forestry among many others. In Bavaria, graduates from forestry university programs who want to pursue a career in forest management or leadership positions in the Bavarian Forest Administration or State Forest Company can enrol in a trainee program that lasts between one and two years. In other countries like Bosnia and Herzegovina and Serbia certain forest management jobs require a professional or license exam from forestry graduates.

d) Non-formal trainings

Courses and trainings for people interested in acquiring specific forestry related skills like chainsaw, machinery operation, pest control, forest pedagogy, new technologies, etc. are offered in several countries of the Danube Region through private companies and Forest Administrations. These trainings do not require a background in forestry

[10] Ibid, 7.

education and are mostly directed at landowners, employees of forestry-related areas and members of local action groups.

3.1.2 Gender awareness in forestry educational institutions

The gender situation in a sector is largely reflected by the gender situation in institutions providing education.[11] In order to get an insight into the situation at forestry educational institutions in the Danube region this report examines existing gender awareness programs or activities promoting gender equality that are part of the curriculum at forestry educational institutions. The results of this study indicate that most countries in the Danube Region have National and/or University based-Gender Equality Plans. Most existing programs for gender awareness can be found at Forestry Universities. At the moment there are no existing programs for gender awareness or activities promoting gender equality at vocational training centres or forestry high schools. Four of the nine countries in the study point out that they have no activities that specifically promote gender equality in forestry education. These results stress the need to mainstream gender awareness concepts into forestry education in the Danube Region.

Table 1: Existing concepts for gender awareness in educational and training institutions in the Danube Region (Source: own elaboration)

ALL	University and/or National Gender Equality Plan
AT	At Universities: Mentoring programme, networking events and scholarships to support female students and researchers
BA	At Universities: Sessions on gender awareness for students & staff; International Program UNIGEM
CZ	At Universities: International program AGRIGEP
DE	At Universities: Mentoring programme; Courses on gender awareness for teaching staff
RO	None
HR	None
SI	None
RS	None
UA	None

3.1.3 Challenges and opportunities for improvement in the educational systems

The present study describes the challenges that the forestry educational systems across the Danube Region are facing at the moment. These challenges mostly address gender inclusivity, stereotypes, lack of female role models, especially in leadership positions,

[11] Ibid, 4

modernization of the curricula to meet the changing demands of the forestry sector, lack of information on career opportunities, low salaries and concerns about the job chances after graduation. In Romania, frequent changes in forest legislation and government policies that disrupt academic planning and a lack of structured vocational training and continuous professional development for forestry workers were mentioned as additional challenges to the educational system.

To tackle the current challenges in the educational systems of the Danube Region the transnational Fem2forests research team proposes a comprehensive set of ideas and recommendations. The most important ones are as follows:

1) **Enhancing Gender Diversity and Inclusion in Forestry Education**: Women are still underrepresented in the forestry sector, especially in leadership positions. Forestry education offers several ways to change this situation:

   a) *Mentoring programmes and Networks: The creation of stronger networks for women in forestry* and the promotion of mentoring programmes in forestry education are essential to help women strengthen their confidence and support for their professional life. The ideas for mentoring programs proposed in this report include the introduction or improvement of existing mentoring for students and also for young professionals starting a career in forestry.

   b) *Promotion of Female Role Models in Forestry:* Increase the visibility of successful women in forestry through guest lectures, media campaigns, networking events, and the official websites of schools and faculties as source of inspiration to encourage young women to enter forestry professions.

   c) *Gender sensitive curricula and training:* Introduction of gender-awareness contents into the curricula of forestry educational facilities and inclusive field work opportunities. Additionally, trainings that promote diversity and help young women to strengthen their self-confidence and communication skills during forestry education should be available at forestry educational institutions to help young women to prepare for work life.

   d) *Creation of funding opportunities:* Introduction of scholarships specifically for female forestry students and to fund supporting programs for women in forestry. Forestry companies could provide funding to offer internships and leadership training for women.

2) **Modernization of the existing educational curricula**: The results of this study point out that in many countries of the Danube Region the curricula at forestry educational institutions are outdated and not yet adapted to meet the challenges that the forestry sector is facing like *climate change and biodiversity loss*. New curricula should address these topics and include courses with a focus on carbon sequestration, forest resilience to climate change, and sustainable land management that will prepare graduates to deal with these challenges. The *integration of new technologies* in forestry also forms part of the curricula modernization. These include providing students with skills e.g. in digitalization and technology like remote sensing, geographic information systems, drone technology, and AI-based forest monitoring. Furthermore, *digital learning tools* like online platforms, virtual labs, and field simulations could be introduced to make education more accessible and engaging—especially in smaller, remote communities.

3) **Creation of incentives for forest entrepreneurs:** Forestry educational facilities could encourage students to start forestry-related businesses by offering courses on entrepreneurship, fundraising, renewable forest products, and market-oriented forestry innovations that provide a good starting for prospective forestry entrepreneurs. Furthermore, providing funding opportunities for innovative forestry start-ups and networking opportunities between students, investors and forestry entrepreneurs would also trigger the development of innovation in the forestry sector.

4) **Collaboration of education and industry**: The ties between educational institutions and the forestry sector should be tighter to ensure that the educational programmes align with the needs of the industry and to help facilitate the transition into the job market for students. There are multiple ways how such partnerships could look like, including e.g. internships, workshops, trainings, research projects, and so on.

5) **Creative outreach in primary and secondary schools:** Organization of school outreach events like “Forest Days” in primary and secondary schools with workshops, games, and storytelling to introduce forestry careers and raise awareness about forest-related topics for both, girls and boys, and also for parents and educators. Through the collaboration of schools with environmental NGOs and conservation centers exciting hands-on forestry experiences can be offered as extra-curricular activities to children.

The following compilation of country reports provides a comprehensive overview of the forestry educational training systems in the Danube Region and contains a set of recommendations and ideas to improve the forestry educational system in each country.

3.2 Austria

3.2.1 Forestry educational and training system

In Austria, there are various educational pathways for forestry. Training begins at vocational schools, continues through higher agricultural and forestry schools, and extends to university studies. Each level of education offers specific focuses and qualifications tailored to different professional requirements in the forestry sector (see appendix 6).

a) Forestry Vocational Schools

Forestry vocational schools provide practical training that prepares students for technical and manual professions in forestry. Students acquire fundamental skills in handling wood, operating forestry machinery, and understanding the ecological aspects of forest management.

b) Higher Agricultural and Forestry Schools

Institutions such as the Higher Federal College for Forestry in Bruck an der Mur (HBLA für Forstwirtschaft Bruck/Mur) offer comprehensive education in forestry. These schools provide both theoretical and practical training, leading to a high school diploma (Matura). Graduates have the option to enter the workforce directly or pursue higher education at a university.

c) University-Level Education

Academic programs in forestry are offered at universities, such as the University of Natural Resources and Life Sciences in Vienna (BOKU). These programs cover areas such as forestry, wood technology, and environmental sciences. University education emphasizes scientific research, sustainable forest management, and strategic planning in the forestry sector.

d) Vocational Courses and Further Training

In addition to traditional educational paths, Austria offers a range of professional development courses. These are particularly beneficial for career changers or professionals looking to specialize in specific areas such as nature conservation, sustainable forestry, or the implementation of new technologies in forestry. Thanks to this diverse educational system, Austria provides both hands-on and academic pathways into the forestry sector, catering to various interests and career goals.

3.2.2 Overview of career paths in forestry

In Austria, there are various career opportunities in the forestry sector, ranging from handson practical work to higher-level administrative and research positions. Depending on the level of education and training, individuals can pursue different roles with specific responsibilities in forest management, conservation, and sustainable resource use. The most common forestry careers in Austria include:

- **Forestry Worker:** Forestry workers typically complete vocational school or apprenticeship training. Their primary responsibilities involve physically demanding tasks such as tree felling, timber harvesting, and general forest maintenance. They play a crucial role in ensuring that forestry operations run smoothly and that forests are managed in a sustainable and efficient manner.

- **Forester:** Foresters need to have an education from either a vocational forestry school or a higher forestry school. Their role involves managing forests sustainably, overseeing timber harvesting, and ensuring proper wildlife management. They are responsible for balancing economic forestry operations with environmental and ecological considerations, ensuring that forests remain healthy and productive for future generations.

- **Forest Manager:** A forest manager must complete a university degree in forestry, typically at the University of Natural Resources and Life Sciences in Vienna (BOKU). Their responsibilities include developing and implementing sustainable forestry strategies, conducting research, and working on innovations in forest management and wood technology. Forest managers often engage in scientific studies and policy development to improve forestry practices at national and international levels.

- **Forestry Officials:** Forestry officials hold high-ranking positions within state or federal forestry administrations and are required to have a university degree in forestry or a related field. Their work primarily involves developing forestry policies, overseeing regulatory compliance, and managing large-scale forest

conservation and land-use planning initiatives. They ensure that forestry laws are followed and that sustainable practices are implemented at a governmental level.

Through these various career paths, Austria offers opportunities for individuals with different levels of education and interests to contribute to sustainable forest management and environmental protection.

3.2.3 Forestry education in numbers

In recent years, the proportion of women in forestry education programs has increased, particularly at universities. More women are choosing to study forestry, reflecting a broader trend toward gender diversity in the field. Women also make up a growing share of teachers in forestry schools, although they remain underrepresented in technical positions and leadership roles within the forestry sector. The total number of forestry students, both male and female, fluctuates slightly from year to year. However, there is a noticeable rise in interest in sustainable forestry, which continues to attract more students to the field.

The statistics on the proportion of women at the Bruck/Mur School of Forestry provide detailed insights into the development of gender distribution among graduates and teaching staff over several decades. It records both the absolute number of women and the total number of graduates and teaching staff per year, supplemented by the percentage of women.

In the case of graduates, it can be seen that in the first years recorded, especially from 1979 to the early 1980s, no women graduated from the school. The proportion of women in these years was therefore zero percent. It was only in the following decades that the proportion of women slowly began to increase, although it remained at a low level for a long time.

The proportion of female teachers was also extremely low at the beginning of the survey. In the 1979/80 school year, there was only one woman among the total of 26 teachers, which corresponds to a proportion of just 3.85%. In the following years, this proportion fluctuated slightly but remained constant at around four to five percent. This indicates that the Foresters' School was a heavily male-dominated institution in its early decades, both among its graduates and its teaching staff.

In recent years, the proportion of women at the Bruck/Mur School of Forestry has increased noticeably, both among graduates and on the teaching staff.

There has been a clear change among graduates compared to the early years. While there were no women among the graduates in the 1980s, the proportion of women was already over 20 percent in 2022. In 2023, it was 11.67%, and in 2024, 7 out of 63 graduates were women, which corresponds to a share of 11.11%. Even though the proportion of women is still relatively low, it has risen considerably compared to the first decades of the survey. The number of women among teaching staff has also risen steadily in recent years. While the proportion was only around four percent in the 1980s, it reached values between 32 and 39 percent in the years 2020 to 2024. In the 2020/21 school year, 18 of the 46 teachers were women, which corresponds to 39.1%. In the following years, the figure fluctuated slightly but was consistently above 30%. In the 2024/25 school year, 15 out of 46 teachers were women, which corresponds to 32.6%.

These figures show that the Bruck/Mur School of Forestry has become increasingly open to women in recent decades. While the proportion of women among graduates is still comparatively low, the proportion of female teachers has already risen significantly and is gradually approaching a more balanced gender distribution.

3.2.4 Gender awareness in forestry educational institutions

In forestry educational institutions, targeted programs have been established to encourage and support women in technical professions, including forestry. These initiatives aim to increase gender diversity and provide women with better opportunities in a traditionally male-dominated field.

The University of Natural Resources and Life Sciences Vienna (BOKU) has implemented specific programs focused on gender equality and the promotion of women in natural sciences. These programs include mentoring opportunities, networking events, and scholarships designed to support female students and researchers in forestry-related disciplines.

Additionally, various events and workshops on gender sensitivity are regularly organized within the forestry sector. These events aim to raise awareness about gender-related challenges, promote equal opportunities, and foster an inclusive learning and working environments for all individuals pursuing careers in forestry.

3.2.5 Strengths, Weaknesses, Challenges, and Barriers in forestry educational and training system

Strengths:

- The forestry educational and training system in Austria boasts several strengths that have contributed to its success in preparing students for careers in forestry. One of the key strengths is the diverse range of educational pathways, which allows students to choose from vocational schools, higher agricultural and forestry schools, and universities, such as the University of Natural Resources and Life Sciences Vienna (BOKU). These institutions offer both practical and theoretical education, catering to a wide array of career aspirations within the forestry sector.

- Another strength is the high level of practical training provided by many of the forestry programs, ensuring that students gain hands-on experience alongside their theoretical studies. This is particularly evident in institutions like HBLA Bruck/Mur, where students receive comprehensive forestry education, including forest management, sustainable practices, and forestry techniques.

Weaknesses:

- Despite these strengths, there are several weaknesses and gaps in the forestry education system that need attention. One significant issue is the gender disparity in the field. While women are increasingly enrolling in forestry education programs, they remain underrepresented in technical, managerial, and leadership positions within the industry. Although educational institutions are taking steps to address this, such as offering mentorship and networking opportunities for women, more comprehensive efforts are needed to create a truly inclusive environment and encourage women to pursue and sustain careers in forestry.

- Another weakness lies in the outdated curriculum in some educational institutions. While traditional forestry practices are well-represented, there is a need for curricula to be modernized to address emerging challenges, such as climate change, biodiversity conservation, and the integration of new technologies like GIS and drones.

Challenges:

- The forestry education system faces several key challenges that limit its effectiveness, particularly when it comes to gender inclusion and the ability to adapt to modern industry needs. One major challenge is the lack of role models for young women in forestry, which can discourage them from pursuing or continuing a career in the field. Without sufficient female representation in leadership roles or practical forestry settings, young women may not see

themselves reflected in the profession, which can lead to lower enrolment and higher dropout rates among female students.

- A significant barrier to effective education is the disconnect between academic training and real-world forestry practices. Despite efforts to strengthen partnerships between educational institutions and forestry businesses, there is still a gap between what is taught in the classroom and the skills required in the field. This limits the ability of graduates to transition smoothly into the workforce, particularly for students from less practical or rural educational backgrounds.

- Moreover, the traditional male-dominated nature of the forestry profession can pose cultural and psychological barriers, especially for girls and young women. These challenges, such as a lack of female mentors or industry-specific support systems, can contribute to a less welcoming environment for women, further hindering their success in the sector.

3.2.6 Opportunities for improvement

Strengthening Mentoring Programs for Women in Forestry

- In many forestry educational institutions, there is still a relatively low number of women in technical or leadership roles within the field. One way to address this imbalance would be to strengthen mentoring programs specifically aimed at supporting women in forestry. Such programs could provide female students with the opportunity to connect with experienced professionals in the field. These mentors could offer valuable insights, career advice, and personal experiences to help guide the students through their professional journey. Additionally, creating a strong network of female professionals would boost the confidence and motivation of women to pursue a career in forestry. In the long term, this would help increase the representation of women in forestry careers and contribute to making the industry more diverse and inclusive.

Integrating New Technologies into Education

- The ongoing digitization and technological advancements have significantly transformed the forestry sector. New technologies such as drones, used for aerial mapping and surveying, Geographic Information Systems (GIS), which assist in the management and monitoring of forests, and remote sensing, which allows for monitoring forest health and tree growth from a distance, have

become essential tools in forestry. It is crucial to incorporate these technologies into forestry educational programs. Students should not only acquire theoretical knowledge but also gain practical skills in using these modern tools, so they are well-prepared for the increasingly technology-driven job market. This would not only enhance their professional skill set but also ensure that graduates stay up-to-date with the latest developments in the industry.

Adapting Curricula to Address New Challenges

- The challenges faced by modern forestry are growing significantly. Climate change and biodiversity loss are serious threats to global forests. As a result, the educational system needs to be adapted to prepare students for these emerging global challenges. Curricula should increasingly include topics related to climate-smart forestry and sustainable land management. Subjects such as reforestation of degraded ecosystems, managing climate induced forest fires, and promoting biodiversity should become central components of the education. When students are equipped with the latest scientific knowledge and practical solutions for these challenges, they will be better prepared to manage forests in a sustainable and responsible manner, meeting both ecological and socio-economic demands.

Strengthening Networking Between Educational Institutions and Forestry Businesses

- One of the greatest challenges for forestry graduates is often transitioning from education to the workforce. Closer cooperation between educational institutions and practical forestry businesses could be highly beneficial in this regard. By regularly collaborating with forestry companies, universities, and vocational schools can ensure that their curricula align with the current needs of the industry. Such partnerships could include internships, workshops, and joint research projects, giving students hands-on experience and opportunities to build a professional network. Stronger connections with industry would not only facilitate the transition into the job market but also help students acquire the specific skills and knowledge that are in demand in the forestry sector today.

3.3 Bosnia and Herzegovina

3.3.1 Forestry educational and training system

In Bosnia and Herzegovina, the education and training system in the field of forestry is structured across multiple levels, starting from secondary schools with forestry specializations to higher education institutions offering specialized forestry programs (see appendix 6.2).

a) Secondary education

After completing the nine-year primary education, students may enroll in secondary schools that offer forestry-related programs. These schools provide foundational knowledge and practical skills necessary for employment in the forestry sector. Upon completing the four-year program, students obtain the qualification of forestry technician. Forestry-oriented secondary education is currently available in the following schools across Bosnia and Herzegovina: - Secondary Forestry School for Environment and Wood Design in Sarajevo - Secondary Forestry Schools in Zavidovići, Busovača, Kladanj, Kiseljak, Bosanski Petrovac, Travnik, Bijeljina and Živinice. Graduates with the title of forestry technician are qualified to perform various operational roles such as chainsaw operator, skidder operator, silviculture and forest protection worker, and other roles related to forest harvesting and management.

b) Higher education

The higher education system in Bosnia and Herzegovina is aligned with the Bologna Process and follows a three-cycle structure, incorporating the European Credit Transfer and Accumulation System (ECTS). Within this framework, several academic institutions in the country offer forestry focused programs that enable both initial education and advanced specialization for professionals in the sector. The academic institutions providing forestry education include the Faculty of Forestry at the University of Sarajevo, the Faculty of Forestry at the University of Banja Luka, the Biotechnical Faculty of the University of Bihać (Department of Forestry), and the Faculty of Agriculture at the University of East Sarajevo (Department of Forestry). The first cycle of studies leads to a Bachelor of Forestry degree, typically lasting three to four years and awarded upon completion of 180 to 240 ECTS credits. This level of education equips students with core competencies in areas such as silviculture, forest protection, forest planning, and

ecosystem services, laying the foundation for both employment and further academic pursuits.

The second cycle results in a Master of Forestry degree and usually spans one to two years (60 to 120 ECTS), depending on the scope and structure of the first cycle. Master's programs provide specialized knowledge and skills in areas such as sustainable forest management, biodiversity conservation, and forest governance. These programs are often research-oriented and conclude with a master's thesis. Finally, the third cycle of academic education leads to a PhD in Forestry, which requires a minimum of 180 ECTS credits and includes the development and public defence of an original doctoral dissertation. Doctoral studies prepare candidates for careers in academia, policy development, and high-level scientific research in forestry and natural resource governance. All forestry programs in Bosnia and Herzegovina are subject to national accreditation procedures and are aligned with the Qualifications Framework in Bosnia and Herzegovina (QF BiH) and the European Qualifications Framework (EQF). The regulation of qualifications for performing professional forestry tasks is primarily governed at the entity and cantonal levels, as there is no unified national framework regulating professional accreditation in this sector. While a formal license to practice as a forestry engineer is not legally required, most positions involving responsible and technically demanding duties within public forestry companies and administrative bodies are subject to clearly defined legal requirements concerning educational qualifications and the completion of a professional examination. According to current vacancy notices and internal rulebooks of public forestry enterprises— candidates for positions such as Forestry Expert Associate, Forestry Engineer, or Planning Associate are required to possess:

- a degree from a Faculty of Forestry, with 180, 240, or 300 ECTS credits (depending on the Bologna cycle level);

- at least one year of relevant work experience (or more, depending on the qualification level);

- and in certain cases, a passed professional exam, which includes both written and oral components based on sector-specific legal and technical documentation.

This examination is not administered by an independent licensing chamber but is organized as part of the recruitment process, following the internal acts of public enterprises and cantonal legal provisions.

3.3.2 Overview of career paths in forestry

- **Field and technical occupations:**

  - **Forestry technician** – implements operational forest works (harvesting, tending, protection, silviculture), and maintains field documentation.

  - **Forest inventory technician** – conducts field measurements, estimates standing timber volume, and participates in forest inventory surveys.

  - **Chainsaw operator (Logger)** – a professionally trained individual who performs manual tree felling.

  - **Tractor and machine operator** – operates forest tractors and specialized machinery (forwarders, harvesters).

  - **Forest worker** – performs tasks such as planting, reforestation, clearing, and tending young forest cultures.

- **Forest guards** - monitoring and protecting forest areas by preventing illegal activities such as logging, poaching, and forest fires, as well as ensuring compliance with forestry regulations and supporting sustainable forest management.

- **Engineering and professional positions:**

  - **Forestry engineer (Bachelor level)** – plans and oversees forestry activities in the field, drafts operational plans, and participates in sustainable forest management.

  - **Forestry engineer (Master level)** – works on more complex projects, including forest management planning, and conservation policies.

- **Management, Administration, and oversight:**

  - **Director / General Manager of Public Forest Enterprise** – oversees enterprise operations, strategic planning, and resource allocation.

  - **Sector / Department Head** – leads specialized departments such as silviculture, protection, harvesting, or mechanization.

  - **Administrative Officers** – maintain records on forest production, transport, planning, and personnel.

- **Legal, Procurement and Logistics Officers** – plan and monitor the acquisition of materials, tools, equipment, fuel, and other operational necessities.

- **Inspection and supervisory roles**

  - **Forest Inspector** – enforces forestry laws, monitors legal compliance in forest operations and wood transport, issues administrative orders and fines.

  - **Environmental / Nature Protection Inspector** – supervises the implementation of regulations related to protected areas and nature conservation.

- **Research and academic positions**

  - **Forestry Researcher** – works at institutes or universities on topics such as forest ecology, biodiversity, genetic resources, etc.

  - **University Professor / Assistant** – teaches and conducts research at forestry faculties (e.g., University of Sarajevo, Banja Luka, Bihać).

  - **Laboratory Technician (e.g. dendrology, soil science, entomology) –** performs analyses of soil, tree samples, foliage, pests, and other research materials.

- **Private sector / NGOs**

  - **Project Coordinator (Forestry / Nature Conservation)** – leads forestry and conservation related activities in NGOs or international organizations.

  - **Policy and advocacy officer** – analyses forest policies, drafts recommendations for legislative reforms, and advocates for sustainable forest management.

  - **Private Forest Owner** – manages private forests and organizes silvicultural and harvesting operations.

  - **Entrepreneur – Forestry Contractor** – operates a licensed business for logging, timber extraction, afforestation, and related services.

  - **Wood technologist / Wood processing worker** – works in companies specializing in wood processing, often closely linked with the forestry sector.

3.3.3 Forestry education in numbers

Although Bosnia and Herzegovina lacks regularly updated and systematically maintained statistical data on the participation of women in the forestry sector, available research and partial records indicate a gradual increase in women's involvement in forestry education and, to a lesser extent, employment in recent decades. Nevertheless, forestry remains a predominantly male profession, especially in operational and field-based roles.

Historically, the first women graduated from the Faculty of Forestry in Sarajevo in 1955, with a noticeable increase in female graduates starting in the 1980s. Between 1981 and 1990, out of 522 forestry graduates, 142 were women—over 27% of the total. In earlier decades, the proportion was much lower; for example, from 1953 to 1960, women made up only 8.4% of graduates. According to the Faculty's official monograph, between 2001 and 2008, 75 women and 131 men graduated, meaning women accounted for approximately 36%.

