Where next for Asia-Pacific collaboration in forestry education?

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ABSTRACT

As with many long-term programs, collaboration amongst forestry educators in the Asia-Pacific region first involved learning more about each other. Once a picture had been built up, it was evident that were considerable regional inequities, with some economies being in a much better position than others. This led to the development of online teaching tools that would be made available to all the members of the Forestry Education Coordination Mechanism. The delivery of these has continued to evolve, especially when Covid led to the instant adoption of large numbers of online courses. At this time, the online courses proved invaluable for many universities and colleges. The materials continue to be used, although such use is not always acknowledged.

Where next? The world is very different to when the FECM emerged. There is much less interest in globalization, and geopolitical issues have gained increasing significance. The inequities identified at the outset still exist, but do not have the same distribution as then. Educators face many challenges not least of which is the intrusion of politics into the classroom. The Mechanism is a strong position to help resolve many, but not all, of these issues in the coming years.

Forest Industry Innovation to Create Sustainable Job in the Future

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ABSTRACT

Indonesia must urgently expand its forest industries research and development capacity as part of a drive to a low-carbon economy. Sustainable timber will be a critical piece in the mix that will be required if we are to have a low-carbon economy. We now have the opportunity to use leading-edge technology to increase the economic viability of the entire supply chain sustainably, which will complement the know-how we already have to manage our forests and the life-cycle assessment of wood products. The marriage of technology and sustainability is the way of the future for all industries, including the Indonesian forest sector. The forest industry, through forest intensification, is among the few industries that can grow while reducing its GHG emissions and remain sustainable. The future for forestry is exciting and bright. The forest sector is in a good position to make the sustainable revolution a reality. The Forestry 4.0 overarching goal of using technology to solve operational challenges while also creating a green job for sustainable forest industry.

Progress in post-pandemic Peruvian forestry education

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ABSTRACT

The presentation will be based on an analysis of the situation of forestry education in post-Pandemic Peru. At present, forestry science professionals are trained in 15 universities (14 public and one private), practically half of them combined with environmental engineering, with approximately 5,000 students in this field in Peru. This figure is worrying if we estimate that more than 50% of the country's territory is covered by forests or land with a forestry attitude (more than 63 million hectares). Formal education in the classroom and in field practices, incentives for the development of research, new incentive modalities for forestry scientific production, such as research circles, research centres, scholarship and grant competitions, the deficit of high quality teachers in the field, priorities to reduce the gaps between research generation and the requirements of the private and public sectors, and the imminent creation of the first PhD in forestry sciences in Peru will be presented.

Forest Ecosystem Services and Livelihood Security of Local Tribal Community Using Geospatial Technologies in Kinnaur of Himachal Pradesh, India

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ABSTRACT

Ecosystem services are the ecological characteristics, functions, or processes that directly or indirectly contribute to human wellbeing. Forest Ecosystem services ensure a healthy ecosystem, and sustain, sustain and fulfill human life and their need sustainably. Kinnaur is situated in the western part of the Indian Himalayan Region and is one of the twelfth administrative districts of Himachal Pradesh in India. As per India State Forest Report 2019, total forest area in the district is 646 sq. km comprising of very dense forest (80 sq. km), moderately dense forest (329 sq. km), and open forest (237 sq. km). The study aims to identify the changes in forest cover and degradation of forest area the district. It also intends to explore the dependency role of different forest products in the livelihood security of the local tribal communities and their perception of forest products for sustainable forest management in the study area. For this study primary and secondary data have been collected from the study area and different government departments and publications. A total of 384 respondents were chosen using a stratified random sampling method from Forest Fringe Villages in the eight forest ranges (Bhaba Nagar, Kalpa, Katgaon, Kilba, Malling, Moorang, Nichar and Poo) of Kinnaur district. To show changes in forest cover Normalized Difference Vegetation Index (NDVI) and Land Use Land Cover (LULC) have been used with the help of satellite. The highest Forest-based Livelihood Security Index (FLSI) was reported in Bhaba Nagar (0.6094) followed by Kalpa (0.6076) and the lowest FLSI was reported in the Malling (0.4393) followed by Katgaon (0.4806) forest range in Kinnaur district. The forest ranges with high FLSI are more secure and sustainable in forest-based livelihood than forest ranges with low FLSI.

Keywords: Forest Ecosystem Services, FLSI, LULC Change Matrix, NDVI, Community

Sustainable forest management based on community agroforestry system - A case study in Lampang province, Thailand

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ABSTRACT

The majority of the agricultural community's lifestyle in Lampang province still revolves around mono-crop cultivation, which poses challenges due to fluctuating crop prices and high production costs. There are limitations in terms of cultivation areas, degraded soil conditions, and issues with improper post-harvest burning practices, leading to the spread of forest fires and destruction of natural habitats. Additionally, they also must face unavoidable climate change, particularly droughts, resulting from the expansion of agricultural areas in Lampang province, especially in the Maechang river basin. During the period from 2001 to 2021, it was found that the rice cultivation area (160.02 sq. km.) remained relatively stable, as it is mostly cultivated for local consumption. However, the areas for maize (124.70 sq. km.) and sugarcane (17.72 sq. km.) have increased by 2.8 times and 9 times, respectively. Meanwhile, forested areas have continuously decreased. Particularly, the deciduous forest areas have noticeably decreased by 16.9%. Therefore, this project aims to establish a sustainable forest management (SFM) model in drought-prone areas, combining traditional knowledge with a strong community network, which has proven successful through the agroforestry approach. The project selects suitable crops for the area and employs techniques such as agroforestry, nurturing and maintaining the results, ranging from short-term to long-term benefits. These diverse outcomes include food, medicinal herbs, timber, raw materials (rubber, dye, fiber), organic fertilizers, and decorative plants. This initiative opens avenues for income generation, ensures food security, and improves the ecological balance by integrating agricultural systems with forest conservation. In the long run, this community-based agroforestry system will add value and benefits to the economy, society, and environment. It will also prepare the community to adapt to future climate change and transformations in all dimensions.

