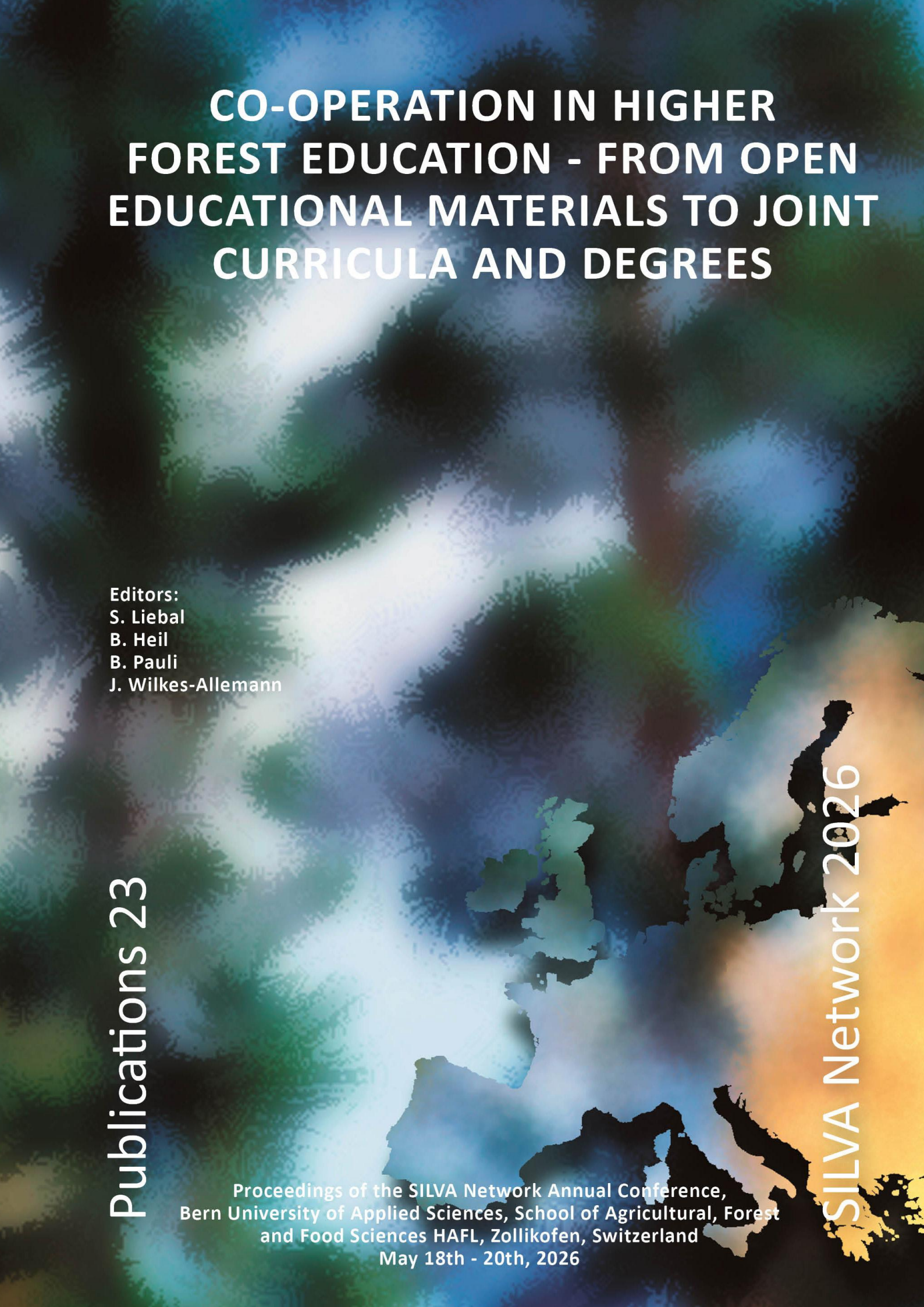
CO-OPERATION IN HIGHER FOREST EDUCATION - FROM OPEN EDUCATIONAL MATERIALS TO JOINT CURRICULA AND DEGREES

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Publications 23

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Conference Topic

Co-operation in higher forest education – from open educational materials to joint curricula and degrees

Higher education in forestry is undergoing a period of rapid transformation, driven by global sustainability challenges, changing labour market demands and the growing interdisciplinary nature of forest-related professions. In response to demands for climate-smart forestry, biodiversity conservation, bioeconomy development and digital innovation, universities are recognising the importance of deeper cooperation in teaching across institutions. Such collaborative approaches facilitate the sharing of expertise, the development of complementary strengths, and the creation of learning pathways that better prepare graduates to tackle complex, transboundary issues.

New developments in higher education such as European Degrees, joint degrees, micro-credentials, and Massive Open Online Courses (MOOCs) are reshaping the academic landscape in Europe. European and joint degrees strengthen cross-border collaboration and enhance student mobility, fostering a more integrated European Higher Education Area. Microcredentials and MOOCs, in turn, support more flexible, modular, and lifelong learning opportunities beyond traditional degree structures. Moreover, Open Educational Resources (OER) have recently emerged as powerful foundation for collaboration. By promoting transparency, accessibility, and adaptability, OER facilitate the co-creation of teaching resources, reduce duplication of effort, and support harmonised quality standards across programmes. Building on these open resources, universities are increasingly exploring joint curriculum development and establishing shared or double degrees that offer students richer and more diverse academic experiences. Together, these innovations are expected to significantly influence the structures and processes of higher education in Europe by promoting greater flexibility, internationalization, and accessibility.

Thus, the SILVA Network Annual Conference 2026 brings together educators, researchers, and institutional leaders to explore new pathways for collaboration in teaching in higher forest education. The event focuses on strengthening cooperation through open educational resources, innovative teaching practices, and the development of joint curricula and degree programs.