Table 2: Overview of engineering Faculty of Forestry in Sarajevo – graduates by gender (Source: Mašić 2020)

Udio – share (%)					
Godine Years		Žene Women		Muškarci Men	
1953-1960		16		174	
1961-1970		45		524	
1971-1980		43		367	
1981-1990		142		380	
1991-2000		43		155	
2001-2008		75		131	
	Bakalureati šumarstva ili hortikulture 2009-2019 Bachelor forestry or horticulture 2009-2019	Master studij (Bolonjski sistem) 2010- 2019 Master study (Bologna system) 2010- 2019	Međunarodni II ciklus studija FOPER 2009-2015 International II cycle of FOPER studies 2009-2015	Diplomirani inžinjeri šumarstva ili hortikulture 2009- 2019 Graduated engineers forestry and horticulture 2009- 2019	Magistri šumarstva ili hortikulture (postdiplomski studij) 2008-2019 Masters of Forestry or Horticulture (postgraduate study) 2008-2019
Muškarci/Men	381	168	2	110	29
Žene/ Women	244	93	11	45	11

Table 3: A) Number of employed women per company and B) Number of women in management positions (Source: Mašić 2020)

A)

Žene Women	Sarajevo-šume *Sarajevo-Forests*	Srednjo-bosanske šume *Central Bosnia Forests*	Unsko-sanske šume *Una Sana Forests*	Zeničko-dobojske šume *Zenica-Doboj Forests*	Federalno ministarstvo poljoprivrede, vodoprivrede i šumarstva The Federal Ministry of Agriculture	Bosansko-hercegovačke šume *Bosnia and Herzegovina forests*	JPŠ Šume Republike Srpske *Forests of the Republic of Serbian*
Stalno zaposlene VSS *Full time employees UD*	9	31	14	21	3	5	151
Tehničari Technicians	0	9	21	8	0	0	158
Žene sa SSS-III stepena šumarske struke *Women from HSE-III forestry profession*	0	3	0	0	0	0	0
Pripravnice VSS Trainees UD	0	0	12	2 VSS 1 SSS	0	0	4

B)

Žene Women	Sarajevo-šume *Sarajevo-Forests*	Srednjo-bosanske šume *Central Bosnia Forest*	Unsko-sanske šume Una Sana Forests	Zeničko-dobojske šume Zenica-Doboj Forests	Federalno ministarstvo poljoprivrede vodoprivrede i šumarstva The Federal Ministry of Agriculture	Bosansko-hercegovačke šume Bosnia and Herzegovina forests	JPŠ Šume Republike Srpske Forests of the Republic of Serbian
Rukovodeći položaj *Leadership position*	2 rukovodioca službe *Head of service*	1 izvršni direktor i 2 upravnice šumarija *1 executive director and 2 forestry manager*	2 (1 upravnica šumarije, 1 rukovodilac sektora) *2 (1 forestry manager, 1 head of service*	2 (1 upravnica šumarije, 1 rukovodilac službe) *2 (1 forestry manager, 1 head of service*	1 pomočnica ministra za šumarstvo i lovstvo *1 assistant minister for forestry and hunting*	1 rukovodilac službe *1 head of service*	21

Enrolment statistics from recent years reveal fluctuating but generally increasing female participation in forestry programs. In 2014/2015, more women than men enrolled at the Faculty of Forestry in Sarajevo (3 out of 4 students), while in earlier years, female Enrolment ranged between 12% and 26%. Low enrolment is attributed to the perception of forestry as a “male profession” and the fact that students often come from rural areas where cultural norms still favour educating boys over girls. Employment data shows that workforce numbers in public and state-owned forestry enterprises have remained relatively stable in recent years—5,245 employees in 2023, compared to 5,461 in 2019. However, these figures are not disaggregated by gender, making it difficult to assess the actual share of women in the workforce. A 2020 survey involving 78 women working in forestry companies in Bosnia and Herzegovina showed that most were employed in administrative or technical positions. Only in the Central Bosnia Forests company were women with secondary forestry education found working in operational roles; elsewhere, such positions were virtually absent. As of 2020, there were 83 women with forestry degrees employed in the Federation of Bosnia and Herzegovina and 151 in

Republika Srpska. Nine women held management positions in the Federation, and 21 in Republika Srpska.[12]

According to data from the Agency for Statistics of Bosnia and Herzegovina, a total of 62,150 students were enrolled in all higher education institutions during the 2023/2024 academic year, of which 37,157 were women (59.8%) and 24,993 were men (40.2%). In the previous academic year 2022/2023, there were 63,288 students enrolled, with women accounting for 60.8% of the total. In 2021/2022, the number of enrolled students was 65,561. These figures indicate a declining trend in the total number of enrolled students, but a continuous increase in the proportion of female students. This may have positive implications for increasing women's participation in traditionally male-dominated sectors such as forestry—provided that adequate support systems are in place.

3.3.4 Gender awareness in forestry educational institutions

Gender awareness in forestry education institutions in Bosnia and Herzegovina varies depending on the level of education and the degree of institutional support. While university-level institutions—particularly the University of Sarajevo—have taken notable steps toward integrating gender equality into their policies and activities, secondary vocational schools that train professionals for the forestry sector have yet to demonstrate visible initiatives in this area.

At the University of Sarajevo, including the Faculty of Forestry, educational sessions have been conducted under the title "Gender-Aware Policies at Organizational Units of the University of Sarajevo." These sessions aim to introduce the foundational concepts of gender-based violence and discrimination, with a particular focus on sexual harassment, as well as to familiarize staff and students with institutional mechanisms and policies for protection against various forms of gender based violence.

In addition, the University adopted a Gender Equality Action Plan for the period 2022–2023. This plan includes activities to promote gender equality across all fields of work, strengthen the capacities of teaching and administrative staff in promoting gender-sensitive practices, integrate gender equality principles into student engagement, and advance gender equality in research and artistic work.

Through the project "Introducing Gender-Aware Policies in Higher Education" (UNIGEM), funded by the Government of the United Kingdom, the University has also organized workshops and training sessions aimed at raising awareness about the importance of

[12] Mašić, A: WOMEN IN FORESTRY IN BOSNIA AND HERZEGOVINA – Original scientific papers https//doi.org/10.31298/sl.144. 11-12.4 Šumarski list, 11–12 (2020)

gender equality in higher education and society more broadly. These efforts are particularly important in fields like forestry, where women have historically been underrepresented both in academic programs and in professional roles.

However, when it comes to secondary forestry schools in Bosnia and Herzegovina, available information does not indicate the existence of specific programs or activities aimed at promoting gender equality or increasing the participation of women in the forestry sector. A review of their official websites reveals no references to student engagement in workshops, gender-oriented extracurricular activities, or partnerships with gender equality initiatives. This absence highlights a significant gap in awareness and action at the secondary education level.

It is worth emphasizing that women in forestry remain largely underrepresented, particularly in field-based and technical roles. While a growing number of women are pursuing higher education in forestry and entering roles in administration, management, and academia, their participation in operational forestry remains minimal.

3.3.5 Strengths, Weaknesses, Challenges, and Barriers in forestry educational and training system

Strengths:

- Bosnia and Herzegovina has a complete forestry education chain, ranging from vocational secondary schools to university and postgraduate levels.
- There is a long-standing tradition of forestry education, particularly at the Faculty of Forestry, University of Sarajevo, which is recognized as a cornerstone institution in the region.
- Strong links exist with public forestry enterprises, where many students' complete internships and often find employment after graduation.
- Within university institutions, there is political will to implement gender equality, as seen through Action Plans, various projects, and staff training programs.
- Forestry is promoted through fairs, public events, and conferences, increasing the visibility of the profession in the academic space.
- There is a growing presence of women in academic and administrative positions at forestry faculties, which serves as a positive signal for future generations.

Weaknesses:

- Lack of coordinated promotion of forestry among youth, particularly girls – the sector is still presented in a traditional manner, without actively engaging new interest groups.

- Secondary forestry schools do not implement gender-related initiatives, nor do they integrate educational content that would challenge stereotypes and attract more female students.

- Curricula are mostly outdated, focused on conventional forest management, with little or no emphasis on modern topics such as climate change, digital mapping, or biotechnology.

- There is no systemic monitoring of gender representation among students, staff, or workers in the sector, which hinders evidence-based policymaking.

- Weak cooperation between the education system and the private sector, especially in developing practical training, tailored courses, and market-relevant skills.

- Forestry schools are often located in smaller, underdeveloped municipalities such as Bosanski Petrovac, Zavidovići, and Busovača, where young people have little motivation to enrol due to poor infrastructure, a lack of investment, and limited career perspectives. These schools are facing a steady decline in student numbers, making it difficult to maintain quality and relevance.

Challenges:

- Deep-rooted gender stereotypes that still portray forestry as a "male profession," directly impacting girls' interest in enrolling or pursuing careers in the field.

- Lack of female role models and mentors in the sector makes it difficult for young women to identify with the profession and feel a sense of belonging.

- Uncertainty regarding employment after graduation, particularly for women, who often face invisible barriers and limited opportunities in the labour market.

- The absence of a modern forestry development strategy, with existing policy documents not addressing current challenges such as digitalization, decarbonization, and sustainable development.

- Low salaries in the forestry sector make the profession less attractive—not only for women but for young people in general.

3.3.6 Opportunities for improvement

1. **Modernizing teaching and curriculum**

- **Curriculum reform:** Introduce contemporary topics such as climate-smart forestry, digital mapping, drone technology, artificial intelligence in forest monitoring, protected area management, and bioeconomy.

- **Digital learning tools**: Develop online platforms, virtual labs, and field simulations to make education more accessible and engaging—especially in smaller, remote communities.

2. **Attracting more women and young people throughout promotion and awareness raising**

- **Scholarships and quotas for women:** Establish targeted scholarship programs for female students in forestry, along with additional entry points or incentives in regions where they are underrepresented.

- **Mentorship programs:** Pair young women with female professionals working in forestry (science, operations, administration) to build confidence and a sense of belonging in the field.

- **Visible campaigns and role models:** Promote the stories of successful women in forestry through social media, media outlets, and the official websites of schools and faculties— visibility leads to inspiration.

- **Creative outreach in primary schools:** Organize “Forest Day” events with workshops, games, and storytelling to introduce forestry careers to both girls and boys from an early age.

3. **Stronger links with the labour market**

- **Dual education model**: Increase the involvement of forestry enterprises in hands-on training— allowing students to spend part of the academic year in real working environments.

- **Support for self-employment and innovation:** Offer training in project writing, entrepreneurship, and accessing EU funds for young people interested in forestry startups (e.g., wood products, forest tourism, sustainable energy).

3.4 Croatia

3.4.1 Forestry educational and training system

Forestry professions are among the oldest in Croatia. The training of forestry personnel began in 1860. with the establishment of the Economic Forestry Institute in Križevci, which was the first forestry school in this part of Europe. An academic education of forestry personnel started in 1989 with opening of the Forestry Academy in Zagreb (see appendix 6.3).

Formal forestry education in the Republic of Croatia is provided by nine secondary forestry schools (in the school year 2024/2025) and faculty specialised in forestry and wood technology. A long tradition of education in forestry sector (faculty in Zagreb is older than 126 years) ensures that students are well educated to contribute to sustainable, close to nature forestry and 260 years long tradition of organized forestry in Croatia which results with 97 percent of all forests that are of natural origin.

a) Secondary Education

In the school year 2024/2025 nine secondary vocational schools offer and implement the forestry technician education program:

Table 4: Secondary schools (program for forestry technician), school year 2024/2025 (Source: Agency for adult and vocational education)

No.	School (name, city)	Number of classes (years and total)	Number of students (classes and total)
1.	Srednja škola Matije Antuna Reljkovića, Sl. Brod	1 to 4 = 4	16+14+18+19 = 67
2.	Drvodjeljska škola Zagreb	1 to 4 = 4	23+21+20+25 = 89
3.	Šumarska i drvodjeljska škola Karlovac	1 to 4 = 4	22+24+23+13 = 82

4.	Srednja škola Otočac	1 to 4 = 4	17+15+13+12 = 57
5.	Srednja škola Josipa Kozarca Đurđenovac	1,2,4 = 3	5+15+0+5 = 25
6.	Srednja škola Ivana Trnskog Hrvatska Kostajnica	1,2,4 = 3	11+9+0+4 = 24
7.	Tehnička škola Virovitica	1 to 4 = 4	20+17+24+18 = 79
8.	Poljoprivredno šumarska škola Vinkovci	1 to 4 = 4	19+20+14+19 = 72
9.	Srednja škola Delnice	1 to 3 = 3	25+16+9+0 = 50
	Total	33	158+151+121+115 = 545

These programs usually combine theoretical knowledge with practical training. To enroll in the secondary school education program for forestry technicians, it is necessary to have completed elementary school and a medical certificate from an occupational medicine specialist stating that there are no health contraindications for performing the profession.

- Forestry technicians (four-year program) are qualified to collect data on habitat, climate, tree species and population, and possible damage and diseases. He/she monitors the development and implements measures to protect forests, monitor seeds collecting and producing planting material. In his/her work, he/she uses various measuring and surveying instruments, as well as tools and aids used for forest planning and measuring.
  A forestry technician supervises the work of employees in afforestation, clearing, felling trees and building forest roads, is directly responsible for the application of occupational safety regulations, controls the quality of work, takes care of forest protection, maintenance of tools and machines, keeps records and statistics of completed work, collects data on technical standards and their application, and performs observations for the diagnostic and prognostic service for forest protection.

b) Higher Education

Faculty of Forestry and Wood Technology University of Zagreb offers bachelor's and master's degree programs in forestry studies and studies of urban forestry, nature conservation and environmental protection.

- Undergraduate Studies in Forestry – first cycle:
  The study programme last for three academic years (180 ECTS). Students receive a certificate stating the completion of studies and the acquisition of a title according to the course of studies: *University degree of Bachelor (baccalaureus/baccalaurea) in Forest Engineering*. The obtained knowledge provides the basis for continuation of studies in second cycle (MSc) studies of Forestry and other fields of study. In order to complete studies, a student must fulfil all the study requirements of the registered courses. A student must complete and defend Diploma Thesis.

- Undergraduate Studies of Urban Forestry, Nature Conservation and Environmental Protection – first cycle:
  The study programme last for three academic years (180 ECTS). Students receive a certificate stating the completion of studies and the acquisition of a title according to the course of studies: *Bachelor/(baccalaureus/baccalaurea) Engineer of Urban Forestry, Nature Conservation and Environmental Protection.* The obtained knowledge provides the basis for continuation of studies in second cycle (MSc) studies of Forestry and other fields of study. In order to complete studies, a student must fulfil all the study requirements of the registered courses. A student must complete and defend Diploma Thesis.

- Graduate Studies - Programme: Silviculture and Forest Management with Wildlife Management – second cycle:
  The duration of graduate studies is four semesters (2 years, 120 ECTS-credits). Upon completion of graduate studies and final thesis defence, the student receives a university diploma stating the completion of studies and the acquisition of an academic title according to the programme of studies: *Master's degree in Forest Engineering - Silviculture and Forest Management with Wildlife Management*.

- Graduate Studies - Programme: Techniques, Technologies and Management in Forestry – second cycle:
  The duration of graduate studies is four semesters (2 years, 120 ECTS-credits). Upon completion of graduate studies and final thesis defence, the student receives a university diploma stating the completion of studies and the acquisition of an academic title according to the programme of studies: *Master's degree in Forest Engineering - Techniques, Technologies and Management in Forestry*

- Graduate Studies - Studies of Urban Forestry, Nature Conservation and Environmental Protection – second cycle:
  The duration of graduate studies is four semesters (2 years, 120 ECTS-credits). Upon completion of graduate studies and final thesis defence, the student receives a university diploma stating the completion of studies and the acquisition of an academic title according to the programme of studies: *Master of Engineering in Urban Forestry, Nature Conservation and Environmental Protection*.

- Postgraduate Specialist Studies – third cycle:
  The duration of postgraduate specialist studies is four semesters (2 years, 120 ECTS-credits). Students can enrol in 7 specialist studies at the Department of Forestry: Ecological Landscape Design, Nature Conversation and Horticulture; Silviculture and Forest Establishment; Forestry Techniques and Technologies; Hunting; Forest Tree Silviculture and Conservation of Forest Genetic Resources; Forest Roads; Forest Management Planning; Management and Entrepreneurship in Forestry. Upon completion of the postgraduate specialist studies and final specialist thesis defence, the student receives a university diploma stating the completion of studies and the acquisition of the academic title: *University Specialist.*

- Postgraduate Doctoral Studies of Forestry – third cycle:
  Academic title by completing the studies: *Doctor of science in the scientific field of the Biotechnical sciences, in the scientific field of Forestry*. The duration of the studies is 3 years or 6 semesters and is awarded in 180 ECTS credits. During their studies, the candidates must collect 36 ECTS credits in direct teaching classes from the first and the second credit group (compulsory courses, elective modules and elective courses) and 144 ECTS credits from the third credit group (scientific works, scientific activities and doctorate dissertation).

The other university that offers professional undergraduate study connected to forestry is Karlovac University of Applied Sciences with undergraduate program of Applied sciences in wildlife management and nature conservation, obtaining bachelor degree (*bachelor/(baccalaureus/baccalaurea) engineer of wildlife management and nature conservation – bacc.ing.agr.)*.

c) **Lifelong learning**
Adult education and requalification program for professional occupation Forestry Technician is usually organized by eight secondary vocational schools and adult education centres.

For over 16 years Croatian Chamber of Forestry and Wood Technology Engineers is organizing education and lifelong learning for chartered engineers. Education and lectures in different fields and specialities in forestry are organized according to the Annual Program, on regional basis so that almost 40 activities are organized and valued yearly.

d) **National Vocational Qualification**
There are many institutions with a permission from the ministry responsible for education to carry out specific programs, usually chainsaw operation courses, offering introduction to the regular maintenance of chainsaws/machinery and the basics of working techniques. The program is intended for people who will operate certain municipal machinery, who are over 18 years old and have completed elementary school. Education as well as the test of the candidates' knowledge includes theoretical and practical part. Some of the most common national vocational qualifications are: chainsaw operator/logger, forestry tractor operator, operator of harvesters and timber trailers.

e) **Non-formal education and trainings**
Sector for private owned forests, as a part of Ministry carries out some activities, usually lectures related to sustainable forest management or forest management constraints in the Natura 2000 area, legislative framework and possibilities of EU funds. The lectures are intended for forest owners, other stakeholders, citizens, consultants or representatives of local action groups.

3.4.2 Overview of career paths in forestry

According to the national classification of occupations, the forestry sector offers a variety of career paths, each requiring specific educational qualifications and entailing different responsibilities:

- **Forestry technician**
  Education: Secondary vocational training in forestry (e.g. Forestry Technician Programme). Tasks: Forestry technicians most often work under the instructions

of a forestry engineer, and to a certain extent independently and then they are responsible for the supervision of forestry operations. They carry out forest inventories, assess the health of trees and help with the planning and implementation of forestry projects. They are directly responsible for the application of occupational safety regulations, participates in the introduction of new workers to the job, controls the quality of work, takes care of forest protection, maintenance of tools and machines, keeps records and statistics of completed work,

- **Forest engineer**
  Education: Bachelor's degree in forestry, which can be followed by a master's degree to advance. Tasks: Forest engineers deal with the technical aspects of forest management, including the planning, design and implementation of forest management projects. They analyse forest resources, develop management plans, ensure compliance with environmental regulations and may also work on sustainable forestry practises. She/he performs professional tasks directly and independently: silvicultural planning, marking trees for felling, drawing up annual plans for cultivation, protection and felling.

- **Forest Manager**
  Education: advanced positions require a master's degree.

  Tasks: Forest managers oversee the management of forest lands. They ensure that work is carried out according to management plans, they coordinate activities to ensure sustainable forest use usually in the forest management unit or in other company managing forests. They work closely with stakeholders and local communities.

- **Forestry advisor**
  Education: Master degree in forestry. Task: Forestry advisors provide assistance and advice on sustainable forest management for private forest owners, including issues of cultivation, fertilization, harvesting, soil erosion and composition, disease prevention, marketing and the use of structural funds.

- **Teacher/professor in forestry**
  Education: Master degree in forestry; it is also necessary to complete a program for acquiring pedagogical competencies. Task: beside educational activities, a vocational teacher also performs other tasks related to his/her educational work: she/he cooperates with teachers (professors) of theoretical classes and with

students' parents, evaluates students, keeps prescribed records, prepares appropriate reports and performs other activities that improve her/his basic.

3.4.3 Forestry education in numbers

In this school year (2024/2025), according to data of the Agency for Vocational Education and Training and Adult Education, nine secondary vocational schools are implementing the forestry technician education program, with total 545 students in 33 classes. There are 158 students in the first class, 151 in the second, 121 in the third (two of these schools do not have students in the third class) and 115 in the fourth class (one school does not have students in the fourth class). There is no data on the presence of women in forestry secondary school education. For the comparison, in the school year 2017/2018 was total 586 students in nine secondary schools with the educational program for forestry technician. The last data that was systematically collected and processed was for the school year of 2012/2013, and it shows that the share of the sector of forestry, on the national level, is quite small, with 986 enrolled students in secondary schools.

According to data for academic year 2018/2019, 42% of all students enrolled to the Faculty of Forestry and Wood Technology are female (results of the project Fem4Forest).

Table 5: Share of women completed study programmes 2023 (Faculty of forestry and Wood Technology) (Source: Croatian Bureau of Statistics)

Programme	M	F	Together	Share of women
Undergraduate study	8	8	16	50%
Graduate study	86	49	135	36,3%
Postgraduate specialist study	1	0	1	0%
Postgraduate doctoral study	3	2	5	40%
	98	59	157	37,6%

According to the latest available data (National Plan for Gender Equality until 2027, March 2023), the share of female graduates in STEM education (in the field of science, technology, engineering and mathematics) was 32%, with 18% in engineering sciences.

3.4.4 Gender awareness in forestry educational institutions

There are no formal or structured initiatives in forestry curricula and educational institutions in the Republic of Croatia that specifically promote gender equality. However, there is a broader national policy that supports gender inclusion. The most important documents for gender equality in Croatia are the National Policy for Gender Equality for the period 2011-2015. and theGender Equality Act, which elaborates on the human rights and fundamental freedoms established by the Constitution (Article 82 of the Constitution of the Republic of Croatia) and establishes the general foundations for the protection and promotion of gender equality as fundamental values of the constitutional order of the Republic of Croatia, and defines and regulates the method of protection against discrimination based on gender and the creation of equal opportunities for women and men. In March 2023, the Government of the Republic of Croatia adopted the National Plan for Gender Equality until 2027 and the corresponding Action Plan for the Implementation of the National Plan for Gender Equality until 2024. One of the specific objectives of National Plan is to increase the sensitivity of the education system (early, preschool, primary and secondary) to gender equality issues and non-stereotypical choices of educational programs at all levels. The above is planned to be achieved by implementing the measures to motivate and encourage female and male students to choose future educational paths and professional orientations unencumbered by gender stereotypes

3.4.5 Strengths, Weaknesses, Challenges, and Barriers in forestry educational and training system

Strengths:

- a long tradition of a well-structured education system from vocational training to doctoral studies,
- high scientific and technical standards in forestry education, ensuring continuity in the education of experts who ensure the implementation of the principles of sustainable forest management,
- internships and dual training models (at secondary and faculty level),

- cooperation of educational institutions - multi-year promotion of study programs at secondary schools and free preparation for the mathematics exam at the state graduation organized by the Faculty of Forestry and Wood Technology,
- cooperation of science and practice - mandatory continuous training and life-long learning (Croatian Chamber of Forestry and Wood Technology Engineers).

Weaknesses:

On 10 December 2024, the European Institute for Gender Equality published the 2024 Gender Equality Index, which shows an EU-wide improvement of 0.8 points compared to the 2023 Index. However, eight of the 27 Member States, including Croatia, are increasingly lagging behind the rest of Europe on the path towards gender equality. According to the 2024 Index, Croatia scores 59.7 out of a possible 100, 11.3 points below the EU average. Croatia ranks 24th in the EU, down four places from last year's edition of the Index, and is progressing more slowly than other Member States. This can impact forestry sector, usually perceived as a male-dominated sector, having in mind weaknesses, such as:

- decreasing the number of (first-year) forestry students in recent years (influenced also by demographic trends),
- lack of efforts and initiatives in promoting forestry careers among female students and insuring support during their studies,
- lack of integration and harmonization of practice needs and educational programmes/organizations in creating or changing curricula, especially having in mind changes in the sector,
- slow changes in the perception of newer opportunities and more current topics in the sector and the need of life-long learning,
- lack of sectoral documents, such as a national strategy or forestry program, which would help define the needs, goals and missions of the sector in the future period, as well as education needs.

Challenges:

Today's occupations in forestry sector are not "fancy" ones. They are quite demanding, dangerous and often dirty, not so attractive for young people today. They are usually connected with rural areas and these jobs are recently underpaid, paid less than average, especially for highly educated personnel. The educational program is comprehensive, covering both technical and biological areas necessary to perform jobs

in forestry sector, which means that the candidate should have an aptitude and abilities in both areas nearly equally.

Challenges:

- gender stereotypes and misconceptions about forestry (the sector is still perceived as "male-dominated")
- low salaries compared to other professions, making the whole sector less attractive
- lack of visible female role models in leadership positions

3.4.6 Opportunities for improvement

- Partnerships with various stakeholders in the forestry sector: Collaboration between educational institutions and the companies in the sector must be imperative. This will lead to better understanding of the needs and visions of the real sector, and will probably result with:

- Modernisation and the revision of the curriculum: according to the needs of the forestry sector, having in mind changes and challenges. We should also think about adapting educational programs and combine them with other fields that are connected with and dependant on forestry. This could bring better perspective especially for women in the forestry sector, and for sure will be more attractive for other candidates.

- Promotion and awareness campaigns**:** with the aim to increase not only overall number of the students in forestry sector, but specifically to contribute to the perception of forestry careers for young women (promotion and the visibility of successful women in forestry, role models). This could also include assistance in developing transversal skills and competences (such as communication, leadership and personal) during their education, which will help prepare them to overcome challenges and strengthen self-confidence throughout their careers.

3.5 Czech Republic

3.5.1 Forestry educational and training system

The forestry education and training system in the Czech Republic is well-structured and offers multiple pathways for individuals interested in pursuing careers in forestry. Education is provided at different levels, ranging from **secondary vocational schools** to **universities**, ensuring a continuous learning process from foundational training to advanced specialization (see appendix 6.4).

a) **Secondary Level – Vocational Education and Training (VET)**

Forestry education begins at the secondary level through specialized vocational schools, which provide hands-on training and theoretical knowledge. These schools are often linked to forest enterprises, ensuring that students gain real-world experience.

- **Forestry Vocational Secondary Schools (Střední lesnické školy)**
    - Provide **two or three-year apprenticeship programs** (with a vocational certificate) or **four-year programs** leading to the *Maturita* (secondary school-leaving exam).
    - Curriculum includes **silviculture, forest management, hunting, environmental protection, and use of forestry machinery**.
    - **Practical Training and Work-Based Learning**
        - Many vocational schools cooperate with **state forestry enterprises (e.g. Lesy ČR – Forests of the Czech Republic)** and private forestry firms to provide hands-on experience.
        - Students often participate in fieldwork, including **tree planting, logging, and wildlife management**.

b) **Post-Secondary / Higher Vocational Education (vyšší odborná škola – "VOŠ")**

For students who do not enter university but want **advanced practical training**, higher vocational forestry schools offer **specialized programs**.

- Typically **lasts 3 years**, focusing on **applied forestry management, forest protection, and sustainable forest use**.

- Graduates earn a **diploma** (*DiS. - Diplomovaný specialista*), allowing them to take on **managerial or specialist roles** in forestry.

c) University-Level Education (Bachelor, Master, and Doctoral Studies)

Higher education in forestry is offered by two Czech universities, providing **academic and research-based education** in various forestry-related fields.

- **Leading Universities with Forestry Programs**:
    - **Czech University of Life Sciences Prague (Česká zemědělská univerzita v Praze - ČZU**
        - Faculty of Forestry and Wood Sciences (FLD) offers **bachelor, master and PhD** programs in Forestry, Wildlife management, Arboriculture, Forest Engineering, Forest and Wildlife protection; see: https://www.fld.czu.cz/en/r-9414-study/r-9500-study-now
    - **Mendel University in Brno (Mendelova univerzita v Brně - MENDELU)**
        - Faculty of Forestry and Wood Technology (LDF) provides programs in forest management, ecology, and conservation; see: https://ldf.mendelu.cz/en/degree-programmes/?psn=99.62264251708984 and https://ldf.mendelu.cz/bakalarske-studium/?psn=2199.84912109375
- **Typical Academic Pathway:**
    - **Bachelor's Degree (3 years)** → Forestry study programmes cover core subjects like **forest ecology, forest management, forest protection wood processing and mechanization, and forest economy**.
    - **Master's Degree (2 years)** → Specialization in areas such as **forest protection, forest biotechnology, and sustainable forestry**.
    - **Doctoral Studies (PhD, 3-4 years)** → Focus on advanced research in **forest science, climate change impact, and biodiversity conservation**.

- **International Collaboration**:
    - Czech forestry education has strong connections with **EU forestry programs**, such as **Erasmus+** and **Horizon Europe**, allowing students to participate in **exchange programs and international research**.

d) Continuing Education and Professional Development

- **Lifelong Learning and Certification Programs**
    - Various institutions, including **universities and the Czech Forestry Society (Česká lesnická společnost - ČLS)**, offer **specialized training** for forestry professionals.
- **State Certification for Forestry Professionals**
    - Certain forestry positions require **certifications from the Ministry of Agriculture or other regulatory bodies** (e.g., licensed forest managers, wildlife managers).
    - These programs ensure **compliance with Czech and EU forestry regulations**.

e) Connection Between Educational Levels and Career Opportunities

The **forestry education system in the Czech Republic is designed to allow smooth transitions** between different levels:

1. **Vocational schools prepare students for immediate employment** in forestry-related jobs or **further study at universities**.
2. **Higher vocational schools bridge the gap** between secondary education and university for students who want specialized training.
3. **University graduates can enter research, policy-making, or leadership roles** in government, academia, or private forestry enterprises.

The Czech Republic's forestry education system offers a diverse range of pathways, ensuring that individuals can acquire both practical skills and advanced academic knowledge. The strong collaboration between educational institutions, industry, and research centres allows students to be well-prepared for careers in forest management,

conservation, and sustainable forestry practices. However, challenges remain, including gender inclusion in forestry education, the modernization of curricula with digital forestry technologies, and enhancing access to forestry education in rural areas. Addressing these challenges will help further strengthen the sector's future workforce.

Note: There are also positions of forest pedagogues, who can be partially or fully employed to work on this position. Forest pedagogues are often women and any forest pedagogues must be a certified person with 1) education on forestry or practical knowledge in forestry and 2) successfully complete the course on forest pedagogy.

3.5.2 Overview of career paths in forestry

Forest Worker (Lesní dělník)

- **Education Required**: Secondary vocational education (apprenticeship) in forestry or agriculture.
- **Typical Schools**: Forestry vocational secondary schools finished by vocational certificate (výuční list ze střední lesnické školy).
- **Main Tasks**:
    - Planting, thinning, and felling trees.
    - Harvesting and transporting timber.
    - Maintaining forest roads and trails.
    - Assisting in reforestation and wildlife conservation efforts.
- **Work Environment**: Field-based, physically demanding, working in forests under all weather conditions.

Forester (Lesník)

- **Education Required**: Secondary forestry school diploma (*Maturita*) or university degree (Bachelor's).
- **Typical Schools**: Střední lesnické školy (Forestry Secondary Schools) or Czech University of Life Sciences Prague (ČZU), Mendel University in Brno (MENDELU).

- **Main Tasks**:
    - Supervising logging and reforestation projects.
    - Monitoring forest health, biodiversity, and pests.
    - Planning and enforcing sustainable forest management.
    - Ensuring compliance with environmental laws and regulations.
- **Work Environment**: Combination of outdoor fieldwork and administrative office tasks.

Forest Engineer (Lesní inženýr)

- **Education Required**: University degree (Master's in Forestry or Environmental Sciences).
- **Typical Schools**: Czech University of Life Sciences Prague (Faculty of Forestry and Wood Sciences), Mendel University in Brno (Faculty of Forestry and Wood Technology)
- **Main Tasks**:
    - Designing and managing forest ecosystems.
    - Developing forest conservation plans and climate adaptation strategies.
    - Conducting research on sustainable forest management.
    - Implementing modern forestry technologies (GIS, drones, remote sensing).
- **Work Environment**: Field-based research, office planning, and cooperation with government agencies.

Gamekeeper (Myslivec)

- **Education Required**: Secondary forestry school diploma or Bachelor's in Wildlife Management.

- **Typical Schools**: Střední lesnické školy (Forestry Secondary Schools) or university programs in wildlife ecology.
- **Main Tasks**:
    - Managing wild animal populations and habitats.
    - Regulating hunting activities and issuing licenses.
    - Protecting endangered species and preventing poaching.
    - Collaborating with landowners to ensure sustainable game management.
- **Work Environment**: Outdoor fieldwork in forests, game reserves, and protected areas.

Forest Manager (Správce lesa)

- **Education Required**: University degree (Bachelor's or Master's in Forestry, Environmental Management, or Business).
- **Typical Schools**: Czech University of Life Sciences Prague (ČZU), Mendel University in Brno (MENDELU).
- **Main Tasks**:
    - Managing forest estates for private or public owners.
    - Developing long-term forestry plans and budgets.
    - Supervising staff, equipment, and harvesting schedules.
    - Ensuring compliance with forest sustainability regulations.
- **Work Environment**: Combination of office-based planning and on-site management.

Forestry Consultant (Lesnický poradce)

- **Education Required**: University degree (Master’s or PhD in Forestry, Ecology, or Environmental Sciences).

- **Typical Schools**: Czech University of Life Sciences Prague, Mendel University in Brno.
- **Main Tasks**:
    - Advising businesses, NGOs, and governments on forestry-related policies.
    - Conducting environmental impact assessments.
    - Researching best practices in sustainable forest management.
    - Implementing modern technologies like GIS for mapping and monitoring.
- **Work Environment**: Office-based with frequent travel for field assessments.

Wood Processing Technician (Technolog dřevařského průmyslu)

- **Education Required**: Vocational school diploma or university degree in Wood Technology.
- **Typical Schools**: Střední lesnické školy, Mendel University in Brno (Faculty of Wood Technology).
- **Main Tasks**:
    - Overseeing the production and processing of timber.
    - Ensuring sustainable and efficient use of wood resources.
    - Managing sawmills and furniture manufacturing processes.
    - Implementing quality control measures in wood production.
- **Work Environment**: Industrial settings such as sawmills, furniture workshops, and timber factories.

National Park Ranger (Strážce národního parku)

- **Education Required**: Bachelor's or Master's degree in Forestry, Environmental Sciences, or Conservation Biology.

- **Typical Schools**: Czech University of Life Sciences (FLD), Charles University (Faculty of Science), Mendel University in Brno.
- **Main Tasks**:
    - Protecting national parks and nature reserves.
    - Conducting environmental education programs.
    - Enforcing conservation laws and park regulations.
    - Monitoring wildlife and ecological changes in protected areas.
- **Work Environment**: Outdoor-focused, working in national parks and protected areas.

Forestry Policy Maker (Tvůrce lesnické politiky)

- **Education Required**: Master's or PhD in Forestry, Environmental Policy, or Law.
- **Typical Schools**: Charles University (Faculty of Social Sciences), Czech University of Life Sciences Prague (Faculty of Forestry and Wood Sciences).
- **Main Tasks**:
    - Developing and implementing forestry policies at national and EU levels.
    - Ensuring compliance with international forestry and environmental agreements.
    - Advising the government and stakeholders on sustainable forest management.
    - Working on carbon sequestration and climate adaptation strategies.
- **Work Environment**: Government institutions, think tanks, and international organizations.

Urban Forester (Městský lesník)

- **Education Required**: Bachelor's or Master's in Urban Forestry, Landscape Architecture, or Environmental Sciences.

- **Typical Schools**: Czech University of Life Sciences Prague, Mendel University in Brno.
- **Main Tasks**:
    - Managing green spaces in cities, parks, and suburban forests.
    - Planning tree-planting programs and urban greening projects.
    - Ensuring urban trees are healthy and resistant to diseases.
    - Collaborating with city planners and environmental agencies.
- **Work Environment**: Municipal offices, city parks, and urban development projects.

Forestry careers in the Czech Republic range from hands-on fieldwork to high-level research and policy-making. The education system provides clear pathways from vocational training to advanced university degrees, ensuring a well-qualified workforce to manage the country's extensive forests. Many careers require a combination of practical experience and theoretical knowledge, emphasizing sustainability, conservation, and technology integration. With increasing global attention on climate change and biodiversity, forestry professions are becoming more critical than ever in shaping the future of sustainable forest management.

3.5.3 Forestry education in numbers

In the Czech Republic, there is **no systematic national statistical monitoring** of the development of the share of women in forestry education, nor of the gender composition of forestry teaching staff, managers, or other employees at the sectoral level. Gender-disaggregated data are generally not collected or published regularly for forestry-specific education across vocational schools, higher vocational schools, or universities.

However, **partial information** is available for selected institutions, particularly for the **Faculty of Forestry and Wood Sciences (FLD)** of the **Czech University of Life Sciences Prague (ČZU)**, which is one of the key forestry faculties in the country.

According to internal data from FLD ČZU:

- The share of **female students** at FLD in recent years fluctuates between **30–40%** of total enrolled students, depending on the specific year and study program.
    - Forestry (bachelor study programme) – 40 %
    - Hunting and Wildlife Environment Management (bachelor study p.) – 42 %
    - Systematic arboriculture (bachelor study p.) – 21 %
    - Forest engineering (master study programme) – 34 %
    - Forestry Water and Landscape Management (master study programme taught in English – only 7 students totally) – 71 %
- The proportion of **female teaching and research staff** is lower, estimated at approximately **15–20%**, with fewer women represented in senior academic or leadership positions (e.g., department heads, professors).
- In administrative and technical support positions (laboratories, administration), the representation of women is generally higher than among academic staff.

Trend:

Although no official longitudinal statistics are available, internal reports suggest that:

- The **share of female students** has shown a **slight gradual increase** over the last decade, particularly due to greater interest in fields like **environmental protection, wildlife management, and forest ecology**, which are part of the broader forestry education offer.
- The **total number of forestry students** (male and female combined) has remained relatively stable at the university level, but **some secondary forestry schools** in the Czech Republic have reported a **moderate decline** in enrolment, reflecting the broader trend of reduced interest in vocational technical fields among young people.

Without comprehensive national data, it is difficult to evaluate the full picture of gender dynamics across all forestry educational institutions. Therefore, we recommend improving data collection and monitoring, especially within the **Ministry of Education, Youth and Sports** and the **Ministry of Agriculture**, to better assess trends and set informed policies regarding gender equality and inclusiveness in forestry education.

3.5.4 Gender awareness in forestry educational institutions

Gender awareness and the promotion of gender equality have gained attention within forestry educational institutions in the Czech Republic. While specific programs integrated into the curricula of these institutions are not extensively documented, several initiatives and projects have been implemented to address gender disparities and encourage women's participation in the forestry sector.

1. Increasing Female Enrolment in Forestry Education

Recent trends indicate a positive shift in the gender composition of forestry students in the Czech Republic. The share of female students in forestry programs has been increasing, reflecting a growing interest among women in pursuing careers in this field. This is especially visible in high school education.

2. Participation in International Projects Promoting Gender Equality

Czech forestry institutions have engaged in international projects aimed at fostering gender equality in the forestry sector. Notable initiatives include:

- Forests in Women's Hands (Fem4Forest)
- Innovative pathways for efficient involvement of girls and young women in the forestry sector (Fem2forests)
- There are also other ongoing initiatives that support gender equality at the organizational level, for CZU, it is AGRIGEP project (https://agrigep.eu/)

3. National Strategies and Policies Supporting Gender Equality

The Czech Republic has implemented national strategies to promote gender equality across various sectors, including education. The Gender Equality Strategy 2021–2030[13] aims to address gender inequalities, such as the low number of women in decision-making positions and horizontal gender segregation in education.

4. Environmental Education and Awareness Initiatives

[13] Strategie rovnosti žen a mužů na léta 2021 – 2030 – Ministerstvo zdravotnictví

Environmental education programs in the Czech Republic, such as the State Program of Environmental Education and Eco-counselling for 2016–2025, emphasize inclusivity and aim to engage all demographics, potentially encouraging more women to participate in forestry-related studies and careers.

3.5.5 Strengths, Weaknesses, Challenges, and Barriers in forestry educational and training system

Strengths:

The Czech forestry educational and training system has several strong points that contribute to its effectiveness and sustainability. Some of these strengths include:

- **Well-Structured Forestry Education System**
    - The Czech Republic offers **a clear and well-structured pathway** from secondary vocational schools to higher education institutions, ensuring **continuous professional development**.
    - Institutions such as the **Czech University of Life Sciences Prague (ČZU) and Mendel University in Brno (MENDELU)** are internationally recognized for forestry research and education.
- **Strong Industry Collaboration and Practical Training**
    - Forestry education includes **significant practical training**, with **work-based learning opportunities in state-owned forests (Lesy ČR, Vojenské lesy a statky ČR) and private forestry enterprises**.
    - **Apprenticeships and internships** allow students to gain hands-on experience, making them highly employable after graduation.
- **Sustainability and Environmental Focus**
    - Czech forestry education is **strongly aligned with sustainable forest management** principles, with programs emphasizing **climate adaptation, conservation, and biodiversity protection**.
    - Courses integrate modern environmental policies and **EU sustainability standards**.

- **International Collaboration and Research Opportunities**

    - Czech forestry institutions are involved in **international projects and research initiatives** within the EU, such as Erasmus+, Horizon Europe, and Interreg DTP.

    - This collaboration enhances **student and staff mobility and knowledge exchange**, making Czech forestry education a **valuable model for other countries, learning from experience and good practice examples**. This also includes development of new life-long learning programmes including micro-certificates, blended-intensive programs for university students, etc.

- **Growing Female Participation in Forestry Education**

    - Over the past decade, the **share of female students in forestry education has been increasing**, reflecting an **improving gender balance**.

    - Gender-focused initiatives, such as **mentorship programs and networking events for women in forestry**, are helping break stereotypes.

Weaknesses:

Despite its strengths, the forestry educational system in the Czech Republic faces several weaknesses that need to be addressed:

- **Limited Gender Inclusion in Forestry Careers**

    - While **more women are enrolling in forestry education**, their presence in **leadership and decision-making roles remains low**.

    - **Gender-specific challenges**, such as **perceptions of forestry as a physically demanding male-dominated field**, still discourage some women from pursuing long-term careers.

- **Curriculum Modernization Needed**

    - Some curricula **lack integration of modern forestry technologies** (e.g., **GIS, drone technology, digital forest monitoring systems**).

- Greater focus is needed on **climate resilience, carbon sequestration, and forest-based bioeconomy** to align education with **current industry demands**.

- **Insufficient Awareness of Forestry Careers**

  - Many young people, particularly **women and urban students**, are **unaware of career opportunities in forestry**.

  - The field is still often perceived as **limited to traditional logging and manual labour**, which reduces student interest.

  - People outside the forest-based sector still underestimate the role of forest-based value chain in contribution to local and national economy, sustainability and some even think that there is no special knowledge needed to become a forest professional.

- **Limited Access to Forestry Education in Rural Areas**

  - Some **rural communities** have **limited access to forestry education**, making it harder for young people in these areas to pursue forestry careers.

  - More **outreach programs and distance-learning options** are needed to **make forestry education accessible to all students**.

Challenges:

Several external and systemic challenges impact the effectiveness of forestry education and training:

- **Aging Workforce and Low Youth Engagement**

  - The Czech forestry sector faces **an aging workforce**, and **not enough young professionals are entering the industry** (especially in hunting).

  - Without active recruitment and **better incentives for forestry graduates**, there may be a **shortage of skilled foresters** in the coming years.

- **Gender Stereotypes and Cultural Barriers**
    - **Persistent stereotypes** about forestry being a **"man's job"** make it harder to recruit and retain women in the field.
    - A **lack of female role models and mentors** in forestry education discourages some young women from seeing it as a viable career path.
- **Insufficient Funding for Modernization and Research**
    - **Vocational forestry schools** often have **outdated facilities and equipment**, limiting students' ability to learn **modern forestry practices**.
    - Additional funding is needed to **incorporate digital forestry tools, advanced machinery, and research innovations into the curriculum**.
- **Climate Change and New Industry Demands**
    - The forestry sector is **undergoing major changes due to climate change**, requiring new skills in **climate adaptation, forest restoration, and carbon offsetting**.
    - Education must **adapt faster** to prepare graduates for **emerging job opportunities in forest conservation and sustainable resource management**.
- **Limited Career Progression for Women in Forestry**
    - Even when women **successfully complete forestry education**, **career progression remains difficult**, with **few women in high-ranking forestry management positions**.
    - More **leadership training and support for women in forestry organizations** is necessary to close this gap.

The Czech forestry education system has strong foundations with its structured pathways, practical training, and international collaboration. However, it must address gender inclusivity, modernization of the curriculum, and youth engagement to meet the evolving demands of the forestry sector. Overcoming challenges related to stereotypes, accessibility, and technological advancements will be crucial to ensuring a diverse, skilled, and future-ready workforce in Czech forestry.

3.5.6 Opportunities for improvement

To ensure that the forestry education and training system remains relevant, inclusive, and aligned with modern industry demands, several improvements are necessary. These recommendations focus on diversity and inclusiveness, as well as adapting the system to the current and future needs of the job market in the forestry sector.

Enhancing Gender Diversity and Inclusion in Forestry Education

Challenge:

- Forestry is still perceived as a **male-dominated profession**, and **female representation in leadership roles** remains low.
- Gender stereotypes **discourage women from pursuing careers** in forestry.

Recommendations:

- **Promote Female Role Models in Forestry**
    - Increase visibility of **successful women in forestry** through guest lectures, media campaigns, and networking events.
    - Establish **mentorship programs** pairing female students with experienced female professionals.
- **Gender-Sensitive Curriculum and Training**
    - Integrate discussions on **gender equality in forestry** into existing courses.
    - Encourage **mixed-gender group projects** and **inclusive fieldwork opportunities**.
- **Scholarships and Incentives for Women in Forestry**
    - Introduce **scholarships specifically for female forestry students**.
    - Partner with **forestry companies to offer internships and leadership training** for women.

Modernizing the Curriculum to Match Current Industry Needs

Challenge:

- Forestry education does not always **reflect modern industry trends**, including **digitalization, climate change adaptation, and sustainable forestry practices**.

Recommendations:

- **Integration of Modern Forestry Technologies**
    - Incorporate **GIS, remote sensing, drone technology, and AI-based forest monitoring** into forestry courses.
    - Equip vocational schools with **updated machinery and simulation tools**.
- **Climate Change and Sustainability Focus**
    - Expand education on **carbon sequestration, afforestation, and forest resilience to climate change**.
    - Introduce **courses on the bioeconomy, renewable forest products, and green finance**.
- **Entrepreneurship and Business Training in Forestry**
    - Offer courses on **forest entrepreneurship**, equipping students with skills to start businesses in **sustainable forestry, ecotourism, and forest management consulting**.
    - Partner with the **private sector** to develop business-driven forestry training modules.

Expanding Access to Forestry Education and Training

Challenge:

- Many **rural students lack access** to forestry education.

- Urban youth are **not exposed to forestry career opportunities**.

Recommendations:

- **Distance Learning and Hybrid Programs**
    - Expand **online forestry courses** to reach students in rural areas.
    - Develop **virtual field trips and digital forestry simulations**.
- **Career Awareness and Outreach Programs**
    - Conduct **school outreach programs** to introduce forestry careers to younger students.
    - Partner with local **eco-centres and conservation NGOs** to offer hands-on forestry experiences.
- **Stronger Collaboration with High Schools**
    - Introduce forestry-related elective courses in general high schools.
    - Develop **dual education models** where high school students can get early exposure to forestry training.

Strengthening Public-Private Partnerships and Job Market Integration

Challenge:

- There is **a gap between forestry education and industry demands**.
- Employers often **struggle to find graduates with the right skills**.

Recommendations:

- **Stronger Cooperation Between Universities and Forestry Companies**
    - Establish **industry advisory boards** that guide forestry curricula based on real workforce needs.

- Develop **internship programs** where students gain industry experience before graduation.

- **Lifelong Learning and Professional Certifications**
  - Offer **continuous education programs** for forestry workers to update their skills.
  - Introduce **certifications in specialized fields** like **forest risk management, biodiversity conservation, and digital forestry**.

- **Government Support for Modernized Training**
  - Lobby for **public funding** to modernize forestry education infrastructure.
  - Support **tax incentives** for companies that provide forestry internships and apprenticeships.

Encouraging Entrepreneurship and Innovation in Forestry

Challenge:

- Forestry education is **traditionally focused on employment in government agencies** or large enterprises.
- There is **limited encouragement for students to start forestry-related businesses**.

Recommendations:

- **Incorporate Business and Start-Up Training**
  - Introduce courses on **eco-entrepreneurship, sustainable forestry businesses, and market-oriented forestry innovations**.
  - Provide **grants for student-led forestry projects**.

- **Support for Small and Medium Forestry Enterprises (SMEs)**
  - Develop incubators for **innovative forestry start-ups** (e.g., sustainable timber products, reforestation services, forest-based eco-tourism).

- Facilitate **networking events between students, investors, and forestry entrepreneurs**.

Promoting International Collaboration and Exchange Programs

Challenge:

- Czech forestry students have **limited exposure to global best practices**.
- There is **potential for stronger collaboration with European forestry education networks**.

Recommendations:

- **Expand Erasmus+ and International Exchange Programs**
  - Increase participation in **forestry-related EU projects and global exchange programs**.
  - Offer **dual-degree programs** with international universities specializing in forestry.
- **Cross-Border Research and Collaboration**
  - Strengthen research partnerships on **climate adaptation in Central European forests**.
  - Encourage **collaborative field studies with neighbouring countries** (e.g., Austria, Germany, Slovakia).

To ensure a future-proof forestry education system, Czech forestry institutions must focus on gender inclusivity, curriculum modernization, accessibility, industry collaboration, and innovation. By integrating modern technologies, entrepreneurship training, and international cooperation, the Czech Republic can continue to develop a highly skilled and diverse forestry workforce capable of addressing global environmental challenges.

3.6 Germany

3.6.1 Forestry educational and training system

In Bavaria there are several ways to obtain an education in forestry (see appendix 6.5). With a Secondary school-leaving certificate you can do vocational training and have the possibility to specialize once you have completed your training and also to pursue a university education. For example, training to become a Forestry Machine Operator can lead to a bachelor's degree and then a master's degree. In order to pursue a university education in forestry, applicants need at least an Advanced Technical College Certificate, a Professional qualification or a general university entrance qualification. This depends on the university you choose. For example, the University of Applied Sciences requires an Advanced Technical College Certificate or a Professional qualification, whereas the Technical University of Munich requires a general university entrance qualification. Depending on the degree you are aiming for, the programme lasts either six semesters (Technical University of Munich) or seven semesters (University of Applied Sciences) for the bachelor's degree. Regardless of which university you have completed your bachelor's degree at, it is possible to complete a master's degree and then continue for a PhD or choose to enrol in a trainee programme for management and leadership positions in the Bavarian Forest Administration or the Bavarian State Forest Company. As shown, whatever path is chosen, the possibility of archiving higher education always exists, since the educational system is very permeable.

a) Vocational Training

Vocational training to become a forest craftsperson requires a secondary school diploma and lasts three years. It provides practical training leading to basic skills in handling wood, operating forestry machinery and understanding the ecological aspects of forest management. If desired, after graduation as a forest craftsman, further education can be obtained to become a master forest craftsman, forest technician or forest machinery operator. The first is a 10-month vocational course. The second is an apprenticeship with a total duration of 2 years. Third, there is only one examination to be passed.

b) University Level Education

In Bavaria, students can obtain either Bachelor of Engineering or Bachelor of Science. Regardless of the university where the bachelor's degree is obtained, graduates have the option of doing the trainee program for qualification level 3 (Q3) or pursuing a

master's degree, which allows them to continue for the trainee program for qualification level 4 (Q4) for forest managers. The Bachelor of Engineering degree can be obtained at the University of Applied Sciences and lasts 7 semesters. This option covers areas such as forestry, wood technology and environmental sciences and the education emphasizes scientific research, sustainable forest management and strategic planning in the forestry sector. The Bachelor of Engineering at the University of Applied Sciences emphasizes more on practical education while the Bachelor of Science at the Technical University of Munich focuses more on scientific education. The University of Munich also offers Master´s and Doctoral degree programmes in forestry.

c) Professional development programs

For continuing education there are three further paths: Master Forester, Forestry Technician and Forestry Machine Operator. If the University route is chosen, there is the Trainee program for Forestry Inspectors (Q3), which is attainable with a bachelor's degree, or for Management Positions (Q4), which requires a master's degree. The trainee program is divided into practical and theoretical components. Participants gain hands-on experience in forest management by working in different forestry districts across Bavaria, where they learn about sustainable harvesting methods, conservation strategies, and administrative responsibilities. Additionally, trainees attend specialized courses at the Bayerische Forstschule in Lohr am Main, where they receive instruction on forestry law, environmental policies, and modern forestry techniques. A unique aspect of the Bavarian program is its integration with the Bayerische Staatsforsten (Bavarian State Forest Company), one of the largest forestry enterprises in Europe. Trainees have the opportunity to work within this organization, gaining insights into forest economics, biodiversity conservation, and climate adaptation strategies. Upon successful completion of the program and passing the required examinations, many trainees secure permanent positions within the Bavarian forestry sector, contributing to the sustainable management of the region's forests.