Silva NETWORK

Conference Program

Monday 18.05.2026	
11:00 – 12:00	Conference Registration & Welcome Venue: Bern University of Applied Sciences, School of Agricultural, Forest and Food Sciences HAFL, Länggasse 85, 3052 Zollikofen
12:00 – 13:15	*Lunch at the mensa of HAFL*
Opening Session Moderation: Bernhard Pauli	
13:15 – 13:30	Welcome speech by Prof. Dr. Ute Seeling
13:30 – 13:45	Conference Opening: Prof. Dr. Bálint Heil
13:45 – 14:00	Introduction of forestry and forest education in Switzerland: Prof. Dr. Bernhard Pauli
14:00 – 14:05	Introduction of the International Union of Forest Research Organizations (IUFRO): Prof. Dr. Jerylee Wilkes-Allemann
First session – Focus: Joint curricula and programs, incl. factors of success for collaborations	
14:10 – 15:05	Keynotes incl. discussion Moderation: Jerylee Wilkes-Allemann
14:10 – 14:30	Global Perspectives and Innovations in Higher Forestry Education: Strategic Analysis of Joint Study Programs: Keynote by Annie Biju (Deputy Coordinator, Research Group 6.09, Forest Education, IUFRO/ Senior Program Specialist, SankalpTaru Foundation, India) (online)
14:30 – 14:50	Multi-Level Collaboration in Education of Forest Sciences – Case: University of Eastern Finland: Keynote by Piritta Torssonen (University of Eastern Finland, Finland)
14:50 – 15:05	15 minutes group discussion of keynotes
15:05 – 15:35	*Coffee*
15:35 – 16:15	Group discussion Moderation: Sandra Liebal
15:35 – 16:15	Group discussion: barriers and incentives for establishing new joint programs Moderation: Jerylee Wilkes-Allemann
16:15 – 18:05	Presentation & discussion of abstracts Moderation: Sandra Liebal
16:15 – 16:25	Development of transdisciplinary international curricula „Digital Forestry" at Vytautas Magnus University, Lithuania (Vitas Marozas & Nerijus Kupstaitis, Lithuania)
16:25 – 16:35	Comparative analysis of BSc level forestry engineering curricula at Romanian higher education institutions (Attila Farkas & Gábor Molnár, Romania)
16:35 – 16:45	Examples of University Educational Collaborations in Hungary (Bálint Heil et al., Hungary)
16:45 – 17:05	20 minutes group discussion of abstracts
17:05 – 17:15	Forest 4.0 Centre of Excellence as a Driver of International and Interdisciplinary Cooperation in Higher Forestry Education (Nerijus Kupstaitis et al., Lithuania)
17:15 – 17:25	A Future Dream of Collaborative Forestry Education (Noëmi Brüggemann, Switzerland)

17:25 – 17:35	International Integrated Degree Programs - A Success Story? (Achim Dohrenbusch & Dirk Jäger, Germany)
17:35 – 17:45	From Design to Implementation: Experiences and Challenges in an Erasmus Mundus Design Measures (EMDM) Project (Nevzat Gürlevik et al., Türkiye)
17:45 – 18:05	20 minutes group discussion of abstracts
18:30	*Barbeque at the campus of HAFL*

Tuesday 19.05.2026	
First session (continued) – Focus: Joint curricula and programs, incl. factors of success for collaborations	
09:00 – 09:30	Keynote incl. discussion Moderation: Bernhard Pauli
09:00 – 09:20	The do's and don'ts for international collaboration in bachelor and master education: Keynote by Gijs Elkhuizen (Wageningen University, Netherlands) (online)
09:20 – 09:30	10 minutes group discussion of keynote
09:30 – 10:45	Presentation & discussion of abstracts Moderation: Bernhard Pauli
09:30 – 09:40	Teaching Integrative Forest Management at higher education institutions in Europe (Andreea Petronela Spinu et al., Germany)
09:40 – 09:50	Forests for a Sustainable Future: Mainstreaming forest education for primary school students (Ekrem Yazici, Türkiye)
09:50 – 10:00	Cross-Institutional Course: "Landscape Fires: Science, Policy, and Management" for the Master of Forestry Program in Ukraine (Sergiy Zibtsev et al., Ukraine) (online)
10:00 – 10:25	*Coffee*
10:25 – 10:45	20 minutes group discussion of abstracts
Second session – Focus: Open access materials	
10:55 – 11:50	Keynotes incl. discussion Moderation: Sandra Liebal
10:55 – 11:15	Open educational resources (OER) – aims, functions and motivations: Keynote by Mika Rekola (University of Helsinki, Finland)
11:15 – 11:35	Factors inhibiting and promoting the exchange of teaching materials: Keynote by Natalie Räber (Bern University of Applied Sciences, Switzerland)
11:35 – 11:50	15 minutes group discussion of keynotes
11:50 – 12:25	Presentation & discussion of abstracts Moderation: Sandra Liebal
11:50 – 12:00	Transforming the International Forestry Training Centre into a Digital and Gender-Responsive Centre of Excellence (Esra Türkyilmaz, Türkiye)
12:00 – 12:10	Linking Forestry Education, Digital Training and Cross-Institution Cooperation (Pavlina Pancová Šimková, Czech Republic)
12:10 – 12:25	15 minutes group discussion of abstracts
12:30 – 13:30	*Lunch at the mensa of HAFL*

Third session – Focus: Forestry education in Switzerland and beyond	
13:30 – 14:30	Keynote incl. discussion Moderation: Bernhard Pauli
13:30 – 13:50	Coordination and documentation of forest education in Switzerland - insights, experiences and perspectives of the competence center CODOC: Keynote by Julia Isler (Co-director of CODOC, Switzerland)
13:50 – 14:00	10 minutes group discussion of keynote
14:00 – 14:35	Presentation and discussion of abstracts Moderation: Bernhard Pauli
14:00 – 14:10	Micro-credential-based ESG advisory competence development in higher education: accredited specialised training and a digital learning model at the University of Sopron (Bálint Heil & András Polgár, Hungary)
14:10 – 14:20	International cooperation and exchange from a student perspective (Laura Schenk, forestry student at HAFL, Switzerland)
14:20 – 14:30	10 minutes group discussion of abstracts
14:30 – 14:50	*Coffee*
14:50 – 16:15	Workshop and conference wrap-up Moderation: Stefan Dubach
14:50 – 15:45	Workshop & discussion on quality management in joint curricula and programs of higher forestry education
15:45 – 16:15	Wrap-up of the conference & closing speech by Prof. Dr. Bernhard Pauli
16:15 – 17:15	General Assembly of the SILVA Network
18:15	*Meeting point at the main entrance of the Bern train station*
18:15 – 19:15	*Guided tour through the Old City of Bern (UNESCO World Heritage Site) by Alexander Dominik Ezuma May*
19:15 – 21:30	*Conference Dinner at restaurant "Rosengarten" (Alter Aargauerstalden 31b, 3006 Bern)*

Wednesday 20.05.2026	
Field trip on the topic of mountain forestry in the Bernese Oberland	
08:15	Meeting point at the main entry of the campus of HAFL
08:30 – 09:30	Trip to the Bernese Oberland by bus
09:30 – 13:00	Visit of protective forests and input on mountain forestry
13:00 – 14:00	*Lunch (will be provided on site)*
14:00 – 15:00	Trip back to Bern by bus
15:00	Arrival back at campus of HAFL (we will also stop at Bern main station for those who want to catch a train from there)



Aerial image of the Bern University of Applied Sciences, School of Agricultural, Forest and Food Sciences (HAFL) in Zollikofen. Source: HAFL



View of Bern's Old Town. Source: Pixabay



View of the Alpine peaks during the field trip. Source: S. Liebal

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1 Foreword

Higher forestry education must equip graduates to navigate profound environmental, technological, and societal change. Meeting the multiple demands placed on forests—from biodiversity conservation and climate adaptation to renewable resource production and other ecosystem services—requires sound disciplinary knowledge, practical judgement, and the ability to work across professional and cultural boundaries. Cooperation between educational institutions is essential to developing these competencies. The SILVA Network Annual Conference 2026, held at the Bern University of Applied Sciences, School of Agricultural, Forest and Food Sciences (BFH-HAFL) in Zollikofen, Switzerland, from 18–20 May 2026, addressed this challenge under the theme “Co-operation in higher forest education – from open educational materials to joint curricula and degrees.” Bringing together educators, researchers, and practitioners, the conference explored how shared expertise, resources, and programmes can strengthen forestry education. These proceedings capture the breadth of that exchange and its implications for teaching and learning.

Participants were welcomed by Prof. Dr. Ute Seeling, Director of BFH-HAFL, who introduced the university's long-standing commitment to excellence in education, applied research, and international cooperation, highlighting the role of BFH-HAFL within the Bern University of Applied Sciences and its growing international partnerships. This provided a fitting introduction to the programme’s central question: how can institutions translate the ambition to cooperate into meaningful and lasting educational opportunities? International joint study programmes offered one response. Annie Biju presented a global perspective on the transition towards internationally connected, interdisciplinary forestry education, while drawing attention to geographical gaps in provision and barriers to accreditation and credit transfer. Piritta Torssonen complemented this perspective with examples from the University of Eastern Finland, showing how cross-institutional courses, interdisciplinary studies, and structured student mobility can be embedded within curricula.

Contributions on integrated and double degree programmes examined their benefits for international experience, language skills, specialist knowledge, and professional networks. They also called for a careful assessment of outcomes, as evidence that double degrees consistently improve career prospects remains inconclusive. The FORCLIMED initiative on Mediterranean forest health under climate change illustrated the practical demands of designing a joint master’s programme, from developing an integrated curriculum to negotiating partnership agreements and managing changes within a consortium. The conditions for successful cooperation were a recurring concern. Gijs Elkhuizen emphasised trust, mutual respect, and a shared commitment among academic staff, educational management, and institutional leadership. Partnerships require an understanding of each institution’s priorities and constraints, backed by sufficient resources and a willingness to adapt established procedures. Comparative research

on Romanian forestry engineering curricula added another dimension: identifying a common disciplinary foundation while retaining specialisations that reflect institutional strengths and labour market needs.

Cooperation across educational levels also received close attention. Noëmi Brüggemann's vision for Swiss forestry education connected universities, universities of applied sciences, and vocational forestry schools through shared courses, field weeks, and living laboratories. Realising this vision requires coordinated timetables, transparent credit recognition, and accessible teaching resources. Examples from Hungary demonstrated how joint curriculum development and sustainability courses can put such collaboration into practice. Digital transformation is reshaping both the competencies forestry graduates need and the ways they acquire them. The Digital Forestry master's programme at Vytautas Magnus University integrates forestry, information technologies, data science, and environmental sciences, preparing students to use remote sensing, artificial intelligence, modelling, and decision-support tools. The Forest 4.0 Centre of Excellence connects these developments with research, technology transfer, and industry partnerships, extending their application to professional development and lifelong learning.

The educational value of these tools depends on their connection to practice. Contributions from Mendel University linked forest ecosystems with wood processing and construction and demonstrated how digital field-training tools can support management exercises in real forests. Shared learning units and comparable decision tasks provide a basis for teaching across institutions. Research on Integrative Forest Management further highlighted the need to combine ecological knowledge with public communication, synthesis, and collaborative problem-solving—competencies essential for making informed decisions under uncertainty.

Open Educational Resources offer another practical foundation for cooperation. Mika Rekola's presentation of the open online textbook "FORESTS" explored how openly licensed materials can broaden access, support common learning outcomes, and enable interactive teaching. It also raised the question of how educators receive recognition for developing and sharing such resources. Natalie Räber's experience with the SOWAL platform showed that effective exchange depends on understanding users' needs, supporting participation, and cultivating an active community. The challenge is therefore as much organisational and pedagogical as it is technological. Several contributions demonstrated how educational partnerships can respond to urgent regional needs. The planned cross-institutional course on landscape fires in Ukraine brings together fire science, policy, and management in the context of war, climate change, and land use change. In Türkiye, the transformation of the International Forestry Training Centre combines applied learning and digital simulations with gender-responsive approaches to forestry, conservation, and disaster management. These initiatives underline the importance of preparing professionals for crisis coordination and for the diverse social circumstances in which forest management takes place.

The discussion also placed higher forestry education within a wider continuum of learning. FAO's work with primary school children emphasised the value of developing forest literacy early through interactive, locally relevant education. CODOC illustrated the role of teaching materials, trainer support, career information, and coordination in strengthening vocational education. At the professional level, the University of Sopron's specialised training in environmental, social, and governance (ESG) matters demonstrated how micro-credentials and digital learning can address emerging competence needs. The student perspective provided an essential measure of the relevance and accessibility of these approaches. Laura Schenk highlighted how motivations, financial resources, and personal responsibilities shape participation in international education. Semester exchanges, short courses, and flexible online formats meet different needs; their success depends on affordability, clear information, credit recognition, and practical support. Cooperation achieves its educational purpose when these opportunities are accessible to a diverse student community.

Taken together, the contributions show that collaboration becomes durable when it is embedded in curricula, supported by institutional arrangements, and shaped by the needs of learners and the profession. They also identify practical opportunities for progress: sharing teaching resources, coordinating field exercises, opening courses across institutions, and building towards joint programmes. The SILVA Network provides a valuable forum for developing these connections and sustaining the exchange on which they depend. We thank all authors, speakers, participants, and organisers for their contributions. We hope these proceedings will encourage readers to turn shared ideas into educational partnerships that prepare future forestry professionals to care for forests and serve society in a changing world.