3.6.2 Overview of career paths in forestry

- **Forest Craftsperson -** A Forest Craftsperson completes vocational training. Their primary responsibilities involve physically demanding tasks such as tree felling, timber harvesting, nature conservation and landscape management, and general forest maintenance. They play a crucial role in ensuring that forestry operations run smoothly and that forests are managed sustainably and efficiently.

- **Master Forest Craftsperson** - The specialization as a Master Forest Craftsperson lasts 10 months and the main tasks are to support the operational process in mechanical harvesting, to monitor the compliance with the current safety standards and to train new work procedures. They are the link between the Forest Craftspersons and the Foresters.

- **Forestry Technician** - The apprenticeship lasts two years. As a forestry technician, the main tasks are planning and organization, as well as the acquisition of orders and ensuring the utilization of forestry machinery.

- **Forestry Equipment Operator** - This training can be obtained through an examination. Their main responsibilities are the assessment, planning and design of major forest road construction projects. In addition, harvest timber with machines such as harvesters, but also chain excavators, cable crane systems, graders or heavy forestry mulchers.

- **Forester at Forest Administration or State Forest Company** - The forestry preparatory service is a prerequisite for entering the 3rd qualification level. This lasts one year and is followed by a qualification examination, after which you can start working as a forester. The main tasks of a forester are planning, organizing and monitoring timber harvesting, planting measures and nature conservation measures, as well as carrying out hunting. In addition, there are forest tours such as forest education and support for recreational facilities in the forest. In the forestry administration, the focus is increasingly on advising private forest owners, processing financial subsidies, as well as complying with legal regulations in state and private forests.

- **Forest Manager at Forest Administration or State Forest Company** - As a forest manager, a two-year preparatory service (traineeship) must be completed after the master's degree in order to reach the 4th qualification level. As a forest manager, the main tasks include the marketing of harvested timber, nature conservation, personnel management, public relations and hunting management.

- **Forestry Consultant** - The educational path to become a forestry consultant usually includes a bachelor's or master's degree in forestry. A forestry consultant assesses various aspects of forestry, including forest health, timber potential, and management practices. They may also provide legal support and project planning

advice. They can work in various sectors including public administration, private companies, research institutions and environmental organizations.

- **Wood processing Technician** - The vocational training to become a wood processing technician lasts 3 years and includes wood processing techniques, machine operation, material science, and quality control. Wood processing technicians often work in the furniture industry, construction, or carpentry shops. Their tasks include the production, processing, and assembly of wooden products such as furniture, windows, doors, and other wooden components.

- **Forest educator** - To become a forest educator a degree in fields such as forestry, environmental education, biology, or pedagogy is required. Additionally, practical experience in nature and environmental education, as well as specialized training in forest pedagogy, is beneficial. Forest educators develop and conduct educational programs related to forests and nature. They often work with schools, kindergartens, environmental organizations, or in adult education.

- **Nature and landscape conservation specialist** - Nature and landscape conservation specialists often work in landscape architecture, nature conservation, or municipal green maintenance. An apprenticeship or a university degree in areas such as landscape gardening, forestry, or environmental management is required. Their tasks include planning and implementing measures for landscape care, restoring areas, maintaining green spaces, and promoting biodiversity.

- **National Park Ranger** - The training to become a national park ranger can vary but typically includes a degree in environmental sciences, forestry, biology, or conservation. National Park rangers are responsible for the protection, preservation, and management of national parks and their natural resources. Their tasks include monitoring wildlife, conducting educational programs for visitors, maintaining hiking trails, and enforcing park regulations.

3.6.3 Forestry education in numbers

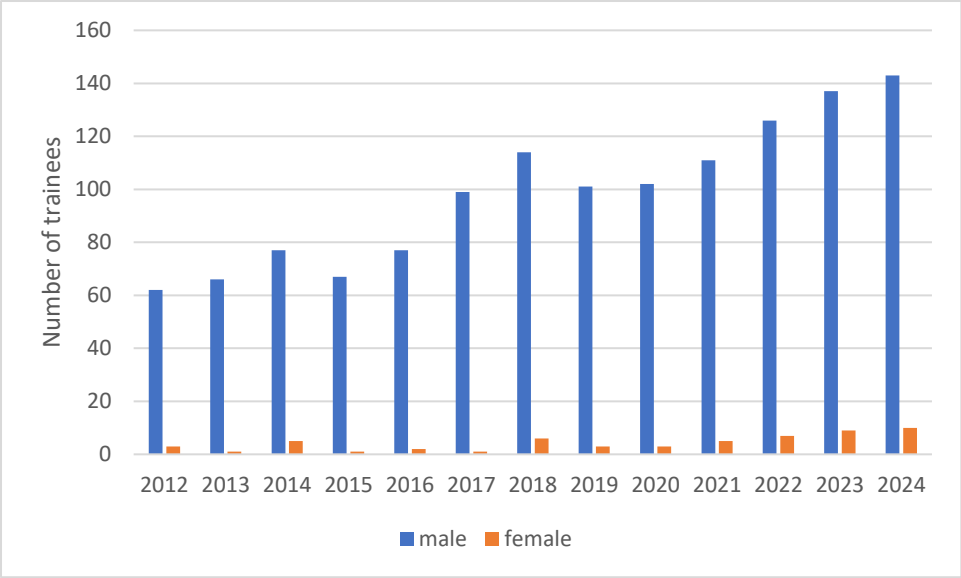


Figure 2: Number of trainees for forest craftsperson, slight increase with the highest proportion of women in 2014 and 2018, (Source: Vocational Training Center Waldbauernschule, 2025)

In vocational training the number of women has been traditionally very low in Bavaria. Figure 2 shows the number of trainees for forest craftsperson since 2012. The proportion of women has been rising steadily since 2021, although only a maximum of three women per year have graduated since then. In the training for Master Forest Craftsperson the first and only women graduated in 2021 and 2023. These numbers show an increasing interest of women in vocational forestry professions in recent years.

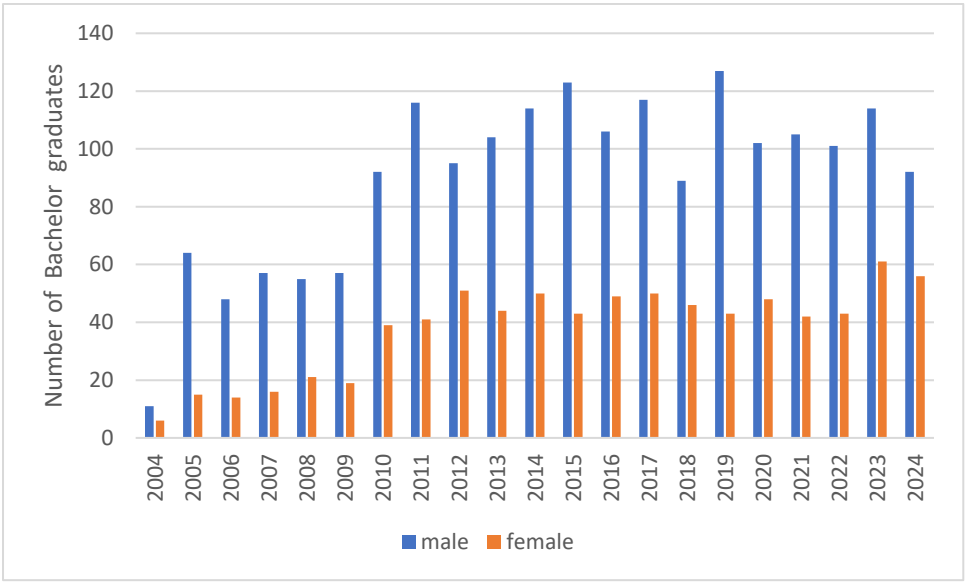


Figure 3: Proportion of Bachelor graduates of the University of Applied Sciences and the Technical University of Munich, slight increase in the proportion of women since 2010, rise to over 35% since 2023 (Source: University of Applied Sciences and Technical University of Munich, 2025

Figure 3 shows that the proportion of women graduating from bachelor's degrees in forestry has increased to an average of 30% since 2010. Among first-year students, there is a higher increase in females from 29% to an average of 36% since 2018. When comparing the data of first-year students and graduates, it is noticeable that more men do not complete their studies, and the proportion of women is almost the same compared to first-year students and graduates.

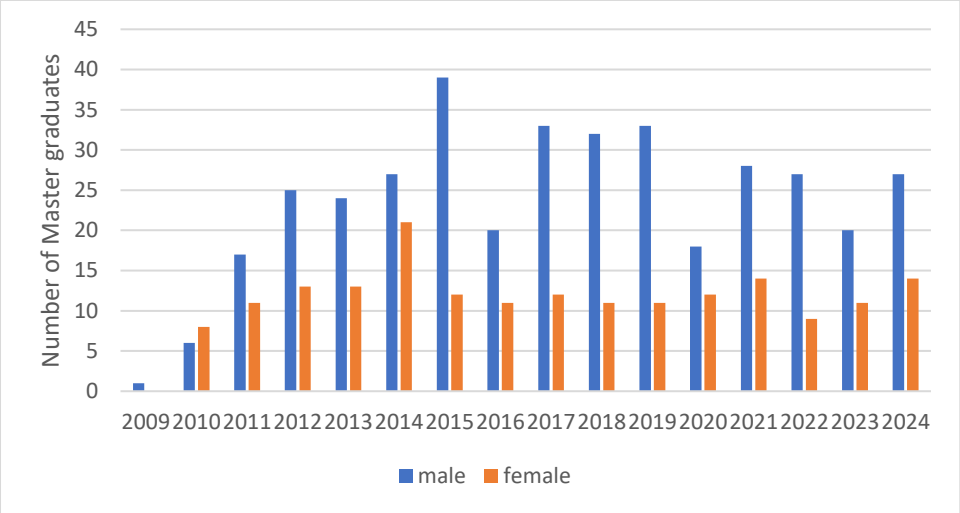


Figure 4: Proportion of M.Sc. graduates at the Technical University of Munich; proportion of women mostly at 30-40%; (Source: Technical University of Munich, 2025)

The number of female graduates in the Forest and Wood Science M.Sc. degree at the Technical University since 2009 shows an average proportion of 30 -40 % female students over the years with peak years of 57% women in 2010 and 44% women in 2014 (Figure 4). The numbers of first-year female students for M.Sc. was relatively constant with occasional dips, especially in 2011, 2019 and 2021.

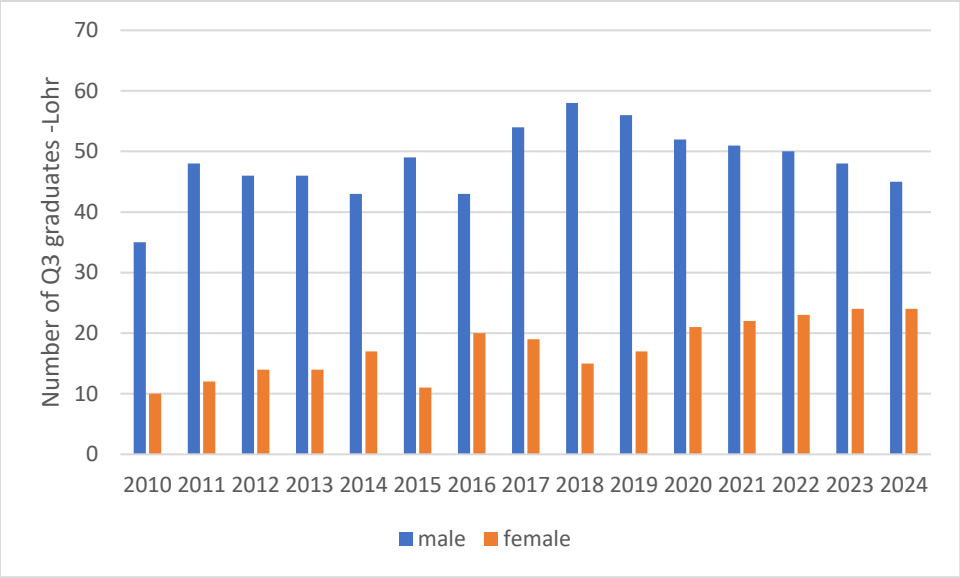


Figure 5: Proportion of graduates as Foresters for the 3rd qualification level at the Lohr Forestry School (Source: Lohr Forestry School, 2025)

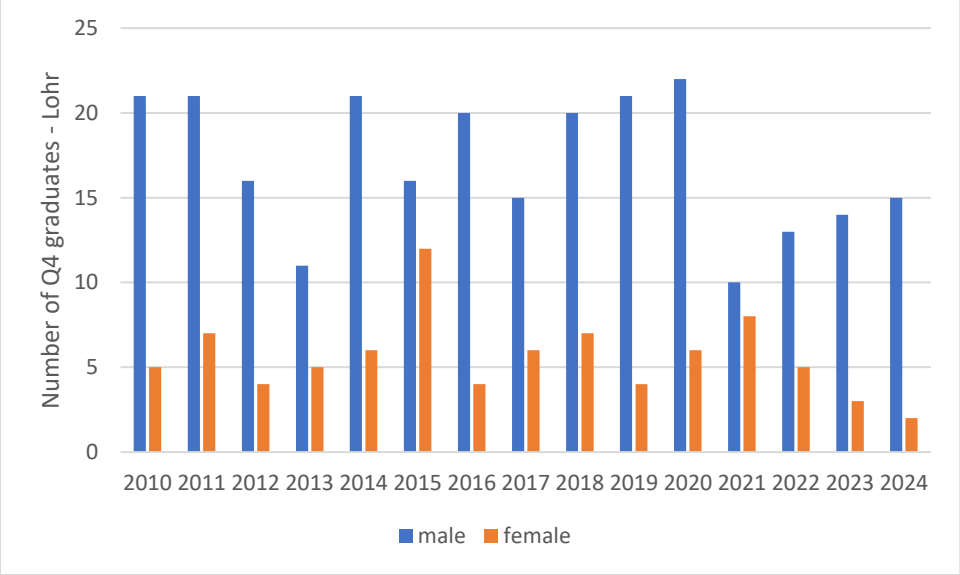


Figure 6: Proportion of graduates as Forest Managers for the 4th qualification level at Lohr Forestry School, (Source: Lohr Forestry School, 2025)

The number of female graduates from the trainee programmes at the Lohr Forestry School varies depending on the qualification level: in the Forester trainee programme Q3 the share of women has risen to over 30% since 2020 (Figure 5) while in the Forest Manager trainee programme Q4 there is a greater fluctuation with the highest proportion of women in 2015 and 2021 (Figure 6).

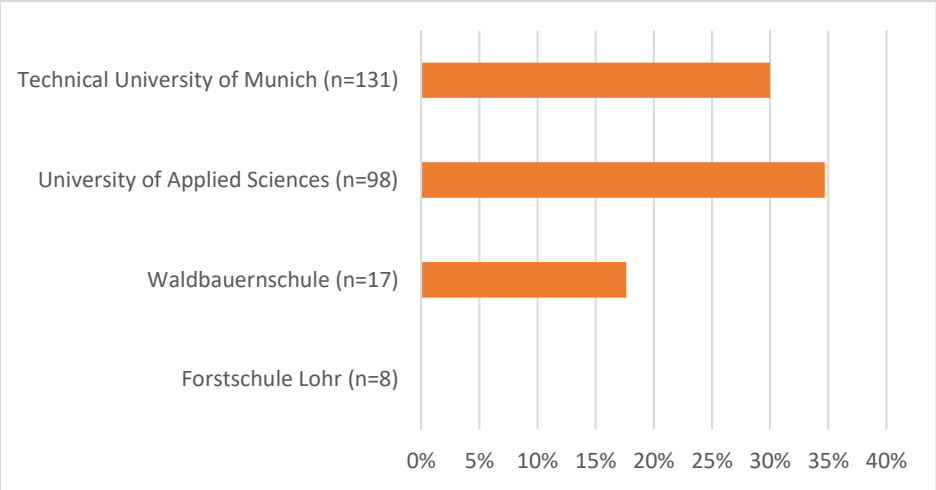


Figure 7: Percentage of women in relation to the total share of teaching staff in forestry education in Bavaria (Sources: Lohr Forestry School, Vocational Training Center Waldbauernschule, University of Applied Sciences and Technical University of Munich 2025)

Figure 7 gives an overview of the proportion of women in the teaching staff of the forestry educational facilities in Bavaria. The highest share of females can be found at the University of Applied Sciences where the teaching staff comprises almost 35% women, followed by the Technical University of Munich with a share of 30% female teaching staff in the forestry faculty. The proportion of female instructors at the vocational training center Waldbauernschule is significantly lower with around 17% women. At the Lohr Forestry School there were no female instructors as of 2025.

3.6.4 Gender awareness in forestry educational institutions

Both vocational training centers in Bavaria do not offer programs that actively support or promote gender awareness among trainees. However, female instructors in vocational training centers have the opportunity to participate in courses on female empowerment offered by the Bavarian Forestry Administration. In higher educational facilities, several initiatives aim to promote gender equality at the university level, though none of them are mandatory or integrated into the official curriculum. For instance, the gender, diversity and inclusion office of the Technical University of Munich, offers courses and trainings for interested teaching staff to raise awareness about diversity and promote female professionals in science. Additionally, TUM also has a family service center with daycare facilities for students and teaching staff. The HSWT University of Applied Sciences offers similar services that strive to promote gender equality at their institution. These programs are not specifically tailored to the forestry

faculty but apply to all members of the educational institutions. One program that is being carried out at the forest faculty of HSWT and has become a valuable tool to achieve gender equality among forestry students is Bayern Mentoring. Designed by women for women, it supports students throughout their studies and career development. The program consists of two distinct components:

- Junior program: university beginners with older students to help them become familiar with life at university
- Senior program: prospective graduates with volunteering mentors from business, research and administrations to help them become familiar with work

Through these initiatives, both universities contribute to a more inclusive and supportive environment, helping female students and professionals navigate their academic and career paths with greater confidence and opportunities. However, despite these efforts, the number of targeted programs remains limited, and further initiatives are needed to ensure lasting and comprehensive progress toward gender equality in vocational and higher education.

3.6.5 Strengths, Weaknesses, Challenges, and Barriers in forestry educational and training system

Strengths:

- Statistical data shows that the proportion of women pursuing an education in forestry has already risen in recent years. This shows that there is a greater interest among women in the forestry sector in Bavaria, which is a promising aspect.

- The strengths of the forestry educational and training system of Bavaria lies in the variety of pathways to obtain a forestry degree.

- Young people can choose between vocational, academic schools and through the permeability of the educational system always have the opportunity to enroll in trainee programs for leadership positions.

- Vocational schools offer young people an in-depth practical training to prepare them for the practical tasks in the field.

- The students who choose higher education can experience broadly diversified teaching content with many practical exercises at the two forestry faculties in

Bavaria. Through the cooperation of the universities with Research institutions like the Bavarian State Institute of Forestry Research students also have the possibility to tap into applied scientific research in the forestry sector.

Weaknesses:

- Despite the comprehensiveness of the educational system in forestry there are some drawbacks. In vocational schools, there is a noticeable lack of structured support systems for young women involved in vocational training, such as mentoring programs or targeted career guidance, and a lack of female role models as instructors. This absence of representation may discourage female students from fully pursuing opportunities in forestry-related professions. Additionally, gender stereotypes about physical demands and leadership in forestry further exacerbate the challenge of attracting and retaining women in the field. Higher educational facilities in forestry are taking steps to promote gender equality, like Bayern Mentoring, but still there are insufficient measures to raise awareness on gender disparity in forestry education and encourage women to pursue a career in forestry. Additional problems of university education in forestry include curricula that are too theoretical and offer too little possibilities of practical experiences in the field and direct exchange with forestry professionals.

- Forestry students who pursue a leadership position at the Bavarian State Forest Administration or the BaySF need to complete a two-year trainee program, but they do not get a guaranteed workplace afterwards. If there are not enough job openings at the Bavarian State Forest Administration/BaySF only the trainees with the best grades obtain a position. This weakness can be regarded as a significant barrier for young people to pursue a career in forestry.

Challenges:

Forestry education in Bavaria faces some challenges that need to be overcome in order to encourage more women to pursue a career in forestry.

- One of the major challenges at vocational schools is gender inclusion since the proportion of men is very high and support structures to create a more inclusive environment for women are missing.

- At higher educational facilities students face high costs for personal protective equipment, chainsaw license, hunting license and hunting equipment.

- At the moment there are no scholarships or grants that help students to cover theses expanses.

- The lack of practical experiences and opportunities for networking with forestry professionals at higher educational facilities presents a major challenge for students to achieve a successful transition to work life.

- Another challenge that forestry education is facing in Bavaria is the lack of knowledge about the variety of forestry professions that exist and the benefits of working in the forestry sector.

3.6.6 Opportunities for improvement

- **Changes in existing curricula:** Introduction of more integrated mandatory internships during university studies to promote the exchange of students with experienced forestry professionals and provide them with the necessary skills for working in the field. Furthermore, the integration of curricula-integrated courses to promote gender equality in all levels of forestry education is a key for change.

- **Adaptation of the traineeship system of the Bavarian State Forest Administration**: Increasing the attractiveness of the trainee program by emphasizing the high chances of employment after completion, despite the absence of a formal job guarantee. Furthermore, strengthening awareness among graduates and students about the excellent opportunities on the job market for those who have completed the traineeship—even if they are not directly hired—since this additional qualification significantly enhances their attractiveness to employers and opens up diverse career paths. Additionally, including female instructors to the teaching staff.

- **Trainings** that promote diversity and help young women to strengthen their self-confidence and communication skills during forestry education should be available at forestry educational institutions in Bavaria to help women to prepare for work life.

- **Mentoring:** Improvement of the existing mentoring program at the university of applied sciences and creation of supporting programs for women at vocational training institutions

- **Networking opportunities:** Creation of local networks at forestry universities.

- **Funding opportunities**: Introduction of scholarships to cover high costs of forestry education in Bavarian Universities and to fund supporting programs for women in forestry like Bayern Mentoring.

- **Role models – Enhancing the visibility of women in forestry:** Introduction of regular talks from female forestry professional for students to show the career paths of female role models to encourage young women to enter forestry professions.

- **Promotion of image change**: Create more awareness for the „modern" profession of foresters that allows a work-life balance, offers a wide field of occupation, and a stable source of income.

- **Marketing of forestry professions:** In order to promote forestry professions highlight the benefits of working in the forestry sector and emphasize the positive impacts that forestry can have for climate and nature protection aspects. Increase gender-sensitive advertisement to encourage women to train as foresters.

3.7 Romania

3.7.1 Forestry educational and training system

The national pre-university education system is made up of all state, private and denominational educational units, provisionally authorized to operate/accredited. The forms of organization of pre-university education are: full-time education, part-time education (see appendix 6.6). Compulsory education includes preschool education, primary education, lower secondary education, and upper secondary education. Compulsory education is full-time education. Pre-university education is conducted at the following levels:

a) early education (3 months – 6 years), consisting of preschool education (3 months – 3 years) and kindergarten education (3 – 6 years), both including nursery, middle, and senior groups;
b) primary education, lasting for 5 years, which includes the preparatory class and grades I-IV;
c) lower secondary education, lasting for 4 years, which includes grades V-VIII;
d) upper secondary education, typically lasting for 4 years. In the case of part time education or seral education, the duration of education is 5 years.
e) post-secondary education, including non-tertiary education, with a duration ranging from 1 to 3 years, depending on the complexity of the qualification and the number of ECTS credits in lifelong learning. Foreman schools are post-secondary schools.

Upper secondary education has three distinct streams:

1. theoretical with the fields humanities and sciences,
2. vocational with the fields military, theological, sports, arts, pedagogy,
3. technological with the fields technical, services, natural resources, environmental protection.

a) The pre-forest education in Romania is facilitated through technological stream. Colegiul Silvic Bucovina (CSB) is now the most important forestry high school, followed by Liceul Silvic „Transilvania"Năsăud and Colegiul Silvic "Theodor Pietraru" Brănești. The forest educational offer of CSB is:

1. full-time education, having the department of Natural resources and Environment protection following by two programs: *Forestry (title: Forestry and logging technician)* and *Environment protection (title: Ecological technician and environmental quality protection).*
2. part-time education in which the curricula is during 5 years, for one program Forestry *(title: Forestry and logging technician)*.
3. post-secondary education *(title: Forest tehnician)*

After graduating the high school there is another possibility for being a Forest Technician in which allows you to acquire the necessary skills to obtain a Certificate of Qualification valid for life, issued by the Ministry of Education and the Ministry of Labor and Social Protection, being recognized nationally and in all EU countries.

b) The Romanian higher education system is an open system. All Romanian universities use the European Credit Transfer System (ECTS/SECT). University

programs can be organized, as appropriate, according to legal regulations, at the following forms of education: full time, part time and distantly. Universities also provide continuing professional training programmes based on the market demands.

Access to higher education is based on the baccalaureate diploma (obtained at the end of upper secondary education), and access to master programmes is based on the bachelor degree (BA/BSc/BEng).

Bachelor studies (BA/BSc/BEng) presuppose 180-240 credit points, calculated in accordance with the European Credit Transfer System (ECTS/SECT), and ends with the level 6 from the European Qualifications Framework for lifelong learning (EQF/CEC).

Master studies (MA/MSc/MEng) presuppose 60-120 credit points, calculated in accordance with the European Credit Transfer System (ECTS/SECT), and ends with the level 7 EQF/CEC.

PhD studies result in a doctoral research thesis, while successful candidates are awarded a PhD diploma. Doctoral studies allow obtaining a qualification at level 8 EQF/CEC.