Jerylee Wilkes-Allemann

on behalf of the editorial and organising committee

Bern, August 2026

2 Global Perspectives and Innovations in Higher Forestry Education: Strategic Analysis of Joint Study Programs

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Abstract

The global forestry sector is currently navigating a period of profound transition, moving from a paradigm of industrial timber production to a holistic model of social-ecological resilience. Central to this evolution is the development of Joint Study Programs (JSPs) and Joint Curricula, which facilitate the internationalization of expertise and the cross-pollination of management strategies. This review evaluates the architectural and pedagogical frameworks of primary global Joint Study Programs (JSPs), including Erasmus Mundus initiatives (MEDfOR, EUFROR, SUFONAMA, GLOFOR), the transatlantic TRANSFOR-M dual-degree, and regional consortia such as the African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE) and the Himalayan University Consortium (HUC) led by ICIMOD. Categorized by continent, these initiatives emphasize regional specializations ranging from Mediterranean fire management to Himalayan transboundary cooperation which significantly enhance graduate employability in climate policy, forest finance, and high-level research. However, significant geographical voids remain in Central Asia and West Africa, where ecological fragility is not yet met with sufficient educational infrastructure. The analysis assesses systemic barriers to JSP scalability, notably accreditation conflicts and credit-transfer complexities, against incentives such as international mobility and scholarship prestige. To meet emerging global demands, we advocate for the integration of digital forestry, indigenous knowledge, and bioeconomy strategies into future curricula. This report concludes that a transition from national silvicultural silos to globalized, interdisciplinary networks is essential to fulfill the objectives of the UN Decade on Ecosystem Restoration.

3 Multi-Level Collaboration in Education of Forest Sciences – Case: University of Eastern Finland

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Abstract

Forest higher education is increasingly influenced by global sustainability challenges and changing labour market demands, requiring graduates to develop broad, interdisciplinary, and adaptive competencies. Forest education must therefore integrate multiple disciplines, flexible learning pathways, and structured collaboration across institutional levels.

The University of Eastern Finland (UEF), School of Forest Sciences, offers forest degree programmes at the bachelor's, master's, and doctoral levels in both Finnish and English. In line with national policies promoting cross-institutional studies, UEF has established curriculum-level collaboration with the University of Helsinki and Karelia University of Applied Sciences (Karelia UAS). This collaboration represents a concrete example of structured cross-institutional cooperation between forest education institutions. It enables the integration of compulsory and elective courses from partner universities into students' personal study plans, thereby diversifying learning opportunities. The cooperation is supported by formal agreements and coordinated administrative systems.

Interdisciplinary competence development is strengthened by integrating studies such as statistics, programming, and business from other UEF faculties into forest degree programmes. Minor studies (25 ECTS), which are compulsory in Finnish bachelor's programmes, provide structured opportunities to broaden students' skill sets beyond forest sciences.

Internationalisation is promoted through curriculum-integrated mobility structures. In the Sustainable Forest Bioeconomy BSc programme, an "exchange window" is implemented during the third-year autumn semester to encourage students to gain international and intercultural learning experiences, either at partner universities abroad or through domestic mobility to Karelia UAS. In addition, UEF coordinates the European Forestry MSc, a joint degree programme delivered in collaboration with seven European universities, and participates in the Transatlantic Forest MSc programme. In both programmes, students complete one academic year at UEF and one at a partner institution, supporting comparative learning and pedagogical diversity.

Overall, strategic multi-level collaboration at institutional, national, and international levels enhances the pedagogical quality, relevance, and adaptability of higher education in forest sciences.

4 Development of transdisciplinary international curricula „Digital Forestry" at Vytautas Magnus University, Lithuania

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Abstract

The forest sector in Lithuania and worldwide is undergoing rapid digital transformation driven by climate change, technological innovation, and evolving societal and environmental demands. The increasing use of remote sensing, artificial intelligence, robotics, and data-driven decision-making is fundamentally reshaping forest management and governance. At the same time, the sector faces a growing shortage of specialists equipped with advanced digital and analytical competencies. To address these challenges, Vytautas Magnus University (Lithuania) has developed a transdisciplinary and international Master's program "Digital Forestry". The program is designed to educate globally oriented specialists capable of operating at the intersection of forestry, information technologies, data science, and environmental sciences. It responds to the global nature of current forest-related challenges and the increasing demand for professionals with integrated ecological, technological, and analytical expertise across countries with strong forest sectors. The program aims to develop innovative and critical-thinking professionals who can apply advanced digital technologies, data analytics, and artificial intelligence to sustainable and multifunctional forest management. Graduates are trained to design data-driven, adaptive forest management solutions that enhance ecosystem resilience under conditions of global environmental change. The curriculum follows structured progression, beginning with filling knowledge gaps in forestry or information technologies, followed by core courses in forest information systems, applied programming, data collection and processing, Forest 4.0 technologies, and scientific communication. Advanced electives include remote sensing, machine learning, forest modelling and simulation, GIS applications, and decision-support systems. The program concludes with professional practice and a master's thesis, fostering applied research, innovation, and international collaboration. The Digital Forestry program represents a novel educational model that supports sustainable forest management through digital transformation and contributes to the development of a new generation of internationally competitive forestry professionals.

5 Comparative Analysis of BSc Level Forestry Engineering Curricula at Romanian Higher Education Institutions

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Abstract

The objectives of SILVA Network to develop open educational materials and to ensure joint curricula for forestry engineering across different countries is something to be welcomed. At the same time, we felt that before making international comparisons, we should get a picture of the national situation through the importance attributed to individual disciplines.

In Romania, nine higher education institutions offer a four-year bachelor's degree program in forestry engineering in the 2025/2026 academic year.

We compared the curricula of each educational institution based on the names of the disciplines taught and the content of the course descriptions. We used the names of disciplines in the Sapientia Hungarian University of Transylvania curriculum as a basis for comparison. We determined the similarity by classifying subjects with identical or equivalent names into one category and disciplines not included in the Sapientia curriculum into a separate category. This allows us to distinguish between a common core, which is included in the curriculum of most universities, and a group of disciplines that differ. The different subjects indicate the direction taken by individual higher education institutions in adapting to labor market expectations and current social challenges.

We discuss separately the importance of teaching artificial intelligence at individual university sites.

6 Examples of University Educational Collaborations in Hungary

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Abstract

In the past decade, Hungarian higher education has undergone a major transformation, particularly through the restructuring of 21 public universities into foundation-based institutions since 2019. This systemic reform has fostered new frameworks for inter-university cooperation, several of which are presented in this contribution.

One notable initiative is the EFOP-3.4.3-16-2016-00022 "QUALITAS" project, a joint effort of the University of Sopron and Eötvös Loránd University's Savaria Campus. The project supported educational development across Sopron, Szombathely, and Tata, with collaborative curriculum design, integration of practice-oriented and international elements, and strong engagement with professional partners for mentoring systems and content development.

Another key example is the EU-funded RRF-2.1.2-21-2022-00011 project, focusing on the digital transformation of education at the University of Sopron. Here, Sopron cooperates with the Universities of Miskolc and Szeged in areas such as curriculum review, molecular-level course development through the CourseGarden platform, and AI-supported analysis of student data to reduce dropout rates.

The University of Sopron also actively participates in the Higher Education Methodology and Educational IT Forum of the Hungarian Rectors' Conference, promoting the exchange of digital education best practices through national workshops.

Furthermore, as a founding member of the Hungarian Universities' Sustainability Platform (MEFP), Sopron engages in joint sustainability education. This includes the online course "Introduction to the Sustainable Development Goals (SDGs)", in which 14 universities participate. Sopron contributes with content on "The Role of the Forest-Based Economy in Climate Change Mitigation", reaching over 300 students from all four faculties of the University of Sopron in 2025, with a total number of 1600 students enrolled per semester from the participating universities.

These initiatives reflect Hungary's commitment to collaborative, future-oriented higher education development, in alignment with international expectations and sustainability goals.

7 Forest 4.0 Centre of Excellence as a Driver of International and Interdisciplinary Cooperation in Higher Forestry Education

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Abstract

The European Union–funded Forest 4.0 initiative aims to establish a sustainably operating competence centre that promotes international and interdisciplinary cooperation in forest related matters, including higher forestry education through the integrated development of education, research, and technology transfer. Coordinated by the Vytautas Magnus University in Lithuania the project is implemented by a consortium of complementary partners, including universities, research institutions, and innovation-oriented organisations, whose expertise spans forestry, environmental sciences, and information and communication technologies. This interdisciplinary collaboration provides a strong basis for the development and application of innovative digital technologies – such as remote sensing, geographic information systems, artificial intelligence (AI), Internet of Things (IoT) solutions, and data analytics – in forest-related education and research.

This presentation analyses the role of the Forest 4.0 Centre of Excellence as a driver of educational innovation by linking advanced research capacities with contemporary teaching approaches and practical implementation. In the educational domain, the centre contributes to the design of internationally oriented and interdisciplinary curricula, supports shared and cross-institutional teaching models, and integrates digital technologies into forestry study programmes, micro-credentials, and lifelong learning formats. A strong emphasis is placed on research-driven teaching, ensuring that emerging digital methods, tools, and infrastructures are systematically embedded in learning environments. In parallel, the competence centre strengthens technology transfer through close collaboration with industry partners, support for start-ups, and pilot applications of digital forestry solutions. By fostering international partnerships and reinforcing the interconnection between education, research, and innovation, the Forest 4.0 contributes to a more integrated, collaborative, and future-oriented model of higher forestry education. The presentation concludes by highlighting key experiences and transferable lessons for initiatives seeking to advance joint curricula, shared teaching models, and digitally enabled cooperation in higher forest education across Europe.

8 A Future Dream of Collaborative Forestry Education

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Abstract

This contribution presents a vision for the future of Swiss forestry education—a dream of a fully connected system that prepares new generations of forest professionals for increasingly complex ecological and societal challenges. In this envisioned future, ETH Zürich, the Swiss Universities of Applied Sciences, and the vocational forestry schools in Switzerland collaborate seamlessly across academic levels. Jointly developed and co-taught courses bring together scientific, applied, and practice-oriented expertise, while shared field weeks and living-lab formats in Swiss forests allow students to work side by side on real management problems and explore digital and climate-adaptation strategies. In such a network, not every institution needs to offer all expertise, as students will learn directly from specialists across partner institutions, ensuring high-quality teaching in each subject area.

Realising this vision requires a supportive administrative framework. Harmonised academic calendars coordinated teaching blocks, and joint timetabling will enable students to follow modules across institutions without conflicts. A consistent ECTS recognition process and aligned assessment approaches will need to be developed to ensure smooth transitions between vocational, applied, and academic programs. To sustain long-term cooperation, a small coordination office would oversee scheduling, mobility opportunities, curricular alignment, and the development of shared open educational materials.

Digitalisation will be strengthened through a joint Open Educational Resources (OER) platform offering accessible teaching materials, Swiss case studies, field data, and interactive tools. Internationalisation remains central to this dream, with participation in European mobility networks enabling students to attend summer schools, blended learning formats, and joint field courses abroad, for example through the ENHANCE alliance.

Together, these ideas form a forward-looking, collaborative, and flexible vision for forestry education in Switzerland—one that supports shared teaching, administrative harmony, and global mobility to equip future professionals for sustainable forest management.

9 International Integrated Degree Programs – A Success Story?

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Abstract

With the Bologna reforms of 1999, the number of degree programs in many European countries has increased significantly, particularly the proportion of English-language programs and the establishment of joint international degree programs. The mandatory mobility required for students to change their place of study in such programs makes them diverse and therefore attractive. Graduates primarily expect a double or joint degree to give them a competitive edge in the job market. However, literature reviews have not been able to definitively confirm whether the expectation that double degrees significantly improve career prospects is actually true.

There is little doubt that today's university graduates will have to reorient themselves professionally to a greater or lesser extent before retirement. To broaden the skillset of university graduates, combined study programs at the international level are considered very helpful. The advantages of such programs include international experience, improved language skills, the development of a specialized profile, and significantly more favorable opportunities for networking.

The three currently existing and EU-funded Erasmus Mundus joint Master's programs in which forestry universities in Germany participate are presented and compared with regard to their structures. In addition to the expected advantages of these academic training concepts, the challenges and problems are also addressed.