3.7.2 Overview of career paths in forestry

Romania has a long tradition of forestry, and its careers are often closely tied to public institutions like **Romsilva** and educational institutions such as the **University of Brașov (Transilvania University)** and the **University of Suceava**.

The most typical forestry careers in Romania**,** the education required are as follow:

- **Forestry Engineer** - (e.g., Facultatea de Silvicultură, Universitatea Transilvania din Brașov or Universitatea „Ștefan cel Mare" din Suceava). Master's degree may be required for certain administrative or research roles.

- **Forestry Technician** - Vocational or technical high school diploma in forestry (Liceu Silvic). Some may pursue post-secondary non-university qualifications.

- **Forest Ranger** - high school diploma in forestry (from a technical forestry high school or training program). Additional on-the-job training through institutions like Romsilva.

- **Forestry Researcher** - Master's degree or PhD in Forestry, Ecology, or Environmental Science.

- **Environmental Protection Engineer – Forestry Focus** - Bachelor's degree in Environmental Engineering, sometimes with a forestry specialization

- **Forestry Worker / Logger** - no formal higher education required; vocational training in forestry machinery or logging.

- **Forest Tourism Specialist** - degree in Forestry, Tourism, or Environmental Studies. Knowledge of eco-tourism and protected area management is a plus.

Table 6: The primary career paths in forestry, along with the key public and private institutions or sectors where graduates may find employment, are outlined.

Typical career type	Public institutions	Private firms/companies
Forestry Engineer	**ROMSILVA** – the main public body for managing state forests **Management units** (Directii silvice judetene/ocoale silvice) – local forest districts **Forest Guard** (Garda Forestiera) – controls forest legality, combating illegal logging. **Ministry of Environment, Water and Forests** (Ministerul Mediului, Apelor si Padurilor) – policy, legislation, and national forest strategy **Mayors/Local councils** (Primarii/Consilii locale) – for managing local forest/urban forests **National Agency for Environmental Protection** (Agentia pentru Protectia Mediului**)** – for environmental permits and forest impact assessments	**Private Forest Districts** **Forest Management Consulting Firms** **Forest Management Planning Firms** (Forest Design) **Timber companies/Logging Enterprises** (Holzindustrie Schweighofer (HS Timber Group), Silvania International, Frasinul SRL, Egger) **Firms for FSC Certification & Forest Audits** – e.g. Preferred by Nature, TÜV SÜD Romania. **NGOs** - e.g. WWF, Fundatia Conservation Carpathia.
Forestry Technician	ROMSILVA, Management units, Forest Guard	**Logging and silvicultural contractors** - assisting in thinning, planting, and maintenance operations. **Private Forest Owners' Associations** – e.g., Asociația Proprietarilor de Păduri și Pășuni.

		Reforestation and forestry services companies – subcontractors for larger landowners or NGOs.
Forest Ranger	Forest Districts, Forest Guard	Private Forest Districts, NGOs managing conservation areas, large private landowners or religious institutions (e.g., forested lands owned by monasteries or private estates)
Forestry Researcher	"Marin Drăcea" National Institute for Research and Development in Forestry, Universities, Romanian Academy	NGOs focused on conservation and biodiversity, Private research centers or consulting firms, international forestry development projects
Environmental Protection Engineer	Ministry of Environment, Water and Forests, National Agency for Environmental Protection, County Agencies for Environmental Protection, National and Natural Parks Administrations	Environmental impact assessment firms, CSR/sustainability departments in large companies, eco-certification organizations, NGOs or conservation foundations, Green Energy and Biofuel Companies
Forestry worker/Logger	ROMSILVA, Management units, Public forest districts	Logging and timber harvesting companies, sawmills and timber processors (e.g., Holzindustrie Schweighofer, Egger, Kronospan), forest maintenance subcontractors, seasonal contractors for reforestation or silvicultural work.
Forest Tourism Specialis	National and Natural Parks Administrations, ROMSILVA, Mayors/Local councils, Ministry of Economy - Tourism Department	Eco-tourism operators and agencies, guesthouses and resorts near protected areas, NGOs in conservation tourism, adventure tourism companie (forest owners developing recreational or educational tourism services)

At Romanian level there is nomenclature all institutions, companies and authorized individuals must register their employees using COR codes. It is the employer's responsibility to choose the correct COR code to hire an employee according to the field of activity, but the employer should also be diligent and check the code.

COR (abbreviation for Classification of Occupations in Romania) is the nomenclature that centralizes the occupations (functions and trades) of the active population in Romania and in which an occupation is classified only once. With the help of this tool developed by the Ministry of Labor, occupations are identified, prioritized and codified. The COR is applicable in all areas of economic and social activity, when filling out official documents, in order to specify the exact occupation that is the subject of the activity to be performed.

Table 8: Main COR codes according to the field of activity in forestry

COR code	Name of the category
131	Managers in industry, agriculture, forestry and fish farming
1311	Agricultural and forestry managers
131102	Chief Agricultural and Forestry Engineer
131107	Head of district, center, forestry office
131115	Forestry, orchard, viticulture nursery manager
131122	Small enterprise manager - owner (entrepreneur) in agriculture and forestry
2132	Consultants in agriculture, forestry and fisheries
213218	Forestry Engineer Designer
213219	Forestry Engineer Advisor
213220	Expert forestry engineer
213221	Specialized forestry inspector
213222	Specialized forestry engineer
213224	Forest engineer/sub-engineer
213251	Forestry researcher
213252	Forestry Research Engineer
213253	Forestry Research Assistant
214931	Forest harvesting researcher
214932	Forestry research engineer in wood harvesting
214933	Forestry Research Assistant in wood harvesting
314306	Forest Cadastre Technician
6210	Forestry and related workers
721501	Mechanic-assembler for cable installations in forestry and logging
817236	Harvesting and grooming operator
9215	Unskilled forestry workers
.....	.....

3.7.3 Forestry education in numbers

At the Faculty of Forestry at Ștefan cel Mare University of Suceava, the teaching staff comprises approximately 31 members, with an estimated 7 women and 24 men, resulting in a gender distribution of roughly 22.6% female and 77.4% male.

Based on the information from the faculty's website the gender distribution among teaching staff is as follows: **full professors** 2 men – 1 woman; **associate professors** 9 men – 2 women; assistant professors 10 men – 3 women; **assistant teaching** 1 male. Including the secretary, administrative and technical staff the staff number is increased with 11 members, from which 3 are women and 8 men.

Throughout the 12-year period, the faculty has consistently seen higher enrolment of male students. On average, boys outnumber girls by a factor of three to four each year, highlighting a persistent gender imbalance in forestry education. While the number of girls enrolled each year is lower, there are notable fluctuations: the highest female enrolment was observed in 2016 and 2023, with approximately 30 girls; the lowest female enrolment occurred in 2019 and 2022, where numbers dropped to around 15.

Enrolment of male students remains relatively stable, mostly ranging from 70 to 85 students per year. However, slight declines were observed in 2016 and 2023. In 2016 and 2023, the gender gap narrowed due to increased enrolment of female students rather than a rise in male enrolment. These years represent potential turning points for increasing gender balance.

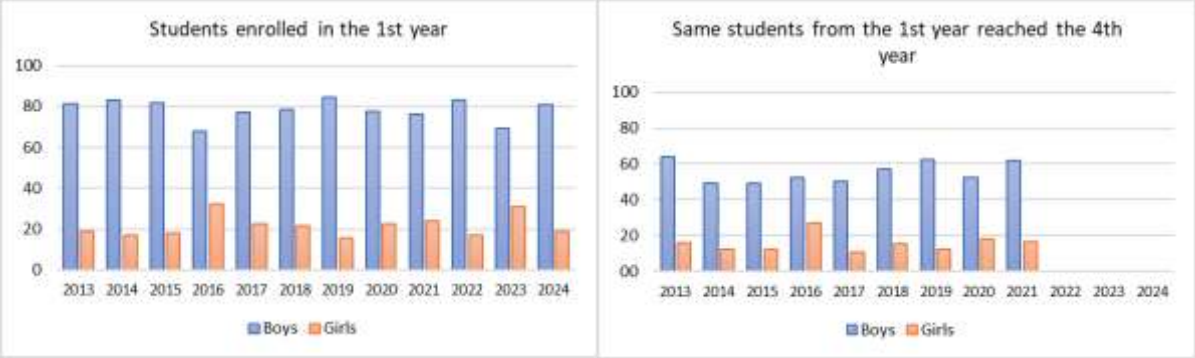


Figure 8: Left: Students enrolled in the 1st year, Right: Same students from the 1st year reached the 4th year

Although male students dominate first-year Enrolment in forestry, trends from 2016 and 2023 demonstrate that progress toward gender equality is achievable. With targeted strategies, the Faculty of Forestry has the potential to foster a more balanced and inclusive academic environment.

The data suggests that while boys are more likely to enrol, they also face moderate dropout levels. The program appears to maintain male students at a relatively stable rate. Girls show strong persistence in years when their **cohort size is moderate or high**. Lower initial numbers (e.g., 2017) correlate with higher dropout rates—possibly due to lack of peer support or inclusivity.

In the second figure, the dropout rate over the 12-year period is presented. The highest dropout rates occurred in 2014 and 2015, at 38%, followed by 2020, which saw a rate of 29% due to the COVID-19 pandemic.

3.7.4 Gender awareness in forestry educational institutions

Gender equality is not yet a standard component of forestry syllabi, unlike in social sciences or education faculties. Institutions rarely publish gender-based Enrolment or employment statistics, which hinders awareness and action. There is a need to tackle deep-rooted cultural norms that associate forestry with physical, male-dominated work.

3.7.5 Strengths, Weaknesses, Challenges, and Barriers in forestry educational and training system

Strengths:

- Romania has long-standing universities such as *Transilvania University of Brașov* and *Ștefan cel Mare University of Suceava*, which offer specialized forestry programs.
- Over 27% of Romania's land is forested, providing a natural laboratory for hands-on training and research.
- Alignment with European Union standards has improved curricula, funding opportunities, and academic mobility.
- Many forestry departments have experienced academic staff involved in international research collaborations.
- Programs include silviculture, forest engineering, wildlife management, and environmental protection, offering diverse career paths.

Weaknesses:

- Some institutions lack modern laboratories, equipment, and digital learning tools.

- Students often report insufficient field training and internships in real forest management settings.
- Gaps remain in areas such as climate change adaptation, digital forestry (GIS, drones, remote sensing), and sustainable forest finance.
- Few programs are taught in English, limiting international student exchange and participation in global networks.

Challenges:

- Most leadership roles in forestry institutions (e.g., Romsilva, forest districts, inspectorates) are still held by men.
- Forestry curricula generally do not include explicit gender equality modules, and few programs directly address gender dynamics in resource access, land ownership, or decision-making in forest communities.
- Women are still significantly underrepresented in field-heavy jobs such as forest ranger, logging, and forest operations
- Fewer students are enrolling in forestry programs due to rural depopulation and a decreasing interest in the sector.
- Skilled graduates frequently emigrate for better opportunities in Western Europe.
- There's a mismatch between educational outcomes and the needs of forest enterprises and agencies.
- Forestry education must address real-world governance and corruption challenges, which are rarely covered in depth.
- Limited national and institutional funding restricts program development, research, and international collaboration.
- Frequent changes in forest legislation and government policies can disrupt academic planning and relevance.
- Forestry is often perceived as a low-income, environmentally controversial sector, which deters student interest.
- There's a lack of structured vocational training and continuous professional development for forestry workers.

3.7.6 Opportunities for improvement

- While gender awareness in Romanian forestry education is improving, especially in academia and conservation fields, structural biases and traditional gender roles still influence career choices and representation in fieldwork and leadership. Continued collaboration with EU projects**,** NGOs**,** and inclusion of **gender equity in curricula** are key to sustained progress.

- To modernize and align Romania's forestry education and training system with diversity, inclusiveness**,** and the current job market demands, many recommendations may serve are primary starting points.

Table 7: Recommendations to modernize and align Romania's forestry education and training system

Area	Action	Benefit
Curriculum	Add gender/diversity content, digital tools, EU policies	Social awareness, job relevance
Employer Relations	Dual education, internships, advisory boards	Market alignment
Access and Inclusion	Scholarships, outreach, mentorship	Equity and diversity
Technology Integration	Training in GIS, drones, data analytics	Competitive edge
Entrepreneurship & Eco-tourism	Cross-disciplinary electives, business skills	Broader job pathways

To support and sustain female participation, the Faculty of Forestry can consider the following measures:

- Introduce gender-awareness content into the curriculum.
- Highlight successful women in forestry through events and media.
- Offer scholarships and mentorship programs specifically for female students.

3.8 Serbia

3.8.1 Forestry educational and training system

In Serbia, there are 4 possibilities of forestry education: (a) vocational education as a forest technician; (b) higher education as a forest engineer at BSc level; (c) higher education as a forest engineer at MSc level; (d) higher education as a doctor of biotechnical sciences - Ph.D. level. Also, members of the Chamber of forestry engineers of Serbia are required to have continuous professional development (see appendix 6.7).

As Figure 15 shows, it is possible to enter higher education after vocational training. The student can start his higher education at the University of Belgrade - Faculty of Forestry with undergraduate studies at the Department of Forestry and nature Conservation and continue its education through master's and doctoral studies at the same faculty.

a) Secondary education

In Serbia, there are 5 secondary schools in which is possible to acquire vocational training for forestry technicians and 1 Faculty of Forestry.

Forestry School from Kraljevo, with its 130-year tradition, is a leader in vocational training for forest technicians (4-year programme). Students learn how to reforest, how to use various machines and equipment, how to plant new forests and improve the condition of existing forests, how to use non-timber forest products in controlled quantities so that they are preserved for future generations, etc. Numerous extracurricular activities are also offered at the school.

Within Food, Forestry and Chemical School from Sremska Mitrovica there is a department for forest technicians (4-year education program).

The School of Agroforestry "Josif Pančić" from Surdulica has a department for forest technicians (4-year education program) in the field of forestry and wood processing.

The technical school "Mileva Marić Ajnštajn" in Novi Sad has a department for forest technicians (4-year education program) in the field of forestry and wood processing.

The vocational school "Krug" in Novi Sad has two departments specializing in forestry and wood processing: Forest Technician (4-year education program) and Forester (3-year education program).

b) Higher education

The University of Belgrade - Faculty of Forestry, with its 100-year tradition, is the highest educational and scientific institution in Serbia in the fields of forestry, wood industry, landscape architecture and soil and water resource protection. As part of continuous education, the Faculty organizes knowledge innovation, professional improvement: training and education of experts in various fields. The current organizational structure includes 4 departments: the Department of Forestry and Nature Conservation, the Department of Wood Technology, the Department of Landscape Architecture and Horticulture and the Department of Environmental Engineering for the Protection of Soil and Water Resources. These four departments produce different engineering profiles in the course of their education, covering a wide range of activities within the economic and institutional structure of the Republic of Serbia. Over the past decades, the Faculty of Forestry has played a leading role in the development and transformation of the

forestry sector in Serbia through the education of professionals at the undergraduate (Bachelor), master and doctoral levels, as well as through scientific research and support for national policies in this sector.

The first level of study is the Bachelor's degree, which is primarily relevant for the labor market and lasts 4 years (8 semesters). At this level, students acquire not only theoretical knowledge, but also sufficient skills, both general and professional, to continue their studies at the next level. Students who complete the forestry degree programme are awarded the professional title Graduate forest engineer. The Master's programme lasts one year (2 semesters). It is conducted in four different study programmes: Forestry, Wood Technology, Landscape Architecture and Ecological Engineering for the Protection of Soil and Water Resources. Upon completion of the Master's degree programme in Forestry, the academic title Master Engineer in Forestry is awarded. The academic doctoral programme lasts 3 years (6 semesters), during which the student acquires 180 ECTS. It is conducted in four study programmes: Forestry, Wood Technology, Landscape Architecture and Horticulture, Ecological Engineering for the Protection of Land and Water Resources. Upon completion of the third study cycle and the public defense of the dissertation in the Forestry module, the student is awarded the title of Doctor of Biotechnical Sciences.

c) License and life-long learning

In Serbia, a license is required to carry out professional activities in forest management. To obtain this license, a person must have completed higher education in the field of forestry (second-level studies, such as a master's degree, specialist academic or professional studies) and have passed both the state professional examination and the specific professional examination related to the licensed activities. The procedure for the license granting and cancellation is implemented by the Chamber of forestry engineers of Serbia.

All licensed members of the Chamber are required to participate in professional development programs. The professional development of Chamber members means the improvement of existing and the adoption and application of new knowledge in the profession, the improvement of the quality of work and business and is carried out on the basis of the annual program. Forms and methods of professional development within the meaning of these regulations are:

- giving lectures or passive participation in professional or scientific events (congresses, symposia, conferences and scientific meetings);

- participation in activities from the continuing education program organized by the Chamber or active participation as a speaker in this program (expert consultations, round tables, seminars, demonstrations of professional procedures);
- participation in meetings of other organizers or giving lectures at these events. Every Chamber member is obliged to acquire at least 8 points within a period of two years.

3.8.2 Overview of career paths in forestry

Public sector

- Public Administration (Ministries)
  Analyst
  - Tasks: developing strategies, and drafting regulations, etc.

  Inspector
  - Tasks: Forest inspections, monitoring compliance with laws

- Public service (institutes for nature conservation)
  Analyst / conservation specialist
  - Tasks: Data collection and analysis, and preparing reports and recommendations, etc.

- Public enterprises for state forest management
  Forest district engineer
  Tasks: Planning and implementing forest management; overseeing operations such as silviculture, reforestation, forest protection, and game management; working with private forest owners.

  Specialists in forest management planning, nursery, forest protection, and silviculture
  - Tasks: Managing nurseries, growing seedlings, protecting forests from pests and diseases, and assisting in forest regeneration and cultivation, elaboration of forest management plans.

  Specialists in protected areas management / ranger
  - Tasks: Managing forests in protected areas, implementing conservation measures, etc.

Specialists for private forests

- Tasks: tree marking, advising private forest owners, drafting management plans, etc.

- Public enterprises for national park management

  Forestry engineer

  - Tasks: Managing forest ecosystems within national parks, supporting biodiversity, conservation, visitors' management.

  Nature guard (park ranger)

  Tasks: Patrolling protected areas, enforcing laws, monitoring flora and fauna.

- Research and educational organizations

  Researcher

  - Tasks: Conducting scientific studies and projects, publishing findings, teaching students, etc.

  Secondary school teacher

  - Tasks: Teaching forestry subjects, fieldwork and practical training, school promotion

  University teacher

  - Tasks: Teaching students, mentoring students (supervising bachelor's, master's, and PhD theses), international cooperation, conducting scientific studies, publishing findings, administrative duties, etc.

Private sector

- Forest-based small and medium enterprises (SMEs)

  Machine Operator / Field Worker

  - Tasks: Logging, planting, thinning, firefighting, and machinery maintenance.

  Wood processing technician / manager

  - Tasks: Managing timber production, processing, quality control, and distribution.

  Timber trade

- Tasks: Procurement and sales, logistics and inventory management, classifying timber types, sizes, and quality grades, certification, market analysis, etc.

- Forest nurseries
  Nursery worker / specialist
  - Tasks: Growing and maintaining seedlings, preparing soil, handling plant protection, etc.

Civil sector

- Private forest owners' associations:
  Forestry engineer
  - Tasks: tree marking, elaboration of management plans, advisory and extension services, etc.
- Environmental NGOs:
  Project manager / officer / expert
  - Tasks: Conservation projects, advocacy, working on biodiversity and climate initiatives, environmental education, etc.

3.8.3 Forestry education in numbers

The Enrolment data for the Faculty of Forestry in Serbia from 2014/2015 to 2024/2025 shows several clear trends across all study levels (Figure 9).

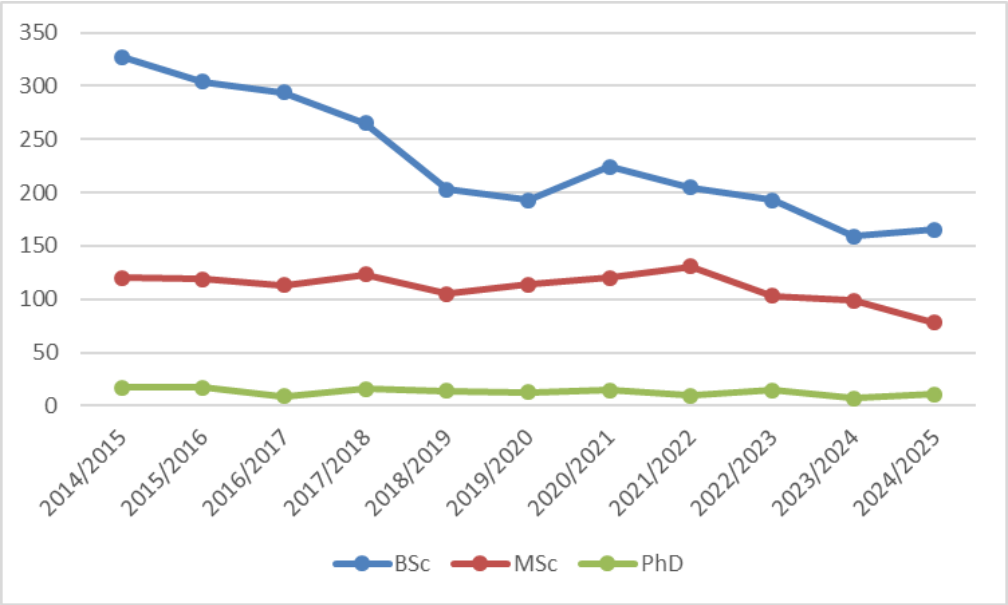


Figure 9: Enrolment data for the Faculty of Forestry in the period 2014/2015 – 2024/2025

The number of 1st year students has declined over the period studied, from 327 in 2014/2015 to 165 in 2024/2025. This represents a decline of almost 50% over the decade and indicates a potential decrease in student interest in forestry fields. The number of MSc students fluctuated more, peaking at 131 in 2021/2022, but then falling to 78 in 2024/2025. The number of PhD students fluctuates between 7 and 17 per year. There is no strong upward or downward trend, although the last two years are among the lowest (7 and 11). The gender distribution in the BSc Forestry program at the Faculty of Forestry in Serbia shows some interesting patterns over the last ten years (Figure 10).

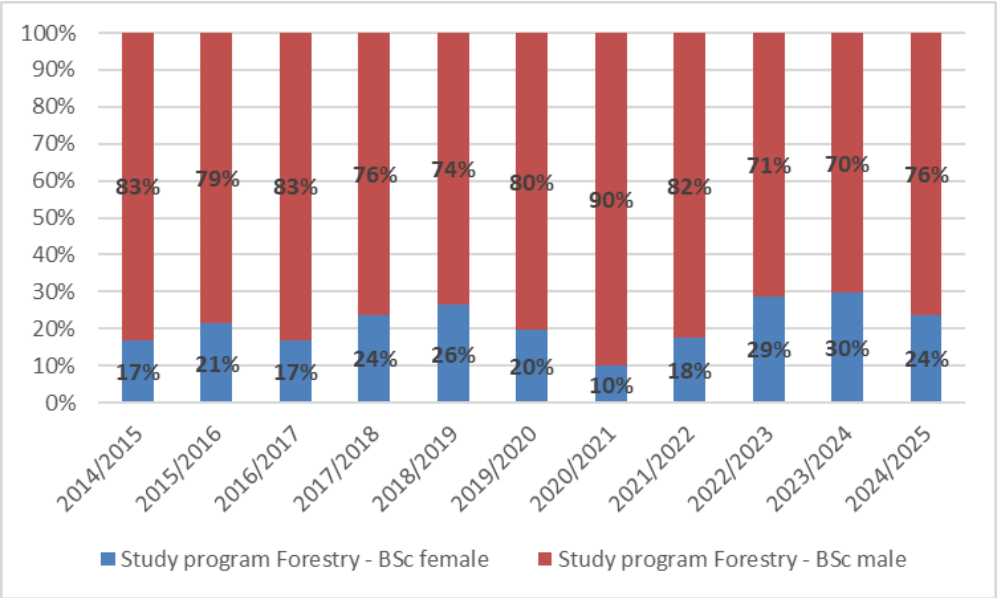


Figure 10: Share of male and female students in the BSc Forestry program

Over the years, male students have consistently outnumbered male students, often significantly more than female students. The highest male dominance was in 2020/2021 with 90% male and only 10% female students. The proportion of female students fluctuated between 10 and 30 from year to year. In the last three academic years, there has been a significant increase in the proportion of women (2022/2023: 29% women; 2023/2024: 30% women (the highest value in the data set), 2024/2025: 24% women). Although this is still a minority, it could indicate slow progress towards gender balance.

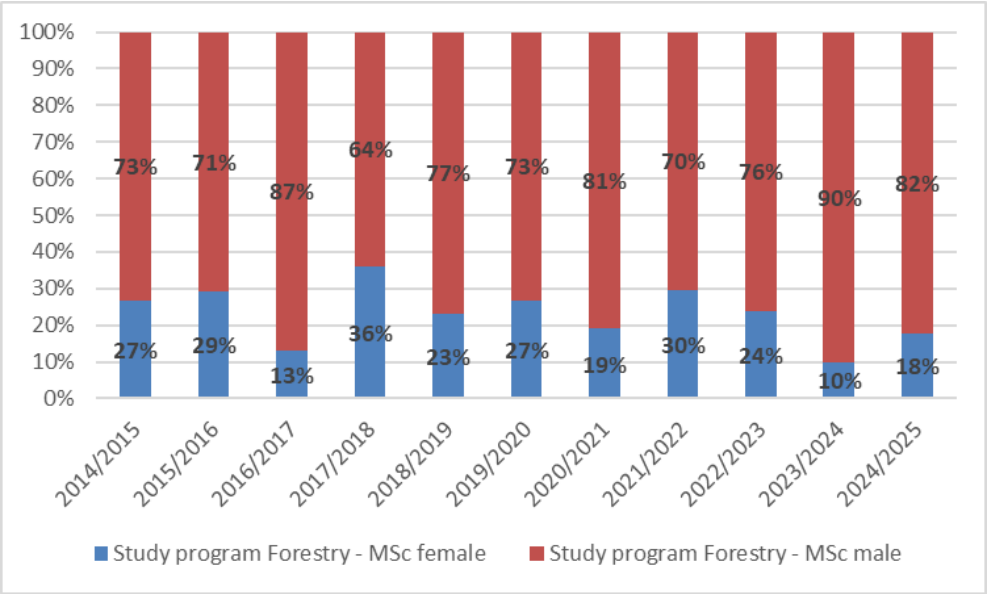


Figure 11: Share of male and female students in the MSc Forestry program

Like the BSc program, the MSc level is also dominated by men throughout the observed period (Figure 11). The lowest female participation was in 2023/2024 with only 10% female students. The highest female participation was in 2017/2018 (36%) and 2021/2022 (30%). In contrast to the BSc level, where there has been an increase in female students in recent years, a decline can be observed in the MSc program.