10 From Design to Implementation: Experiences and Challenges in an Erasmus Mundus Design Measures (EMDM) Project

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Abstract

Erasmus Mundus Design Measures (EMDM) are short-term projects aimed at supporting higher education institutions in developing new, integrated and high-quality joint master's programs in collaboration with international partners. EMDM projects serve as preparatory projects for comprehensive Erasmus Mundus Joint Master's Degree (EMJD) programmes. EMDMs aim to promote institutional cooperation in line with Erasmus+ priorities and contribute to the development of the European Higher Education Area. Through EMDM projects, it is expected that fully integrated joint programmes will be designed with a comprehensive partnership agreement covering all facets of cooperation between partner institutions, from student selection and admission procedures to joint curriculum design and implementation, and degree awarding powers.

In this context, we developed a joint degree programme called FORCLIMED (Forest Health in the Mediterranean under Climate Change) within the Erasmus+ priority area of “Environment and fight against climate change”. FORCLIMED was coordinated by IUAS (Türkiye) and included UAVR (Portugal), UKIM (Skopje, North Macedonia), UNICT (Italy), and SLU (Sweden) in the consortium. All partners possess significant expertise in the responses of forest ecosystems to disturbances and in the thematic areas addressed by the project.

Throughout the project, a fully integrated curriculum comprising 120 ECTS credits was developed through a series of structured meetings. The draft partnership agreement required for the implementation of the joint master's programme was elaborated in detail, covering academic, administrative and financial provisions. The project was successfully completed, although some difficulties were encountered. For example, changes in the consortium structure—such as the withdrawal of some partners, the addition of new members, and the redefinition of organizational roles—presented significant but manageable challenges. This presentation will critically reflect upon the experiences gained encountered throughout the implementation of the EMDM project.

11 The Do’s and Don'ts for International Collaboration in Bachelor and Master Education

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Abstract

In an increasingly complex and interconnected world, the challenges facing our domain cannot be addressed in isolation. They demand system thinking, interdisciplinarity, and above all, strong international collaboration. This keynote explores how partnerships between universities and educational institutions create value far beyond the sum of individual contributions.

International collaboration enables institutions to specialize in their unique strengths while simultaneously broadening their perspectives. By working together, programs, faculties, and universities can develop complementary niches, fostering innovation and enriching education through shared expertise. Such collaboration is not only beneficial—it is essential for tackling global challenges that transcend disciplinary and institutional boundaries.

However, successful cooperation does not happen by chance. It requires alignment at all levels: educational management, academic staff, and institutional leadership must share a common vision and commitment. Understanding the context of partner institutions—being aware of their priorities, constraints, and sensitivities—is critical. Neglecting this can lead to avoidable obstacles that hinder progress.

Collaboration in education can take place at multiple levels: individual courses, full programs, or entire institutions. Yet across all levels, one principle remains constant: flexibility is key. Meaningful cooperation requires a willingness to adapt internal rules and procedures, to compromise, and to invest time and resources. As with a fine wine, true quality comes at a cost.

Ultimately, the foundation of any successful partnership lies in trust and mutual respect. Without these, even the most promising collaborations are destined to fail. With them, international cooperation becomes a powerful driver for innovation, resilience, and lasting impact in education.

12 Teaching Integrative Forest Management at higher education institutions in Europe

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Abstract

The management of forests and their biodiversity is challenged by new environmental and climatic changes, as well as shifts in the society demands. A successful adaptation to global change of management practices requires well-trained forest managers and, thus a transformation of their education. While forestry education has progressed significantly, it remains unclear how well curricula align with alternative forest management approaches.

In Europe, Integrative Forest Management (IFM) is increasingly used as an umbrella term for approaches that integrate biodiversity conservation and global change adaptation into forest management. Therefore, it is important to understand how the academic community perceives the expectations and obstacles associated with teaching IFM.

Using online surveys addressed at forest sciences teaching staff from across Europe, we analysed structures and competencies associated with IFM curricula in higher education.

Our results indicate that the teaching of IFM should focus on practices that promote natural and site-adapted tree regeneration, partial harvesting, structural heterogeneity, and the retention of habitat trees and deadwood. Experts highlighted that competencies in ecology, resilience, synthesis (i.e. combining knowledge, skills and attitudes), and public communication are essential for IFM. We also identified skills such as collaborative problem-solving as gaps in forestry curricula and pinpoint to opportunities for international exchange.

Our review contributes to the advancement of forest sciences education by highlighting how students can be better equipped with relevant knowledge and competencies for IFM and how future professionals can be prepared to take informed management decisions in times of uncertainty.

Jürgen Bauhus and Florian Schnabel contributed equally to this work and share last authorship.

13 Forests for a Sustainable Future: Mainstreaming forest education for primary school students

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Abstract

A first-ever global assessment conducted by the Food and Agriculture Organization of the United Nations (FAO), the International Tropical Timber Organization and the International Union of Forest Research Organizations has shown that forest-related topics are insufficiently covered in school curricula in most countries. The assessment also found persistent misconceptions about forestry careers as outdated, insufficiently impactful or insecure. Furthermore, results showed that opportunities for outdoor learning and experiential engagement with forests remain limited, despite teachers and national authorities identifying such opportunities as highly effective for strengthening environmental awareness.

Forests for a Sustainable Future: Educating Children is a project led by FAO to increase forest literacy among primary school students. The project was implemented in the Philippines and the United Republic of Tanzania. It developed forest education modules designed to help learners understand forests and their diverse roles through an interactive, game-based learning approach. The project aligns with the programme, “Education for Sustainable Development: Towards achieving the SDGs", launched by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

The project generated substantial regional interest, with representatives from approximately twenty countries across the Africa and Asia Pacific regions expressing the need for similar initiatives in their national contexts.

Building on the project’s outcomes, FAO and UNESCO have been designing proposals to adopt this model in new countries, co-creating forest-education modules with education experts, government partners and local stakeholders to ensure their cultural and pedagogical relevance. The scale-up initiatives will also promote a whole-government and multi-stakeholder approach to mainstream forest education in primary schools, strengthening collaboration across institutions contributing to long-term efforts to transform education systems in support of forest stewardship, sustainable development and climate resilience.

14 Cross-Institutional Course: “Landscape Fires: Science, Policy, and Management” for the Master of Forestry Program in Ukraine

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Abstract

The impact of war, climate change, and land use change in Ukraine has led to a significant increase of the area of landscape fires. These fires have caused greater damage to ecosystems, biodiversity, and rural communities and could be called of fires of “new type”. During 2006 - 2021, the annual area affected by fires ranged from 3 to 6 million hectares, largely due to agricultural burnings. In 2020, four major fires damaged up to 160,000 hectares of forest, impacted 22 villages. During the war from 2022 to 2025, 3.1 million hectares were burned, mostly due to war.