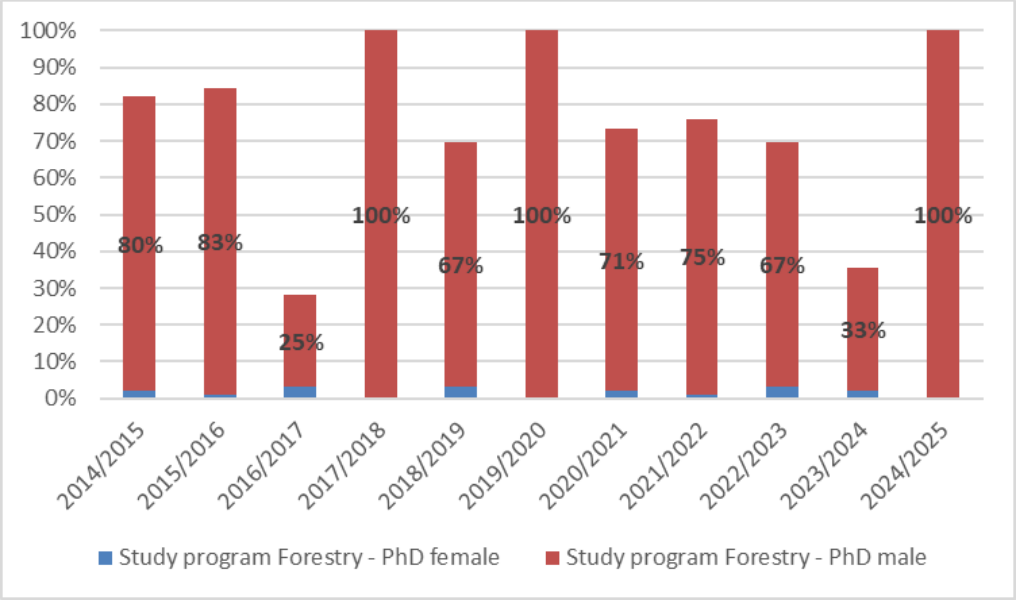


Figure 12: Share of male and female students in the PhD Forestry program

Male students dominate PhD Enrolment across all years. In several academic years (2017/2018, 2019/2020 and 2024/2025), no women have enrolled at all. This indicates not only stagnation, but possibly also a widening of the gender gap at doctoral level.

As of November 30, 2024, 3 women held leadership positions at the Faculty of Forestry, namely the Vice Deans for Teaching, for Science and International Cooperation and for Finance (all Vice Dean positions are held by women). In addition, women chair the departmental council in 4 departments. The student vice-dean is a man, and a woman is the president of the Student Parliament. Women head various departments, laboratories and centers at the faculty. The teaching staff consists of 99 faculty members, 52 women and 47 men, including: 38 full professors (18 women and 20 men), 33 associate professors (24 women and 9 men), and 15 associate professors (6 women and 9 men), 4 assistants with a doctorate (1 woman and 3 men), 8 assistants (2 women and 6 men) and one foreign language teacher (woman).

The Faculty of Forestry, including all 4 departments, has 197 employees in research and development. Of the total number of staff, 118 (59.90%) are women and 79 (41.80%) are men. The total number of researchers is 112, of which 62 are women (52.54%) and 50 (45.05%) are men. There are 62 women (52.54%) employed as researchers (including teaching staff), 11 (9.32%) as research assistants, 5 (4.24%) women work as technical staff, and 40 (33.90%) women work in other jobs. Men are employed: as researchers 50 (63.29%), as professional staff 11 (13.92%), 4 (5.06%) as technical staff and 14 (17.72%) in other jobs. Among the other staff (employees in professional services), 40 (74%) are women and 14 (26%) are men.

3.8.4 Gender awareness in forestry educational institutions

Serbian educational organizations lack formal or structured initiatives specifically aimed at promoting gender equality in forestry curricula. However, the Faculty of Forestry was one of the first faculties at the University of Belgrade to adopt the Gender Equality Plan. A team member of the Fem4Forest project acted as the Chair of the Gender Equality Commission of the Faculty of Forestry and coordinated the preparation of the Gender Equality Plan. The document was adopted in 2022. The establishment of the Gender Equality Commission of the Faculty of Forestry and the elaboration of the Gender Equality Plan of the Faculty were initiated by Fem4Forest project and the national team members.

The methodological framework for the analysis and synthesis of the input data was based, among other things, on the National Action Plan developed as part of the Fem4Forest project.

The planned measures are divided into four key areas (KA):

- KA1: Management and decision making;
- KA2: Employees and career development;
- KA3: Research and science;
- KA4: Students and education.

The plan expresses the Faculty of Forestry's commitment to implementing an equal opportunities policy and respecting diversity among staff and students. With the formation of the Gender Equality Commission and the adoption of the Gender Equality Plan, the Faculty of Forestry aims to create a permanent mechanism to promote gender equality.

KA4, which is related to students has the following goals and measures (Table 8)Table 1

Table 8: Key area 4 of the Gender Equality Plan of the Faculty of Forestry

Goal – why?	Measure – what?	Who is responsible	Target group - who should be involved?	When it should be implemented	Indicator – how will we know?
Promotion of gender equality among students	Supporting students to recognize and report any form of gender-based discrimination	- Management of the Faculty of Forestry - Teaching staff - Students Parliament - Service for teaching and student affairs	Students	from 2023, continuously	Absence of reports of gender-based discrimination
	Increased inclusion in the education system of vulnerable social groups and persons who are at increased risk of dropping out of education due to their sex, gender, marital status and other socio-economic conditions	- Management of the Faculty of Forestry - Teaching staff - Service for teaching and student affairs			Reports of the Service for Teaching and Student Affairs on the implementation of the affirmative Enrolment measures

3.8.5 Strengths, Weaknesses, Challenges, and Barriers in forestry educational and training system

Strengths:

- a well-structured education system from vocational training to doctoral studies
- active promotion and outreach (organized open days, participation in science festivals and events such as the European Researchers' Night, etc.)
- cooperation between the Career Development and Student Counseling Center at the University of Belgrade and the Faculty of Forestry
- the examples of CGC activities at the Faculty of Forestry (e.g.: the info point of the Career Development Center, "Meeting of Profession and Science" – as an example of good practice)
- the Faculty of Forestry has a Gender Equality Plan, the actual implementation is on schedule and consistently monitored
- internships and dual training models (at secondary level)
- Faculty of Forestry at the University of Belgrade, with its 100-year tradition, is a regional leader in forestry education and research
- the system produces professionals (forest engineers and technicians) who work directly in public enterprises, environmental NGOs, research institutions and private forestry companies)
- mandatory continuous training via licensing bodies (i.e. the Chamber of forestry engineers of Serbia)

Weaknesses:

- the number of first-year forestry students has decreased significantly in the last ten years, particularly at the BSc level
- lack of targeted initiatives to promote forestry careers among female students or to support women during their studies (e.g. mentorship, scholarships, professional networks)
- lack of monitoring and data collection (there is no clear overview of the impact of promotional activities on the number of female students over time)
- limited integration between educational organisations and the private sector, especially in the co-creating of curricula, internships or job market alignment
- forestry education still relies heavily on traditional silviculture and forest management practices and places less emphasis on modern topics such as climate-smart forestry, AI in forest monitoring, etc.)

Challenges:

- gender stereotypes and misconceptions about forestry (the sector is still perceived as "male-dominated")
- students and parents often do not have accurate information about what forestry actually entails
- concerns about employment after graduation, especially for women, due to perceived limited career diversity or opportunities
- low salaries compared to other professions, making the whole sector less attractive
- lack of visible female role models in leadership positions
- the current Forestry Development Strategy dates back to 2006; there is a need to adopt a new, modern strategic document that defines the development of the sector

3.8.6 Opportunities for improvement

The following recommendations have been made to improve diversity and inclusion and to meet the current needs of the forest sector job market:

1. Enhanced promotion and awareness campaigns:
   - Targeted campaigns: comprehensive campaigns (use of social media, school events, etc.), especially in primary and secondary schools, to raise awareness of forestry careers, not only for girls and young women, but also to communicate with parents, teachers, etc.
   - Visibility of role models: Increase the visibility of successful women in forestry through media exposure and promotional materials, highlight their achievements to inspire young women to consider forestry as a possible career option;
2. Innovations in the education program:
   - Modernize the curriculum, i.e., update forestry education programs to include more interactive, hands-on and digital learning experiences. Also integrate modern technologies and practices (e.g. AI, machine learning, use of drones, etc.). In addition, develop closer links between forestry schools and industry to align educational programs with current market needs;
   - Practical experience: mandatory internships and hands-on projects that show students the challenges of forestry in practice. Also, introduce dual education

models that combine theoretical learning with hands-on experience in partnership with private companies

3. Evaluation and continuous improvement:
   - Establish mechanisms to track the effectiveness of promotional efforts and educational reforms in increasing female Enrolment and retention. Regularly evaluate the impact of initiatives to adjust strategies as needed.

3.9 Slovenia

3.9.1 Forestry educational and training system

The Slovenian forestry education system provides a structured pathway from secondary school to university and beyond to ensure that individuals are well prepared to contribute to sustainable and multifunctional forestry. In Slovenia, formal forestry education is provided by two secondary forestry schools, a higher vocational school and a faculty specialising in forestry. In addition to these institutions, other organisations (those who provide non-formal education and trainings, courses and lifelong learning – e.g. Slovenia Forest Service; Slovenian Institute for Adult Education) also play an important role in continuous education and professional development in the field of forestry. More broadly, the green professions — including forestry, agriculture, horticulture, food and nutrition, catering, tourism and veterinary medicine — are linked through a consortium of 13 biotechnical schools across Slovenia. This network promotes co-operation and knowledge sharing and supports the development of expertise that is essential for the sustainable management of natural resources (see appendix 6.8).

a) Secondary Education

Two secondary vocational schools offer specialized programs in forestry: „Forester“ and „Forestry Technician“ program, which combines theoretical knowledge with practical training. Additional to theoretical and practical trainings students must complete internship at companies in Slovenia or abroad. Internship last 4 weeks for secondary vocational program and 24 weeks for technical program.

Forestry technicians (four-year program) are qualified to plan, monitor and direct work in forest production; carry out work and tasks in forest management and protection; plan wildlife management; market forest and timber products; prepare high quality felling and harvesting plans; supervise work in a forest; manage forests responsibly and maintain dendrometric parameters and use forestry machinery and equipment.

Foresters (three-year program) are trained to carry out work in the forest with due regard for occupational safety; they carry out felling, tree processing and shaping of forest wood assortments; they collect and transport forest wood assortments; they carry out felling and harvesting in special and emergency situations; they maintain forest roads and small watercourses and maintain hand tools, chainsaws and equipment for work in the forest and in forest nurseries.

b) Vocational Training Center

One higher educational vocational study program (two-year program) educates for the professional title of forestry and hunting engineer. Admission to the study program is allowed to candidates who have passed a final examination in any secondary school, including vocational-technical programs, vocational course or any other program to acquire secondary education. The study provides practical knowledge in the field of forestry and hunting, a responsible attitude towards quality assurance in forestry and hunting, the preparation of silviculture plans, felling and harvesting plans and hunting management plans, monitoring the development of wild animal populations and their compatibility with the forest biotope, the monitoring of areas in connection with legal and administrative regulations in the field of hunting and nature conservation, the independent organisation, coordination and management of work in forest enterprises or private property. Every academic year comprises of 10 weeks of practical training in companies.

c) Higher Education

Forestry studies in Slovenia are offered by the Department of Forestry and Renewable Forest Resources, part of the Biotechnical Faculty, University of Ljubljana. The Biotechnical Faculty provides professional, academic, master's, and doctoral study programmes, not only in the field of forestry but also in the nine different fields, including agronomy, landscape architecture, food science, biology, wood science and technology, biotechnology, forestry, animal science and microbiology. It also carries out scientific research and technical consulting in all this fields.

The Department of Forestry and Renewable Forest Resources offers four study programmes – professional, academic, master's and doctoral one.

- **First Cycle Study Programmes – professional study programme: Forestry (VI/2)**

The basic aim of this study programme is to qualify the graduate for integrated forest and forest landscape management. The aim of the emphasis on the practical implementation of the pedagogical process is to train the graduate for forest and forest landscape management. Their knowledge of forest ecosystems and their management is based on the observance of three modern principles of forest management - the principles of sustainability, multifunctionality and close-to nature. This requires the integration of knowledge from the socio-economic, ecological and technical fields and knowledge of modern methodological tools. Additional to theoretical and practical knowledge graduates must complete professional practice at forestry companies and public forestry service. The professional practice last 2 weeks at forestry company and 3 weeks at public forestry service.

The study programme lasts for three academic years (6 semesters, 180 ECTS), each year student is required to complete 60 ECTS. Studies are available only on a full-time basis. Each year, there are a limited number of enrolment slots: 50 for Slovenian and EU citizens, 2 for non-EU citizens, 2 for Slovenians without Slovenian citizenship, and 2 for parallel studies. To enrol, specific requirements regarding the level of previous education must be met. In case of limited enrolment, specific selection criteria are applied.

Students obtain a professional academic degree in Forestry and receive the title of Bachelor of Applied Science (B.A.Sc.). They acquire knowledge that provides the basis for continuation of studies in second cycle (M.Sc.) programs in forestry and other fields. Additionally, they gain the necessary expertise to enter the forestry sector as professionals.

- **First Cycle Study Programmes – <u>academic study programme</u>: Forestry and Renewable Forest Resources (VII/1)**

The primary aim of this study programme is to qualify the graduate to gain knowledge about forest ecosystems, the social aspects of forest management, various techniques and technologies used in forest management, and modern methodological tools. Graduates acquire competencies in mastering fundamental knowledge and integrating natural, technical, and social sciences. They also acquire information literacy in the field of forest informatics, develops environmental awareness, and an ethical attitude towards nature.

The study programme lasts for three academic years (6 semesters, 180 ECTS), each year student is required to complete 60 ECTS. Studies are available only on a full-time basis.

Each year, there are a limited number of enrolment slots: 50 for Slovenian and EU citizens, 2 for non-EU citizens, 2 for Slovenians without Slovenian citizenship, and 2 for parallel studies. To enrol, specific requirements regarding the level of previous education must be met. In case of limited enrolment, specific selection criteria are applied.

Students obtain a university academic degree in Forestry and receive the title of Bachelor of Science (B.Sc.). They acquire knowledge that provides the basis for continuation of studies in second cycle (M.Sc.) programs in forestry and other fields.

- **Second Cycle Study Programmes – master's study programme: Forestry and Forest Ecosystem Management (VII/2)**

The primary aim of this study programme is for graduates to acquire comprehensive knowledge about forests and forest management, aligned with three modern principles of forest management: sustainability, close-to-nature, and multifunctionality. The study programme enables graduates to deepen their fundamental knowledge of forests and forest management. Depending on their interests and career goals, they can also gain broader knowledge in specialized or peripheral areas of forestry and forest ecosystem management such as a) Ecology and forest management; b) Nature conservation, recreation and tourism in forested areas and c) Forest economics and engineering.

The study programme lasts for two academic years (4 semesters, 120 ECTS), each year student is required to complete 60 ECTS. Studies are available only as a full-time study. Each year, there are a limited number of enrolment slots: 40 for Slovenian and EU citizens, 3 for non-EU citizens, 4 for Slovenians without Slovenian citizenship, and 1 for parallel studies. To enrol, specific requirements regarding the level of previous education must be met. In case of limited enrolment, specific selection criteria are applied.

Students obtain a university master's degree in forestry and receive the title of Master of Science (M.Sc.). They acquire knowledge that provides the basis for continuation of studies in third cycle (PhD) programme in bioscience and other fields. Additionally, they gain the necessary expertise to enter the forestry sector as professionals.

- **Third Cycle Study Programmes – the interdisciplinary doctoral study programme (PhD) of Biosciences (VIII/2)**

This study programme is a level 3 programme under the Bologna scheme. It is an interdisciplinary doctoral study program with 18 scientific fields. Directly related to forestry is the scientific field Managing Forest Ecosystems, and indirectly related fields are, i.e. Economics of Natural Resources and Wood and Biocomposites. The aim of the programme is to train doctoral students for scientific work in fields of basic and applied life sciences, so that they will be able to develop new knowledge within the framework of a scientific research career or transfer knowledge to everyday practice. Within the study are represented traditional fields of life sciences, supplemented with newer fields, dictated by the development of new technologies and the needs of society.

The study programme lasts for four academic years (8 semesters, 240 ECTS), each year student is required to complete 60 ECTS. The study programme is composed of an organised educational part, amounting to 60 credit points, while the remaining 180 credit points are devoted to individual research work for the doctoral thesis. The programme consists of two types of subjects: a) theoretical subjects (5 or 10 ECTS) and b) individual research subjects (5 or 10 ECTS). A doctoral student, together with the supervisor, chooses subjects from the selection of all the subject included in the programme. The study plan is approved by the coordinator of the scientific field of study the doctoral student is enrolled into. The choice of other subjects is possible from among all other elective subjects and from the syllabuses of other comparable programmes of domestic and foreign universities that have programmes evaluated by the ECTS or other systems that enable assessment of comparability.

Studies are available only as a full-time study. Each year, there are a limited number of enrolment slots: 75 positions in 2025/2026. To enrol, specific requirements regarding the level of previous education must be met. In case of limited enrolment, specific selection criteria are applied.

d) Lifelong learning

Adult education: „Forester“ and „Forestry Technician“ program

Courses and training in the areas of:

- Timber harvesting and felling
- Silviculture
- Timber marketing
- Working with a hydraulic loader
- Forest cable logging

- Sawmill
- Arboristics - the basics of urban tree care and tree climbing

e) National Vocational Qualification

A national vocational qualification is a professional certification required to perform a job at a specific level of complexity, based on a national vocational standard. This qualification allows individuals to obtain a publicly recognized vocational certificate, which is classified within the national qualification framework. National vocational qualifications can be earned by assessing and validating skills and knowledge gained through nonformal learning or by completing a formal vocational or professional education program. In the fields of forestry and wood processing, there are eight national vocational qualifications available:

- tree care worker at height (arborist),
- silviculturist,
- logger,
- forestry tractor operator,
- forestry cableway operator,
- timber procurement officer,
- wildlife manager,
- operator of harvesters and timber trailers.

f) Non-formal education and trainings

The Slovenian Forest Service carries out activities related to safe work in forests, sorting of timber assortments, forest management economics, new technologies for forest work, forest pedagogy, and forest cultivation and protection in relation to adapting to and increasing forest resilience to climate change, forest management in the case of natural disasters and pest outbreaks, as well as implementing measures to prevent the introduction of particularly dangerous diseases and pests into forest ecosystems. Training can be attended by owners or members of farms, employees in agricultural, forestry, or processing activities, as well as members or representatives of local action groups.

g) Courses

Forestry and biotechnical schools offer chainsaw operation courses, where participants are introduced to the regular maintenance of chainsaws and the basics of chainsaw working techniques. The training is intended for all forest owners, students, firefighters,

municipal workers, gardeners, fruit growers, and others who occasionally work with a chainsaw.

3.9.2 Overview of career paths in forestry

In Slovenia, the forestry sector offers a variety of career paths, each requiring specific educational qualifications and entailing different responsibilities. Overview of some typical forestry careers:

- **Forestry technician:**

Education: Secondary vocational training in forestry (e.g. Forestry Technician Programme).

Tasks: Forestry technicians are responsible for the management and supervision of forestry operations. They carry out forest inventories, assess the health of trees and help with the planning and implementation of forestry projects. They also help maintain trails and recreational areas in the forests.

- **Forest engineer:**

Education: Bachelor's degree in forestry, which can be followed by a master's degree to advance.

Tasks: Forest engineers deal with the technical aspects of forest management, including the planning, design and implementation of forest management projects. They analyse forest resources, develop management plans, ensure compliance with environmental regulations and may also work on sustainable forestry practises.

- **Forest Manager:**

Education: Bachelor’s degree in forestry, often with experience in the field; advanced positions may require a master's degree.

Tasks: Forest managers oversee the management of forest lands. They ensure that work is carried out according to management plans, they coordinate activities to ensure sustainable forest use. They work closely with stakeholders and local communities.

- **Environmental Advisor:**

Education: Typically requires a bachelor's degree in forestry, environmental science or related field; advanced qualifications are an advantage.

Tasks: Environmental consultants assess the environmental impact of forestry projects. They carry out assessments, prepare reports and advise on compliance with regulations. Their work often overlaps with strategy development and public relations.

- **Wildlife biologist** (specialising in forest areas):

Education: Bachelor's degree in forestry, biology or ecology; a master's degree is often preferred for higher level positions.

Tasks: Wildlife biologists study animal populations in forest ecosystems. They conduct research to monitor species, assess habitats and contribute to wildlife management plans that promote biodiversity in forest areas.

3.9.3 Forestry education in numbers

In higher education forestry programs, approximately 30% of students are women. Specifically, in the 2023/24 academic year, 225 students were enrolled in forestry studies across all programs, with women making up 30% of the total. Women were most strongly represented in the academic study program Forestry and Renewable Forest Resources (34%) and less represented in the professional study program Forestry (24%). In the master's study program Forestry and Forest Ecosystem Management, women constituted 32% of the students.

In the following academic year (2024/25), a total of 229 students enrolled in forestry programs, with women representing 28% of the total. The highest share of female students was in the master's study program Forestry and Forest Ecosystem Management (30%), followed by the academic study program Forestry and Renewable Forest Resources (29%), and the professional study program Forestry (25%).

Table 9: Share of women in academic year per study programme

Academic year	Programme	M	F	Together	Share of women	Share of women (together)

2023/24	Forestry and Renewable Forest Resources (B.Sc.)	58	30	88	34%	30%
2023/24	Forestry (B.A.Sc.)	73	23	96	24%	
2023/24	Forestry and Forest Ecosystem Management (M.Sc.)	28	13	41	32%	
2024/25	Forestry and Renewable Forest Resources (B.Sc.)	60	24	84	29%	28%
2024/25	Forestry (B.A.Sc.)	76	25	101	25%	
2024/25	Forestry and Forest Ecosystem Management (M.Sc.)	31	13	44	30%	

Overall, enrolment in higher-level forestry study programs appears to be relatively stable, with a slight drop in the number of students between the years 2015/16 and 2018/19. However, data on the share of women enrolled in these programs during that period is not available.

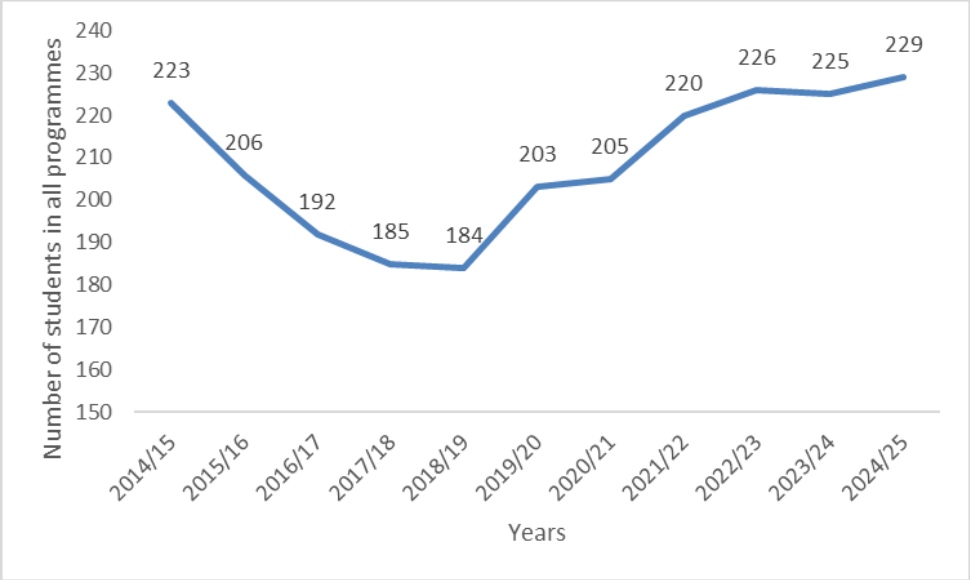


Figure 13: The number of students enrolled into forestry studies (all programmes)

On the other hand, women are quite well represented among employees, with 45% of the workforce being female in 2024. Among pedagogic workers, the share is lower, at only 25%, but it is growing (up from 19% in 2023). Among other staff (technical assistants and others), the share is higher, increasing from 54% in 2023 to 57% in 2024.

3.9.4 Gender awareness in forestry educational institutions

In Slovenian educational institutions, there are no formal or structured initiatives that specifically promote gender equality in forestry curricula. However, there is a broader national policy that supports gender inclusion and there is gradual progress in the participation of women, particularly at university and postgraduate level. The main policy that targets female participation and gender issues in forest sector in Slovenia, including all above mentioned organizations, is Resolution on the National Program for Equal Opportunities for Women and Men 2023 – 2030 (https://pisrs.si/pregledPredpisa?id=RESO132).

Higher education forestry institution, that is Biotechnical faculty is ensuring gender awareness through Gender Equality plan of University of Ljubljana for the time period od 2022-2027 (Enakost_spolov_nacrt_enakosti_spolov_UL_2022_2027.pdf) and through Rules on measures to prevent violence, harassment and ill-treatment (Pravilnik_o_ukrepih_proti_nasilju_nadlegovanju_in_trpincenju.pdf).

3.9.5 Strengths, Weaknesses, Challenges, and Barriers in forestry educational and training system

Strengths:

- Comprehensive structure of formal education: Slovenia has a well-structured forestry education system that covers all levels of education. The courses include field work, internships and theoretical knowledge and prepare students for both practical and scientific careers.
- High scientific and technical standards: Forestry education integrates ecological, technical and business disciplines in accordance with the principles of sustainable forestry.
- Opportunities for non-formal and lifelong learning: Different institutions offer non-formal training, workshops and mentoring programmes for forest owners and practitioners. There are established national vocational qualifications in areas such as chainsaw operation, forest tractor operation and wood processing.
- Pilot initiatives such as mentoring programmes for women in forestry and round table workshops organised by the Slovenian Forestry Institute are promising in supporting young professionals.

Weaknesses:

- Low gender representation and gender-specific support: There is a lack of gender-specific strategies for gender inclusion and there are no systematic programmes to raise awareness of gender equality or gender equality in curricula.
- Perception and cultural barriers: Forestry is still seen as a male-dominated profession. This discourages girls from pursuing such a career.
- Limited practical support for women: Issues such as childcare, work-life balance and inflexible working arrangements are seen as barriers that particularly affect women's career progression. Leadership positions are still dominated by men, with cultural and institutional barriers often hindering women's advancement

Challenges:

- Stereotypes and male-dominated sector
- Lack of role models and visibility: There are few visible female role models, especially in top management and teaching positions. Even among students and professionals, awareness of women in leadership positions in forestry sector is low.
- Structural limitations: limited availability of leadership positions.
- Geographical and socio-economic constraints: many women in forestry come from rural areas where access to opportunities, networks and education can be limited

3.9.6 Opportunities for improvement

- **Modernisation of the curriculum:** Revise curricula to include contemporary topics such as climate change adaptation, gender awareness modules, ecosystem services and green technologies.

- **Institutionalise mentoring and support networks** for women aspiring to an early career woman.

- **Interdisciplinary approaches:** Encourage interdisciplinary studies that combine forestry with fields such as environmental, economic and social sciences. This will promote a more holistic understanding of forestry and enable graduates to look at challenges from different perspectives.

- **Encourage flexibility** in the workplace and support for parents in forestry businesses.

- **Partnerships with industry:** Encourage greater collaboration between educational institutions and the forest industry. This can include the joint development of training programmes, the provision of work placements and ensuring that curricula reflect current industry practises and challenges.

- **Promotion of inclusion:** Create an inclusive learning environment by promoting diversity among students and faculty in forestry education. Implement diversity training and awareness programmes to foster an inclusive culture that values different perspectives and experiences.

- **Increase the visibility** of successful women in forestry through campaigns, events and media.

3.10 Ukraine

3.10.1 Forestry educational and training system

Ukraine's forestry education system includes vocational and higher education institutions. The challenges include funding shortages and the gap between academic programs and industry needs (see appendix 6.9).

Ukraine has a quite developed system of specialized vocational education and training (VET) and higher education (HE) institutions in forestry education. However, during the last decades we have seen that the quality of education is decreasing, because of shortage of financing of staff and resources, lack of professional development of teachers, and a gap between universities and industry.

a) **The earliest forestry professional orientation** starts at the secondary school level within the informal system of education of so-called “school forestries”, where high school students participate in various forestry works, like collection of seeds, planting and growing seedlings, planting seedlings in forest, simple inventory tasks, basics of the forest ranger profession. There are over 500 school forestries operating in schools and at the forest enterprises all over Ukraine.

Higher educational institutions for forestry are spread all over the country, in most cases, covering activities in the territory around the institution's location.

b) **Forest technician professions** as lumberjack, forester, and hunting ranger can be obtained in 19 forestry colleges (schools) in the Carpathians, Polissya and Lisostep geographical regions of the country. Professional trainings for these professions last within the range of 1-3 years.

c) ***High education in the forestry field*** is provided by 27 high educational institutions of I-II accreditation[14] level (professional education level). Those institutions train professionals in the following fields: Forest Management, Hunting Management, Forestry machinery, Forest Harvesting and Primary Woodworking, Woodworking and other.

d) Bachelor's and master's degrees are obtained in the higher educational institutions of III-IV accreditation levels.

In the **Carpathian region** the most prominent higher education institution is the ***Ukrainian National Forestry University (UNFU)***, founded in 1874 in Lviv and considered **the leading** higher education institution in Ukraine with the specialization in forestry, providing training opportunities to the students from all Carpathian regions and beyond. During its history, the University has become a prominent center of both forest and wood engineering education and science in Ukraine, which actively integrates into the European education system.

Apart from UNFU, Uzhhorod, Ivano-Frankivsk and Chernivtsi National Universities also provide forestry education offers.

e) ***Extension training***: In the system of forest management, there is a requirement that each and every forestry staff member (professionals, specialists etc.) conducts professional skill improvement training. This task is delivered by the **Ukrainian Center for training, retraining and upgrade training of forest management staff** (UkrCentrkadrylis), being for decades subordinated to the

[14] According to the status of higher education institutions there are 4 levels of accreditation: I – technical schools, specialized schools (junior bachelor degree), II – colleges and other equal institutions (provide junior bachelor and/or bachelor degree).; III i IV – institutes, academies, universities (provide bachelor and/or master degree). Source: https://ck.ukrstat.gov.ua/shchoric16/Pdf/6_osvita.pdf

State Forest Resources Agency of Ukraine, recently handed over to the State Specialized Forest Enterprise “Forests of Ukraine”.

Main tasks of the Center are: postgraduate studies of the leading staff and specialists of the enterprises and institutions of the SAFRU and other legal and physical bodies; conduction of work safety training for leadership and specialists; publishing of manuals and other training materials; research; consultations.

There is a **Carpathian Regional Training Center** as a branch of the UkrCentrkadrylis, located in Ivano-Frankivsk city, focused on training of forestry and forest management specialists from four Carpathian regions of Ukraine (Zakarpattya, Chernivtsi, Ivano-Frankivsk and Lviv).

Overall, the education and training system regarding forestry and forest-related issues is a traditional one, with rather outdated capacities for providing flexible opportunities for education of temporarily disadvantaged persons, including women on maternity leave, women in office positions or women with lower educational level.

To imagine the features of the above mentioned institutions, the following table can be used. This is a snapshot of key institutions within Ukraine's forestry sector, highlighting their distinct roles and strategic orientations.

Table 10: Key institutions within Ukraine's forestry sector: roles and strategic orientations.

Institutions	**Orient. towards science**	**Orient. towards practice**	**Primary higher education**	**Extension training**
Ukrainian Research Institute of Forestry and Forest Melioration (URIF&FM)				
Ukrainian Research Institute for Mountain Forestry (UkrRIMF)				
National Forestry University of Ukraine (UNFU)				
Other Universities, that provide forestry and related education				
Forestry professional schools and colleges				

Ukrainian Center for training, retraining and upgrade training of forest management staff (UkrCentrkadrylis), including Carpathian Regional Training Center as structural part				

Institutions with a strong orientation towards science, such as the Ukrainian Research Institute of Forestry and Forest Melioration (URIF&FM) and the Ukrainian Research Institute for Mountain Forestry (UkrRIMF), are pivotal in advancing knowledge in forest ecology, biodiversity conservation, and sustainable management practices. They also wish to aim to collaborate closely with forest management entities and industry stakeholders (towards practice).

Institutions categorized under Higher Education primarily focus on providing formal higher education programs related to forestry and forest management, and on ones providing Extension Training aim at professional development and skill enhancement for forestry personnel beyond formal education. Last two columns indicate whether they have a local focus or national reach.

3.10.2 Overview of career paths in forestry

Table 11: Overview of the career paths in forestry

Forestry position	***Education necessary:***	***Tasks performed:***
Master of forest	Basic or incomplete higher education in the relevant field of training (professional junior bachelor, bachelor (formerly also junior specialist degree). Postgraduate education in the field of management. For bachelor - no requirements of work experience, for professional junior bachelor (junior specialist) - work experience in the profession of at least 1 year	▪ Supervision of Forestry Operations: afforestation measures, forest reclamation, protection, fire prevention, and other forestry-related activities, including the cultivation of planting material and forest seed harvesting within the assigned area. ▪ Staff Management: directs the work of forest rangers, organizes labor brigades, provides job instructions and technical guidance, and ensures compliance with labor and occupational safety standards. ▪ Forest Use and Protection Oversight: monitors compliance with forest harvesting regulations, fire safety rules, sanitary standards, grazing and haymaking procedures, and forest resource usage on the managed site.

		▪ Violation Prevention and Enforcement: prepares violation reports, detains offenders as permitted, seizes illegally harvested forest and hunting products, responds to forest fires, and implements pest and disease control measures. ▪ Documentation and Reporting: maintains records of work volumes and quality, manages timekeeping and payroll documentation, and analyzes production performance indicators. ▪ Training and Workforce Development: conducts safety briefings and technical training, contributes to skill improvement programs, encourages innovation and best practices, and fosters teamwork and initiative. ▪ Public Awareness and Community Engagement: engages in outreach activities to promote forest conservation, cooperates with local users, and oversees forest management practices by third parties within the district.
Assistant of forest ranger	Basic, incomplete or complete higher education in the relevant field of training (professional junior bachelor, bachelor, master (formerly also junior specialist and specialist degree). For a bachelor and master (specialist) - no requirements of work experience, for a professional junior bachelor (junior specialist) - work experience in the profession of at least 3 years.	▪ Provides technical supervision of forestry operations within the forest district. ▪ Oversees activities related to forest cultivation, timber harvesting, forest protection, non-timber uses, and seed management. ▪ Carries out forest stand inventory and demarcation of logging areas; prepares violation reports and assesses damage. ▪ Monitors the work of forestry staff and ensures compliance with forest use and fire safety regulations. ▪ Conducts inspections of forest protection in areas assigned to agricultural enterprises or other institutions. ▪ Organizes technical training and instruction for forest workers. ▪ Maintains technical documentation and forest inventory records; updates taxation and mapping materials. ▪ Acts as a forest ranger during forest ranger absence.
Forest ranger	Basic or completed higher education in the relevant field of study (bachelor, master (including former specialist degree). Postgraduate education in the field of management. Work experience in the profession: for a master (specialist) - at	▪ Manages the economic and production activities of the forest district, ensuring efficient use of resources. ▪ Organizes and supervises forestry, silvicultural, fire prevention, and forest protection operations. ▪ Ensures compliance with occupational safety, environmental, and forest use regulations.

	least 3 years, for a bachelor - at least 5 years	▪ Coordinates the work of forestry teams, manages staffing, and supports professional development. ▪ Oversees game management and anti-poaching measures in assigned hunting grounds. ▪ Acts on behalf of the enterprise in legal proceedings related to forest violations and fires. ▪ Maintains records and reporting on forest district operations and forest inventory. ▪ Supervises forest inventory, land reclamation, and scientific research activities. ▪ Responsible for sustainable forest use, forest conservation, and quality control of forestry tasks.
Forest engineer on reforestation/forest cultures	Master's degree	▪ Organizing reforestation, afforestation, seed management, and nursery operations. ▪ Monitoring the quality and timing of silvicultural activities and compliance with safety standards. ▪ Reviewing and preparing forest cultivation project proposals for approval. ▪ Managing records and reporting on forest crops, nurseries, seeds, and post-harvested areas. ▪ Participating in operational planning and forest fire prevention measures. ▪ Implementing innovations, mechanization, and best practices in silvicultural production.
Forest engineer on guarding and protection of forests	Master's degree	▪ Organizing and implementing fire prevention and forest pest and disease control measures. ▪ Developing forest protection programs and overseeing their execution. ▪ Coordinating ground and aerial forest fire protection and supervising fire stations and related infrastructure. ▪ Conducting inspections and monitoring forest health, responding to emerging threats. ▪ Maintaining technical records and preparing documentation on forest violations. ▪ Supplying forest protection units with equipment and organizing staff training. ▪ Leading public awareness campaigns on forest protection and fire prevention.

At the UNFU, the key institution in the country's forestry sector, the share of women in academic and research positions has shown a gradual increase over recent years. The number of female faculty members has grown from 117 in 2022 to 118 in 2023 and further to 134 in 2024. Meanwhile, the number of male faculty members fluctuated from

207 in 2022 to 192 in 2023 and then increased to 210 in 2024. This trend indicates a positive shift towards greater female representation in forestry education, although men still constitute the majority.

In UNFU, the number of female students in forestry education has been steadily increasing over the past years. From 2020 to 2024, the number of female students admitted annually grew from 218 in 2020 to 205 in 2021, 484 in 2022, 562 in 2023 and 613 in 2024. Among the 613 female students admitted in 2024, 51 were enrolled in the Educational and Research Institute of Forestry and Horticulture, accounting for 8% of all female admissions that year.

Focusing on specialty 205 “Forestry”, the number of female students enrolled has fluctuated over the years. In 2020, 15 female students were admitted (10 full-time, 5 part-time), while in 2021, the number decreased to 13 (2 full-time, 11 part-time). The trend reversed in 2022 with 27 students (15 full-time, 13 part-time) and remained relatively stable in 2023 with 25 (17 full-time, 8 part-time). However, in 2024, the number declined again to 18 students (10 full-time, 8 part-time).

The actual number of employees at the State Enterprise "Forests of Ukraine" as of December 31, 2023. was 26,376, of which 4,236 were women.

Some more gender segregated data was provided by one of the leading universities in Ukraine in the field of forestry and forest management, National University of Life and Environmental Sciences, structure of which includes Education and Research Institute of Forestry and Landscape-Park Management. Within the last 5 years number of male students in the Institute amounted to 429 persons, while female students – 176. Typical situation in the teaching and management staff, consisting of 58 men and 49 women.

3.10.3 Gender awareness in forestry educational institutions

Unfortunately, and contrary to the demand of students and requirement of time, there are no specific awareness programs or activities promoting gender equality on a systemic basis in the higher education institutions of Ukraine. Some scarce information comes from the course on forest certification under FSC scheme, which includes gender issues in the evaluation process.

3.10.4 Strengths, Weaknesses, Challenges, and Barriers in forestry educational and training system

Strengths:

- Ukraine has a quite developed system of specialized vocational education and training (VET) and higher education (HE) institutions in forestry education. The system of professional education in forestry is well distributed across the country, providing access to all interested to study close to the place of life and work.

Weaknesses:

- Main weaknesses of the educational system in Ukraine is related to the lack of adequate share of practical training during the studies, which creates a gap between theoretical knowledge students gain and practical requirements of the real work.

- Gap between industry and education is partially related to the above weakness, creating discrepancy between demand in skills of professional and supply of knowledge by the educational institution.

- Lack of clear understanding by students, what types of professions and works they will be able to occupy perform at the market, including wide range of emerging professions related to climate change adaptative decision making, close to nature silviculture, conversion cuts, consultancy in the field of forest management, biodiversity indicators of the forest, forest therapy and recreation etc.

- During the studies it is important for students to get mentorship support and exchange with other professionals, this element of the studies is also missing in educational system of Ukraine, as a systemic one.

Challenges:

- Main challenges for the forestry students and graduates, especially for girls and young women, is related to access to jobs market: very often women don't consider entering jobs which require field work and outdoor work, having initial prejudices that it is not a work for women.

- Secondly often, due to lack of understanding what opportunities, related directly to their education are out there at the market, graduates don't see the variety of career paths they can choose from, leaving them focused on the traditional career paths of forest ranger, master of forest, forest ranger assistant etc.

3.10.5 Opportunities for improvement

- Taking into account that most of the forestry schools and universities contacted do not have any gender related courses or gender related topics, integrated into the basic courses, the opportunities for improvement are wide.

- Based on the interviews with female forestry practitioners there is a high need to integrate gender related topics along with general equity and equality wider scheme into the educational program, providing students with the knowledge on legislation, global and national trends, local specifics related to gender and other equalities. It would be valuable to introduce concepts of work-life balance, share of responsibilities, acceptance of women at traditional work for man, like operator of machinery, forest ranger, hunting ranger, leading positions in forest management.

- What would be valuable at this stage is to have a separate training for teachers of forestry schools and universities on the standard of behavior towards students, with no making difference by gender, eliminating cases like making preferences to girls during studies vs. more demanding attitude towards male students. Overprotection of girls and young women during field work again while demanding from boys and men to perform at required level.

4 Recommendations for gender awareness concepts for forestry educational and training systems in the Danube Region

In forestry, which is a traditionally male dominated sector, the topic of gender has been introduced into forestry education only to a limited extent and efforts made to change this situation are still far from what they should be given the importance of the topic for the forestry sector.[15] Furthermore, gender-aware forest education has not yet become mainstream in educational facilities and existing measures to promote gender equality have not always proved effective.[16] Research on gender equality in forestry educational institutions along with the International forestry student association have drawn attention to these issues and called for gender-aware and inclusive practices in forestry education.[17] The following chapter explores concepts and ideas for raising gender awareness in forestry educational and training systems and outlines a set of recommendations for educational systems in the Danube Region.

4.1 Previous research

The topic of mainstreaming gender awareness into forestry education is fairly new to science and the existing research is primarily focused on Scandinavia and North America. Recent publications suggest ways how to promote gender equality and increase gender awareness in forestry education. The main recommendations of these publications include ideas for trainings and courses, mentoring, networks, awareness-raising initiatives and role models. (Table 12).

Table 12: Ways to increase gender awareness in forestry education – Key findings from recent publications

Measure	Description	Source

[15] Ibid, 4

[16] Ibid, 4

[17] Ibid. and Öllerer, B., Loch, T. K. (2022): IFSA Open Letter on Gender and Forest Education. International Forestry Students' Association. Online available at: https://ifsa.net/gender-open-letter/

Trainings and courses	Increase the gender equality competence among leadership and teachers through trainings Gender equality trainings for people in leadership levels of educational institutions Bystander training for employees and students to change behavior of people witnessing an event to intervene in a positive way Counteract structural discrimination through establishing courses on gender awareness within the forestry sector	Andersson and Lidestav 2015 Grubbström 2020 Öllerer et al. 2022
Mentoring		Larasatie et al 2019
Networks		Öllerer et al. 2022, Larasatie et al 2019
Awareness-raising	Creation of information material on gender awareness for companies where students have study visits Increase existing knowledge on gender awareness	Wickman et al. 2013 Öllerer et al. 2022
Role models	Introduce and highlight role models for FINTA*[18] students	Öllerer et al. 2022

In the Danube Region publications and data about gender awareness in the forestry education is scarce. Insights into gender aspects of forest education and recommendations to introduce and strengthen gender equality and inclusion into educational institutions can be found in the research of the Fem4Forest and the Fem2forests project (D.1.1.1). These recommendations are comprehensive and can be clustered into communicational, educational and institutional measures (Table 13).

[18] FINTA is the abbreviation of Female, Inter-sex, Non-binary, Trans and A-gender.

Table 13: Ways to increase gender awareness in forestry education – Key findings from Fem4Forest research and Fem2forests D1.1.1

Measure	Description	Category
Awareness-raising	Campaigns to dispel misconceptions about forestry, showcasing the sector's diverse opportunities and modern practices to modernize the image of forestry. Awareness raising campaigns to change people´s perceptions on women role in forestry Implement awareness-raising initiatives at educational facilities to combat gender stereotypes and promote inclusivity.	Communication
Gender-sensitive communication	Equality-oriented presentation of the fields of work in forestry and communication of equal opportunities for obtaining jobs in forestry to girls and boys Equality-oriented public relations – being aware of language, pictures, examples	Communication
Role models	Feature successful women in forestry to provide role models and inspiration for young women.	Communication
Networks	Build more networking opportunities that enable a transfer of knowledge from role-models in forestry to young professionals.	Communication
Early education initiatives	Introduce forestry-related activities in elementary schools to reduce prejudices and promote forestry as a sustainable career option to girls, boys and their parents	Education
Mentoring	Develop mentoring programmes to help young women develop a vision for their careers and receive concrete help in realizing it.	Education
Training	Qualification programs for women for gaining security and self-confidence (regarding competencies, abilities, networking). Training programs with emphasis on social skills and communication techniques and training programs that	Education

	teach leadership skills (how to lead a team, communicate with your employees).	
Policy advocacy	Advocacy for policies promoting gender equality to change framework conditions, (e.g. working hours, flexible working conditions, care offers for children and relatives, equal pay initiatives, and supportive networks for female students and professionals)	Institution
Interaction with government bodies	Encourage educational institutions to work with government bodies to develop frameworks that support diversity and inclusion in forestry education and careers.	Institution

4.2 Transnational Alumni Survey

A Transnational Alumni Study with graduates from forestry educational facilities throughout the Danube Region was conducted in the frame of the Fem2forests project from December until March 2025. This study comprised 90 interviews with female professionals in forestry (10 conducted per country) and a transnational survey with 633 forestry graduates from all countries in the Danube Region. In the survey, when asked how forestry education could be improved for women, the topic of gender sensitivity/equal treatment/equality in the sense of respectful and considerate behaviour towards women in forestry educational institutions received the most responses. The answers included ideas on courses for strengthening the self-confidence of women in dealing with 'difficult situations' and increasing their wittiness /communication skills self-confidence, also for men and managers), and also suggestions to sensitize lecturers and managers through courses or further training. Furthermore, survey participants demanded more consideration for the physiological needs of women (e.g. periods, better circumstances for hygiene), awareness raising to change people´s perceptions on women role in forestry, zero tolerance for misogyny, scholarships for women and contact points for women. Other ideas that were important for survey participants to improve forestry education for women were Role Models, Mentoring programmes, and Networks.

The results of the interviewees with forestry professionals during the Alumni studies back the findings of the survey. Interviewees were asked to name their ideas how to include gender awareness in forestry education. These responses along with the recommendations from project partners of the Fem2forests research group from

section 3.1.3 of this report were clustered in categories derived from previous research presented in the last chapter. The findings of this qualitative analysis underscore the recommendations from previous research but also complement them with additional new ideas Based on the analysis of existing literature and the results of the Fem2forests research the first six concepts in Table 14 were identified as the most important for strengthening gender awareness in forestry education.

Table 14: Recommendations for gender awareness collected from forestry professionals during interviews for the transnational alumni study and Fem2forest project partners across the Danube Region. New ideas complementing the findings from previous research are in blue. The most important concepts for mainstreaming gender awareness into forestry education are in green.

MEASURES	AT	BA	CZ	DE	HR	SI	RO	RS	UA
Mentoring programs									
Role models									
Trainings									
Awareness raising									
Gender equality courses (in curricula)									
Networks									
Early education initiatives									
Gender sensitive communication									
Institutional measures									
Interactive Formats									
Funding opportunities									
Support systems									

Collaborations									
Monitoring systems									
Scientific Data									

The new ideas identified in the Transnational Alumni survey and the recommendations for the educational systems of the Danube Region include the following:

- Interactive formats: Discussion groups for mutual support and the exchange of experiences
- Funding opportunities: Scholarships and grants to support female forestry students
- Support systems of educational institutions: Equal opportunities officers should be integrated in training and educational facilities and visible for students
- Collaborations: Integrative approaches to foster collaboration between women and men
- Monitoring systems: Establishing the creation of mechanisms that track the effectiveness of promotional efforts and educational reforms in increasing female enrolment and retention. These could help as a starting point to monitor the impact of implemented initiatives and become a useful indicator for decision-makers to adjust the strategies as needed.
- Scientific Data: Promotion of studies on gender disparities in the forestry sector to develop evidence-based policies.

4.3 Transnational Round Table

The intention of the round table was to verify the most important concepts identified in this study to increase gender awareness in educational institutions (Table 14). To this end experts in education and career counselling from across the Danube Region came together in an online Transnational Round Table conducted on 12 May 2025 via Zoom.

During the event the results from this study were shared and discussed with the participants. The session focused on the following questions:

a) Which measure to increase gender awareness in forestry education is most feasible?

b) Can you name additional concepts or strategies?

For question a) participants were asked to vote on the feasibility of the six most import concepts to increase gender awareness in forestry education identified in Table 14 (Mentoring, Role models, Trainings, Awareness raising, Gender equality courses, Networks) by means of the Mentimeter Tool. The most chosen option was “Role models” followed by “Awareness Raising” and “Mentoring”. The participants considered trainings and networks to be less

feasible. Gender equality courses were not chosen by anyone. During the discussion participants from Romania, Slovenia, Ukraine and Austria stressed the importance of increasing the visibility of women working in forestry as the most important measure to increase gender awareness in forestry education. Participants shared personal experiences with students where close contacts with Female Role Models have proven effective, especially if combined with visits to employers or forest walks.

When asked for additional concepts or strategies the participants shared several ideas (Figure 14) that can be clustered in the categories Role Models, funding opportunities for women, networks, women internships, best practice examples, career mapping tools and awareness of gender roles.

Figure 14: Ideas of Transnational Round Table participants on concepts and strategies to increase gender awareness in forestry education

The results of the expert round table highlight the importance of enhancing the visibility of women in forestry through female role models. They also point out that awareness raising and mentoring are considered especially feasible measures to increase gender awareness in forestry education in the Danube Region. Most of the concepts and strategies named by the participants during the round table coincide with the ones identified in the previous chapter of this report. The only new idea identified during the round table were “career mapping tools” made for women in order to help them to plan their career more effectively and track their personal development.

4.4 Catalogue of recommendations

This study brings together knowledge from several sources and in this way provides a catalogue of measures and ideas on how to increase gender awareness in forestry education. Educators and decision makers in forestry education can use this portfolio of recommendations when developing measures to increase gender equity and awareness in their institutions. Table 15 gives a comprehensive overview of all concepts and ideas collected in this report.