Graduates of the “Landscape Fires: Science, Policy and Management” course must be prepared to take leadership roles in preventing and managing landscape fires in Ukraine. Their training will equip them to address the increasing challenges posed by fire to the country’s forests, natural resources, and communities. This cross-institutional course will be developed within ERASMUS project “Forest Post” during 2026-2027 years.

The course is divided into three main sections:

- Fundamentals of fire ecology and combustion at the landscape scale, including topics such as the fire triangle, combustion chemistry and physics, heat transfer, fuel moisture dynamics, smoke movement, emissions, climate, weather, and wind, overview of research methods in fire behavior.
- National policies for managing landscape fires, discussing strategies, fire legislation, the roles of relevant agencies, the human aspects of fire management, accountability for illegal fire ignitions, and safety concerns for villages and rural communities near fire-prone pine forests.
- Integrated landscape fire management, exploring both long- and short-term prevention measures, preparedness, national early warning systems, fire hazard forecasts,

interoperability, fire detection, sharing information with stakeholders about fire locations, ignition sources, changes in fire season dynamics due to climate change, safety and equipment for personnel, fire suppression tactics and strategies, and rehabilitation of burned areas.

15 Open Educational Resources (OER) – aims, functions and motivations

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Abstract

In research, university faculty strive for maximum openness with their publications, which are tracked through citation indexes. However, in the field of teaching that is based on this research, teaching materials are typically neither subjected to peer review nor published, resulting in a lack of open citations and academic credentials. Open Educational Resources (OER) have long facilitated the online publication of various educational materials, promoting open learning. OER are learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others.

This keynote introduces the concept and aims of Open Educational Resources (OER), as well as relevant repositories of OER in the field of forest science (ROER). It specifically presents an ongoing IUFRO-related project to produce the open online textbook "FORESTS." There are three main motivations for writing an OER textbook: first, the need to formulate mandatory learning outcomes for forest sciences as part of the core curriculum; second, the rising costs of textbooks, which impose greater constraints on libraries and students; and third, technological advancements that allow for more than just publishing a PDF. These advancements enable the use of dynamic graphs, cross-links within the book and to external sources, videos, augmented reality objects, and responsive assignments.

Finally, some conclusions are drawn and recommendations are made, particularly regarding forward-looking prospects for students, teachers, publishers, and university leaders.

16 Factors Inhibiting and Promoting the Exchange of Teaching Materials

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Abstract

What does it take for a sharing platform to work? Five years ago, we conducted a literature review on this topic to serve as the foundation for a platform project for teachers at the vocational school of agronomy.

Is technology key? What about other factors: the users, the conditions, the community management or the education?

The findings were used in the following surveys of platform operators, teachers and school principals. With all this knowledge we gained from the people we were designing the platform for, we conducted an IT project to implement the sharing platform «SOWAL» that was released in August 2022.

We will discuss the factors inhibiting and promoting the use of a platform and sharing teaching material from the literature review and the insight we gained by operating such a platform as well as new questions that arise in today's era of AI.

A summary of the results in German is published on https://miro.com/app/board/o9J_l7f3c5U=/

The final report of the project is available here: https://arbor.bfh.ch/server/api/core/bitstreams/e860f54e-ced4-41a1-9a04-cf1ca85473a9/content

17 Transforming the International Forestry Training Centre into a Digital and Gender-Responsive Centre of Excellence

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Abstract

The International Forestry Training Centre (IFTC), located in Antalya, is being transformed into a regional and global centre of excellence with the support of the Food and Agriculture Organization of the United Nations (FAO) and under the coordination of the General Directorate of Forestry of the Republic of Türkiye. The Centre is being restructured as an integrated training institution where national and international capacity-building activities are jointly implemented, covering forestry, nature conservation, forest fire management, and disaster-related training.

The educational approach of the International Forestry Training Centre is based on an applied and digitally supported learning model that combines the theoretical foundations of advanced forestry education with national practices and relevant international experience. Institutional knowledge gained from forest fire management, integrated fire management, disaster risk management, protected area management, and land restoration is transferred into digital learning environments through simulation-based training modules. This approach enables participants to strengthen decision-making, coordination, and crisis management skills through real-life scenario applications. The training framework is further supported by the Forest School approach, which aims to enhance environmental awareness and disaster preparedness, particularly among children and youth.

A key priority of the transformation process is the systematic integration of gender-responsive perspectives into training tools, simulations, and curricula. In this context, the different roles, responsibilities, and vulnerabilities of women and men in forestry, disaster management, and natural resource use are addressed through case studies and good practice examples developed in cooperation with universities and national and international institutions.

Ongoing curriculum development focuses on sustainable and gender-responsive forest management, sustainable protected area management, combating desertification and land degradation, land degradation neutrality, and forest landscape restoration. Additionally, alternative income-generating activities that reduce pressure on natural resources while supporting women's economic empowerment are promoted. Overall, this transformation represents an innovative institutional model in higher forestry education based on digitalization, internationalization, and multi-stakeholder cooperation.

18 Linking Forestry Education, Digital Training and Cross-Institution Cooperation

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Abstract

Modern forest professionals must have a deep understanding of forest ecosystems and their technological, material, and societal functions. As forestry education is distributed across specialised programmes and institutions, student mobility alone does not ensure comparable competencies. The faculty presents a case study of an educational approach that links forestry—an ecological and economic foundation of landscape stability—with wood processing and wood construction as value-adding industries, forming a comprehensive forest-bioeconomy learning chain.

It is further supported by the FFWT seminar series organised by the Horizon Europe project ERA Chair: Striving for Excellence in the Forest Ecosystem (EXCELLENTIA), which provides openly accessible expert lectures and recordings. This model is complemented by participation in European collaborative projects such as the Horizon Europe project Eurasian Network for Collaborative Research on Tree-Root-Mycorrhizal-Pathogen Interactions in Forest Soils (EuAsiaN-ROOT), which develops open educational resources focused on soil literacy across climatic and geographical gradients. These materials are designed as modular teaching units that can be directly integrated into university courses.

A practical example of hybrid learning is provided by the Erasmus+ project Forest of the Future: Digital Tools for Learners to Foster Continuous Cover Forestry (ForDiL). The ForDiL App is a digital field-training tool that allows students to simulate forest management decisions on marteloscope and travailloscope training plots. By combining real forest sites with digital evaluation of management decisions, the approach supports competence development while maintaining field-based learning. Shared scenarios enable students from different universities and vocational education institutions to complete comparable decision tasks and support recognition of training components across institutions.