Table 15: Catalogue of recommendations

Measure	Description
Awareness-raising campaigns	Actions to combat gender stereotypes and promote inclusivity.
Gender-sensitive communication	Gender-sensitive language use in organizations including equality-oriented public relations.
Role models	Featuring successful women in forestry as role models for young women.
Networks	Networking opportunities for knowledge transfer, exchange and support.
Early education initiatives	Forestry-related activities in primary and secondary education for children, parents and educators.
Mentoring	Mentoring programmes for young women in education and career starters.
Training	Training programs for women with focus on self-confidence, communication and leadership skills. Bystander trainings for employees and students to change behaviour of people witnessing an event to intervene in a positive way. Gender equality trainings for teachers and people in leadership levels of educational institutions
Courses	Courses on gender awareness as part of the curricula in forestry educational institutions.
Interactive formats	Discussion groups for mutual support and the exchange of experiences
Funding opportunities	Scholarships and grants to support female forestry students
Support systems	Equal opportunities officers integrated in training and educational facilities and visible for students.
Collaborations	Integrative approaches to foster collaboration between women and men

Evaluation systems	Mechanisms that track the effectiveness of promotional efforts and educational reforms in increasing female enrolment and retention.
Policy advocacy	Advocacy for policies promoting gender equality to change framework conditions,
Interaction with government bodies	Stronger cooperation of educational institutions with government bodies to develop frameworks that support diversity and inclusion in forestry education.
Scientific data	Promotion of studies on gender disparities in the forestry sector to develop evidence-based policies.
Career mapping tools	Tools developed for women to plan their career more effectively and track their personal development.

5 Recommendations and Conclusions

The cross-country comparison of educational systems of the Danube Region shows that despite differences in the educational paths, especially in secondary education, most countries face similar challenges. The biggest challenge for all countries that participated in this study is promoting Gender Diversity and Inclusion in Forestry Education. This includes especially issues on gender inclusivity, stereotypes and a lack of female role models, especially in leadership positions. The initiatives addressing gender awareness in forestry education identified in this study are part of higher education while forestry schools and training facilities in all countries completely lack strategies to address gender diversity and inclusion.

Additional challenges that many educational systems across the Danube Region are facing include a need to modernize outdated curricula to meet the changing demands of the industry and a general call for innovations. Chapter 3 provides important ideas on how to tackle these challenges in each country to inspire practitioners and decision-makers.

Gender awareness in forestry education in the Danube region is essential for fostering an inclusive and equitable environment in this vital sector. As the forestry industry faces numerous challenges, including climate change and sustainable management, it is crucial to ensure that diverse perspectives are included in decision-making processes. This report gives an overview of recommendations to increase gender awareness in forestry education and provides a comprehensive catalogue of measures that can be applied for good practice (see Table 15). Of these measures the three most feasible ones identified by the experts in the Danube Region are:

1. **Role Models**: Promoting female role models in forestry is vital for inspiring the next generation of women in the field. By showcasing successful women in various forestry-related roles, educational institutions can help break down stereotypes and encourage young women to pursue careers in this area. Initiatives could include guest lectures, workshops, and field trips featuring accomplished female professionals who can share their experiences and insights.

2. **Awareness Raising Campaigns**: Implementing awareness-raising campaigns focused on gender equality in forestry education can help challenge existing biases and promote a more inclusive culture. These campaigns could involve workshops, seminars, and social media outreach to highlight the importance of gender diversity in forestry. By educating students, educators, and industry stakeholders about the benefits of gender awareness, these campaigns can foster a more supportive environment for all individuals in the sector.

3. **Mentoring**: Establishing mentoring programs that connect experienced professionals with students and young professionals can provide invaluable support and guidance. Mentoring relationships can help women navigate the challenges of the forestry industry, build networks, and develop essential skills. By pairing mentees with mentors who understand the unique barriers faced by women in forestry, these programs can empower the next generation of female leaders in the field.

By implementing these recommendations, stakeholders in the Danube region can enhance gender awareness in forestry education, ultimately leading to a more diverse and resilient forestry sector.

The Fem2forests project is making significant strides in enhancing gender awareness in forestry education across the Danube Region. Through an innovative awareness-raising campaign and a Transnational Ambassador Program, the project aims to foster gender equality within the forestry sector.

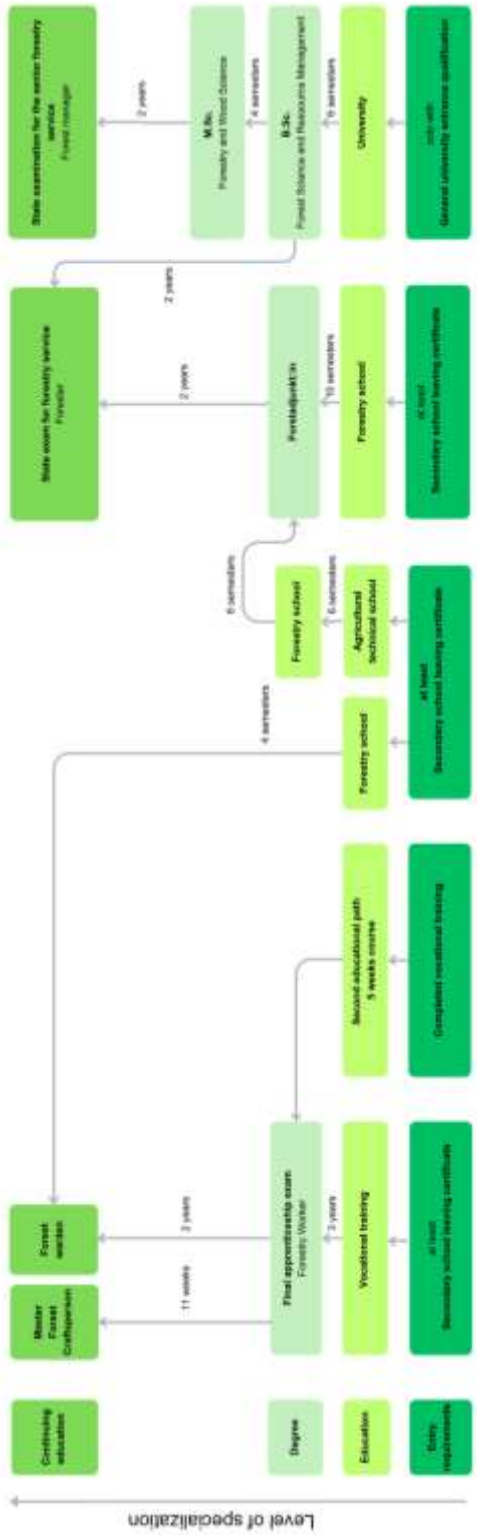
The awareness raising campaign is set to kick off soon, inviting students from all participating countries to engage in a creative initiative where they will develop graphic novels focused on promoting gender equality in forestry. This unique approach not only allows students to express their ideas artistically but also encourages them to explore and challenge existing stereotypes within the industry. By using graphic novels as a medium, the campaign aims to reach a broader audience and spark conversations about the importance of gender inclusiveness in forestry.

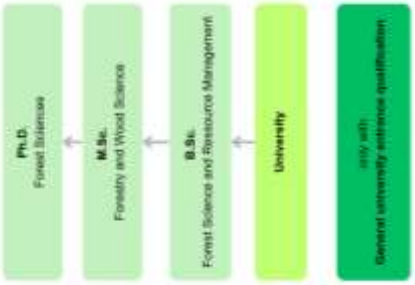
In addition to the awareness raising campaign, the Transnational Ambassador Program will feature role models from across the Danube Region who will participate in various activities designed to increase the visibility of women in forestry. These ambassadors will share their experiences, insights, and achievements, serving as inspirations for young women considering careers in this field. By highlighting the contributions of female professionals, the program seeks to create a supportive network that empowers women and encourages greater participation in forestry.

Together, these initiatives under the Fem2forests project are set to make a lasting impact on gender awareness in forestry education, paving the way for a more inclusive and equitable future in the sector.

6 Appendix

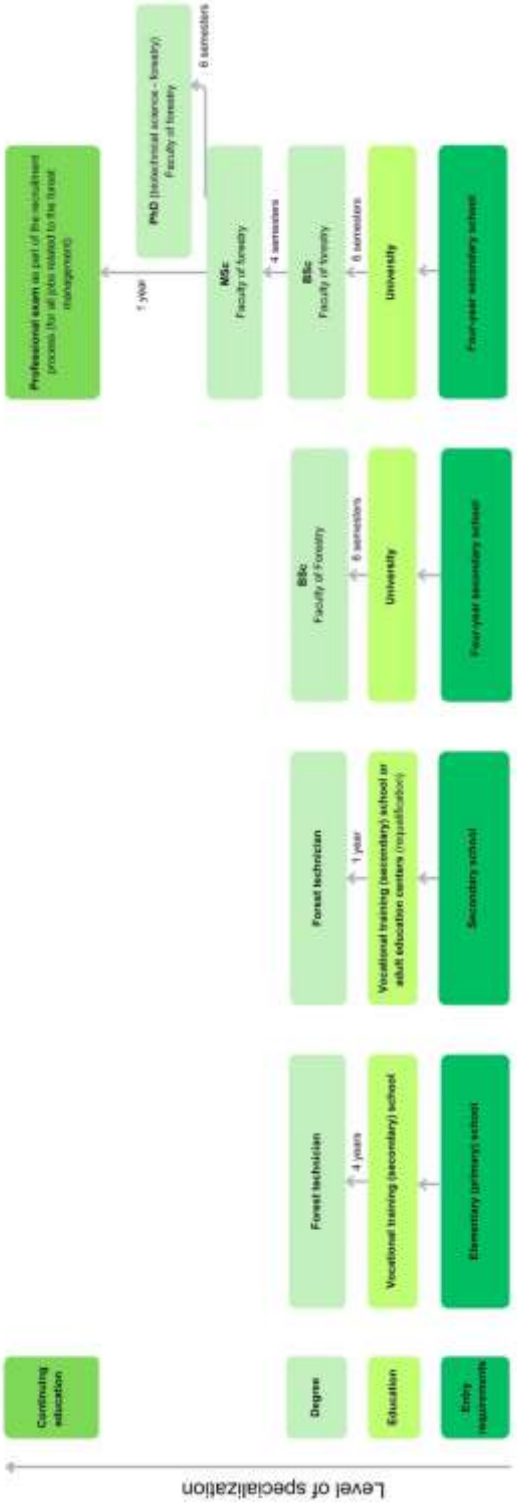
6.1 Overview of forestry educational and training system in



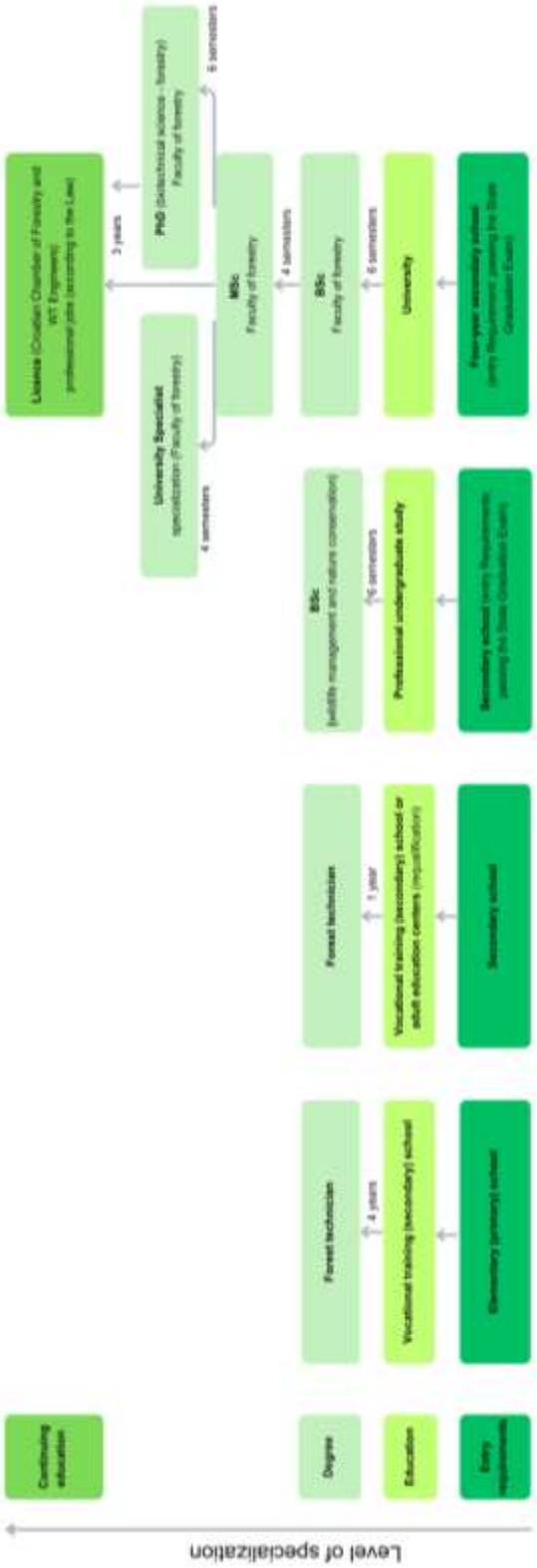


Austria

6.2 Overview of forestry educational and training system in Bosnia and Herzegovina

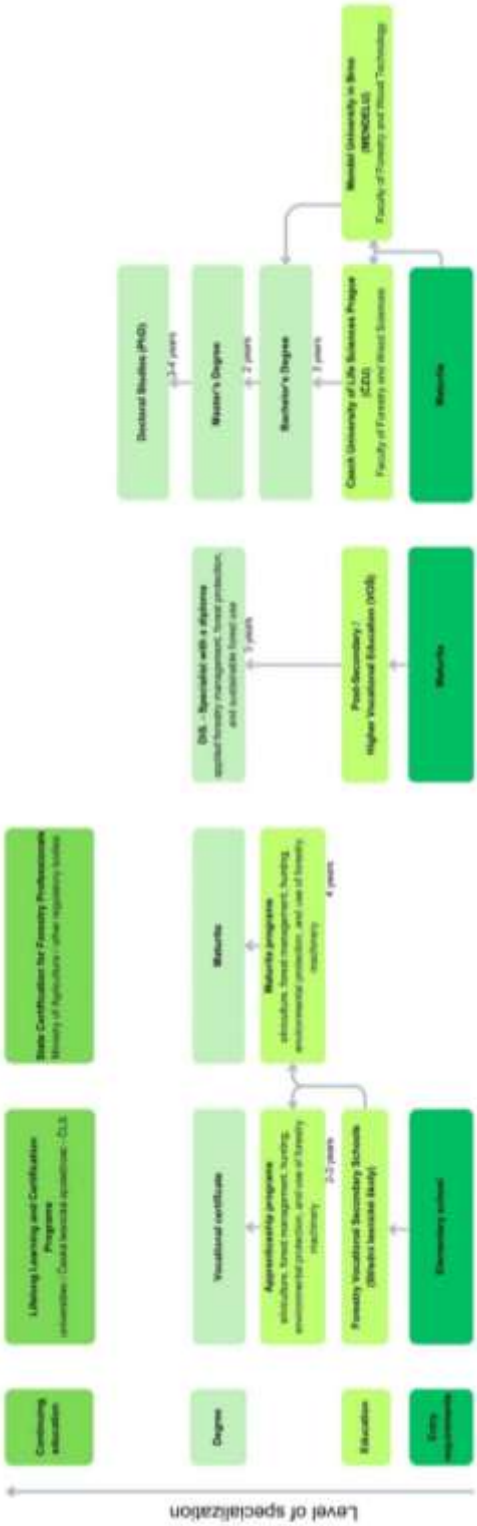


6.3 Overview of forestry educational and training system in

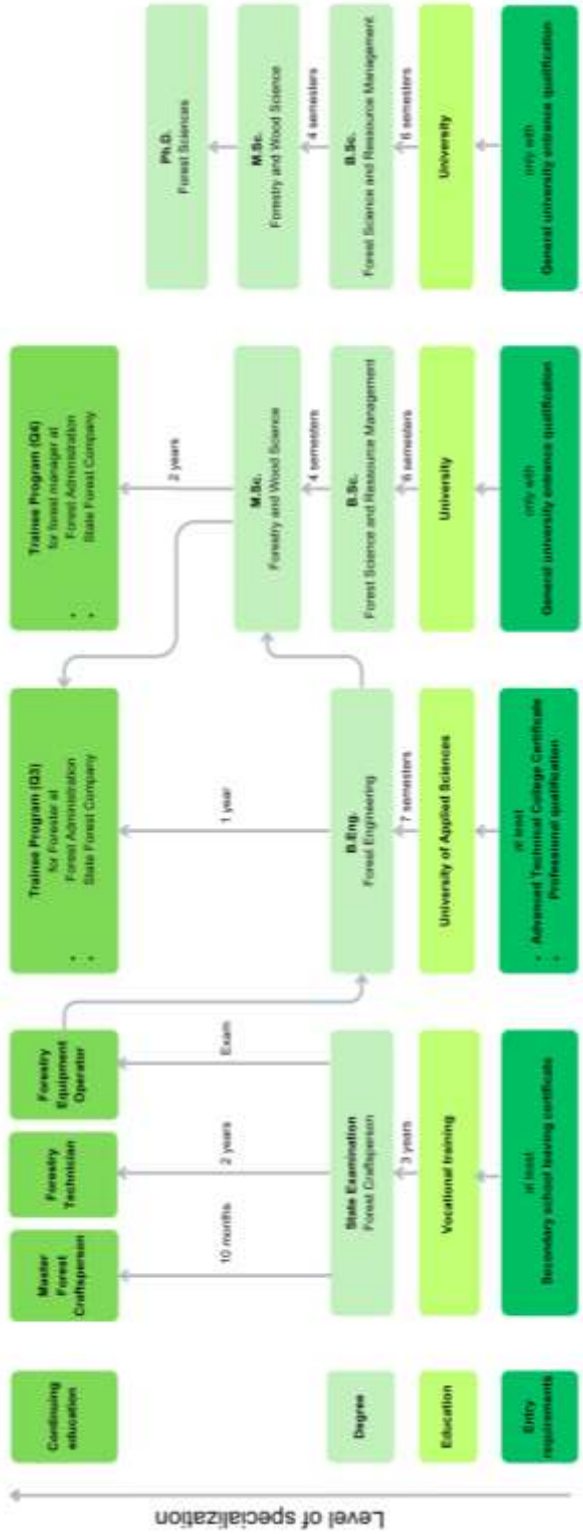


Croatia

6.4 Overview of forestry educational and training system in Czech Republic



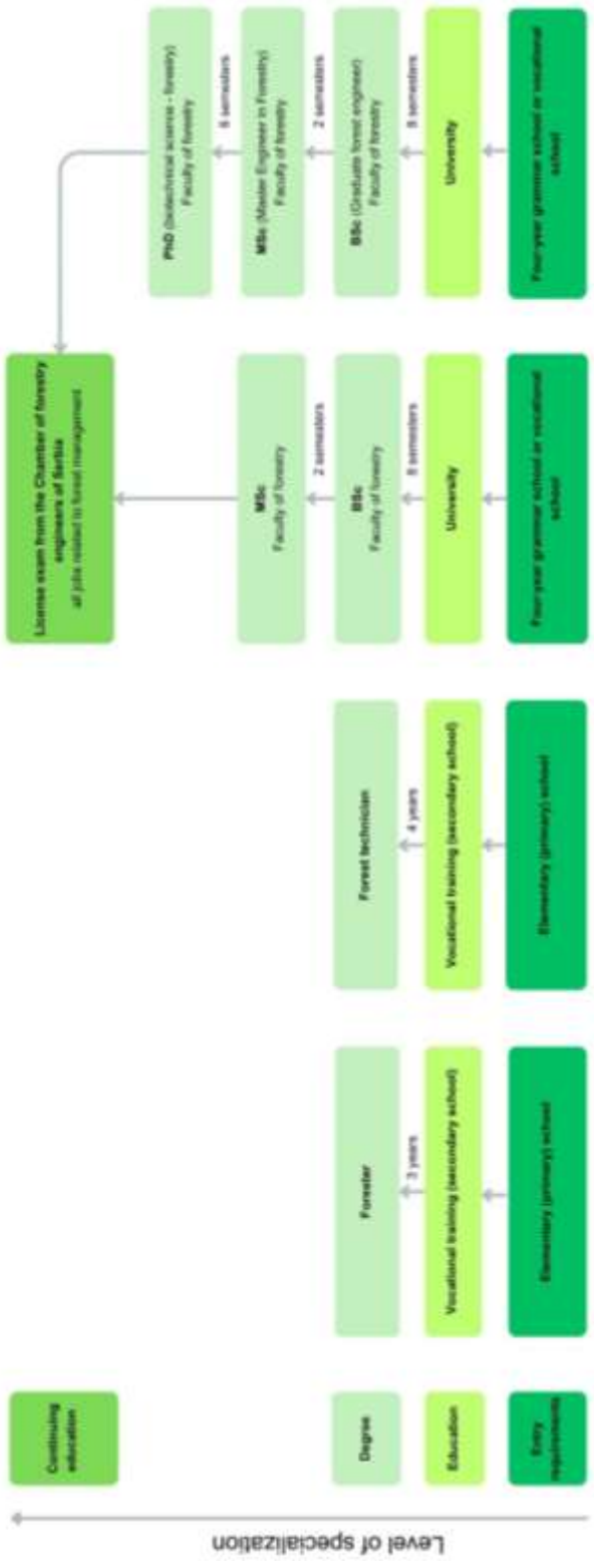
6.5 Overview of forestry educational and training system in Germany



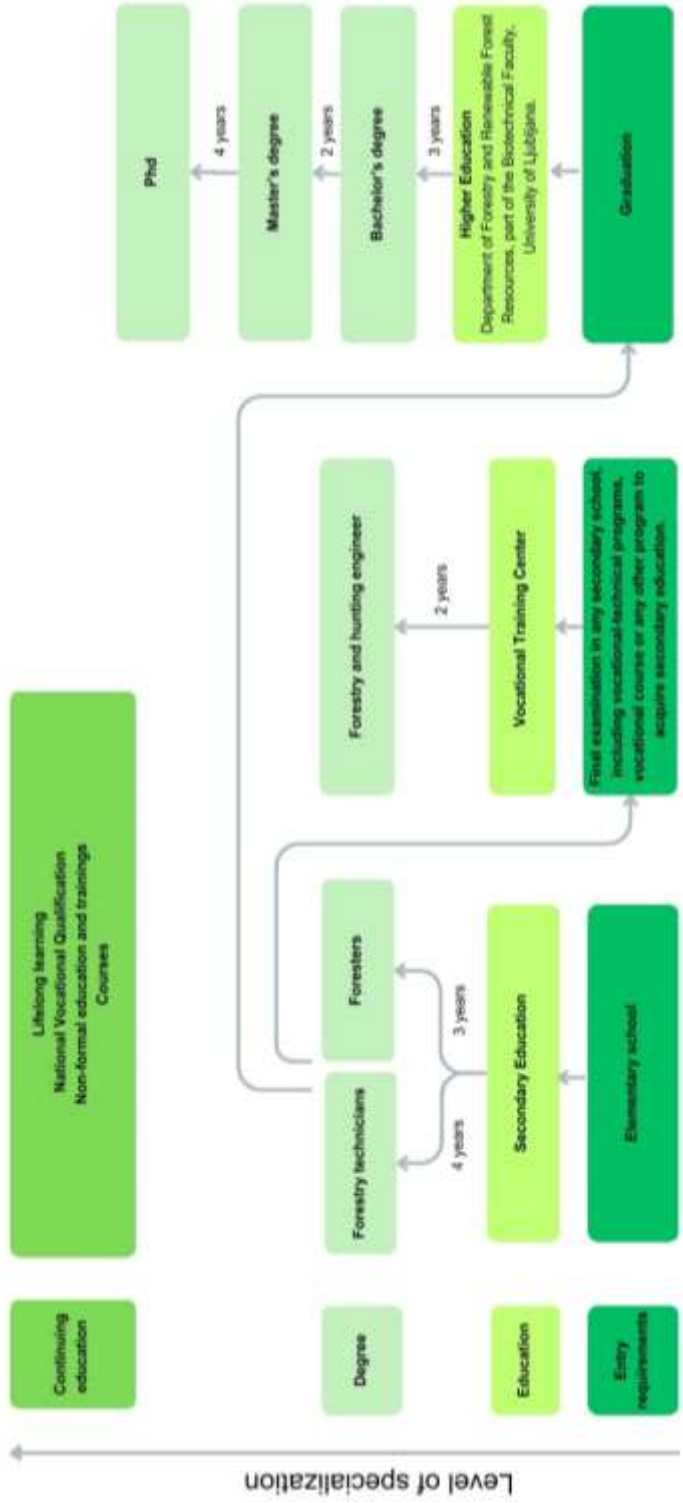
6.6 Overview of forestry educational and training system in

Romania

6.7 Overview of forestry educational and training system in Serbia


Level of specialization
Degree
Education
Entry requirements
Continuing education
Elementary (primary) school
Vocational training (secondary school)
3 years
Forester
Elementary (primary) school
Vocational training (secondary school)
4 years
Forest technician
Four-year grammar school or vocational school
University
8 semesters
BSc
Faculty of forestry
2 semesters
MSc
Faculty of forestry
License exam from the Chamber of forestry engineers of Serbia
all jobs related to forest management
Four-year grammar school or vocational school
University
8 semesters
BSc (Graduate forest engineer)
Faculty of forestry
2 semesters
MSc (Master Engineer in Forestry)
Faculty of forestry
6 semesters
PhD (biotechnical science - forestry)
Faculty of forestry

6.8 Overview of forestry educational and training system in Slovenia



6.9 Overview of forestry educational and training system in Ukraine