Together, these elements form a progression from exchange-based cooperation to structurally shared education: 1) open learning units provide common knowledge components, 2) digital field simulations create comparable competence training, and 3) interdisciplinary curriculum blocks enable integration into joint courses and future joint degree structures.

19 Coordination and Documentation of Forest Education in Switzerland – Insights, Experiences and Perspectives of the Competence Centre CODOC

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Abstract

Codoc is the competence centre for strengthening forestry education in Switzerland. It provides information about the wide range of career opportunities in forestry and supports stakeholders in the sector in promoting these professions. At the same time, Codoc develops and distributes teaching materials for forestry training in Switzerland and supports vocational trainers and teachers. Codoc runs numerous projects to support young professionals, addresses cross-cutting issues such as health promotion, safety or coaching, and fosters networking within the sector.

This keynote provides a concise overview of Codoc's wide-ranging areas of activity. The labour market, society and technology are constantly changing – and this gives rise to a variety of challenges: How can teaching materials be developed successfully whilst balancing the demands of research, pedagogy and practical application? How can basic education remain high-quality and attractive despite ongoing changes? And what fosters effective collaboration within the sector? Using selected examples, it highlights experiences gained from coordinating and documenting forestry education in Switzerland.

These experiences offer insights into how to deal with future changes. Finally, we look to the future: what challenges lie ahead, and what joint approaches might help us overcome them?

20 Micro-credential-based ESG advisory competence development in higher education: accredited specialised training and a digital learning model at the University of Sopron

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Abstract

The integration of ESG aspects (Environmental, Social, Governance) into business operations is a key element of the European Union's transition toward a sustainable economy. Within the regulatory framework aimed at strengthening corporate transparency and accountability, the Corporate Sustainability Reporting Directive (CSRD) plays a prominent role, significantly expanding the scope of companies required to report on sustainability and mandating the disclosure of detailed ESG information. The increasing regulatory expectations require new competencies from both companies and the advisory sector. In parallel, the European Council Recommendation on a European approach to micro-credentials (2022) defines micro-credentials as a key instrument of flexible, short-cycle education designed to address rapidly changing skills demands. In Hungary, the regulatory framework for ESG is established by the Act CVIII of 2023 on ESG, which defines the framework for ESG reporting and corporate sustainability risk management. As a result of this legislation, the demand for ESG advisory and sustainability expert competencies is significantly increasing. In response to these regulatory and labour-market challenges, the University of Sopron has launched the accredited ESG advisory specialised training programme, which supports the targeted and flexible development of ESG competencies as a higher education programme awarding micro-credentials. The two-semester programme is accredited by the Hungarian Economic Development Agency and provides one of the professional requirements for obtaining ESG advisory accreditation. The curriculum covers the main areas of ESG strategy development, corporate sustainability management, ESG regulation, as well as sustainability reporting and data analysis. An innovative element of the educational model is the digital learning platform, which provides online learning materials, interactive modules and knowledge-assessment tests. The learning process is complemented by a practice-oriented methodology: students address real ESG advisory challenges through project-based and cooperative tasks, such as analysing sustainability reports or developing ESG strategies. The presented training model contributes to understanding how micro-credential-based higher education programmes built on digital learning environments can support the rapid development of ESG expert competencies and help companies prepare for compliance with new European and Hungarian sustainability regulatory requirements.

21 International cooperation and exchange from a student perspective

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Abstract

I studied forest sciences at HAFL after completing an apprenticeship. Last autumn, I went to Norway for a study abroad semester at the Evenstad campus, which focuses on boreal forestry and wildlife management. I have participated in several international activities through the International Forestry Students' Association IFSA.

When it comes to international exchange, I see two main target groups. The first group is young, full-time students who want to travel independently, experience a new culture, and learn a language. For them, a study abroad semester is ideal. Important support includes partnerships with universities, recognition of credits (ECTS), help with applications and assistance with accommodation. Affordability is also essential for this group.

The second group includes older or part-time students with responsibilities. They are interested in shorter or distance-learning programs. These students prefer courses that are well-planned, structured, and regular, with recorded lessons they can watch when convenient. Short, compact courses are especially useful, allowing them to participate without long absences.

Overall, international cooperation and exchange can take many forms depending on students' motivations, obligations, and financial resources. From my experience, it is particularly valuable to strengthen international contacts, share knowledge across borders, and broaden horizons.

22 Recommended Publication

The most significant findings arising from the conference have subsequently been published in the following article:

Liebal, S.; Pauli, B.; Seeling, U.; Dubach, S.; Hug, M. and Wilkes-Allemann, J. (2026): Trends and collaboration possibilities in higher forest education. *Allgemeine Forst- und Jagdzeitung* (195), pp. 1-9. DOI: 10.23765/afjz0002109

23 Closing remarks

The SILVA Network Annual Conference 2026 in Zollikofen demonstrated once again how valuable our community is as a European forum for shaping the future of higher forestry education. Under the theme *"Co-operation in higher forest education – from open educational materials to joint curricula and degrees"*, we explored how universities can respond together to rapidly changing societal, environmental and professional demands.

A central message emerged clearly: cooperation should no longer be just an optional additional element of forestry education, but instead increasingly become a prerequisite for its quality and relevance. Joint and double degrees, shared curricula, micro-credentials and open educational resources offer important opportunities. At the same time, successful cooperation requires a clear common vision, mutual benefit, trust, institutional commitment and, above all, people willing to work together.

Our discussions also reminded us that innovation must not come at the expense of the foundations of our profession. Digitalisation, AI, interdisciplinary approaches and new learning formats must complement strong forestry core competencies, practical experience and field-based education. The challenge is therefore not simply to add new topics, but to continuously reconsider how we educate future forest professionals.

This is precisely where the SILVA Network has an important role: connecting institutions, educators and ideas across Europe, providing a trusted space for exchange, and helping translate individual initiatives into a shared development of European forestry higher education.

From Zollikofen, we now look forward to our next Annual Conference at the University of Helsinki. It will be a particularly meaningful occasion: **the 40th Anniversary of SILVA Network**. Four decades of cooperation give us good reason to celebrate – and an even stronger responsibility to shape together the decades ahead.

Prof. Dr. Bálint Heil
President, SILVA Network



Group photo. Source: Sylvain Mazas

Co-operation in higher forest education - from open educational materials to joint curricula and degrees