Keywords: Agroforestry, Sustainable Forest management, Community network, Thailand

Enhancing emancipated learning in forestry higher education to linking conservation, communities and industries

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ABSTRACT

Since 2020, forestry higher education in Indonesia has to adapt to a new national educational policy, called the emancipated learning approaches at all levels, called *merdeka belajar kampus merdeka* (MBKM). This policy aims to link students with many aspects of challenges in their future careers. It allows students to take credits outside their home study program in many learning forms, including internship, independent study, research collaboration, community services project, national defense, teaching campus, entrepreneurship, and student exchange in their home country or overseas. To facilitate the students in this policy, the curriculum has to be adapted, such as giving more elected courses at a minimum 20 credits and maximum 40 credits. UGM as one of the leading university in Indonesia mostly collaborated with government, industries and local government to enhance this emancipated learning. UGM has a long history to send students to rural areas in Indonesia, called *Kuliah Kerja Nyata* (KKN) to educate rural villagers. Every year, thousands of students have been deployed to more than hundreds of villages in Indonesia. The Emancipated Learning Policy has also led to a fundamental change in the forestry study program curriculum. Forestry study programs must provide a minimum time allocation of 20 – 40 credits (1 – 2 semesters) to provide opportunities for students to take learning off campus, whether in government institutions, companies, community service, or other universities related to forestry or non-forestry sectors. This policy urges forestry study programs in Indonesia to send up to 25% of their students in various forms of learning. We will present more details about the experience of changing curriculum of forestry higher education in Indonesia, especially UGM, and the implementation of this emancipated learning to expose students with multi-facet

and multidisciplinary of forestry and environmental challenges, including conservation of peatland and mangrove rehabilitation, biomass energy development, silviculture for pine, ecotourism, forest rehabilitation for multi-bussiness, industrial internship, student exchanges, national park management, and *KKN*.

Lectures, labs, and field camps: Maintaining the momentum of quality forestry education during a pandemic.

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ABSTRACT

In March 2020, students at Michigan Tech were informed that they were not to return to campus following the spring break, and that classes would be offered remotely. This provided a very short window of time for faculty to pivot and prepare for online instruction – an instructional modality that was new to many. It was seen as essential to work to ensure the continued engagement of students, and to ensure that they achieved the learning outcomes needed for their long-term career success. Critical to this transition were professional development opportunities for faculty to develop new skills in online and remote instruction. While Michigan Tech already had a requirement to have formal training in online course development and delivery, it was not possible to have all faculty complete this training prior to starting to teach online, though most competed this training by the end of the summer of 2020. A range of additional opportunities were rapidly developed for faculty to share experiences in teaching online and to learn from one another as well as from experts in the field. These opportunities continued from the start of online instruction and through the various challenges of coming back to campus under requirements for social distancing and protection our

community from the pandemic. As the pandemic evolved, and students started to return to campus, courses (especially hands on courses) were modified to ensure that social distancing could be maintained, and spaces could be sanitized between uses. The adaptations that were made were responsive to the changing information associated with the pandemic and overseen by a university task force charged with overseeing the response of the institution to the challenges that were present.

Michigan Tech is the only forestry program in the United States that requires a full semester, residential field camp experience. A critical decision had to be made as to whether to offer our hands-on Summer Camp experience over an 11 -week period starting in May 2020. The decision made by faculty was to offer this suite of classes to ensure that students stayed on course with the program. The summer courses were taught remotely with the students at remote locations. Each student had a package of tools and equipment mailed to them, and they each worked in forested settings local to where they were living during the pandemic. This provided opportunities for hands on skills development and practice, and resulted in a broader array of forest types being represented during student reports to the class than would have been the case when all students were in residence at a field campus location. For the Fall Camp experience in 2020, students returned to the field campus for their courses. To minimize impacts of the pandemic, students had the option to be screened for COVID 19 at the start of the 14-week experience, maintained social distancing throughout the experience, and lived and worked in pods, such that the number of people an individual student interacted with was minimized. Faculty instruction was a mix of remote and in person, and opportunities to teach outdoors were maximized. While here were some cases of students needing to be isolated due to contracting the virus, most students remained healthy during the semester. The staff at the field campus provided the needed support to students who spent periods of time in isolation.

Throughout the pandemic response, regular interactions occurred with regional partners who are part of the National Association of Forest Resource Programs (NAUFRP). Regular zoom meetings allowed programs to discuss the options that they

were pursuing and share best practices and their experiences. Institutions varied in the extent to which classes continued to be offered, and how the detailed logistics of teaching during the pandemic were handled.

Since Fall 2020, courses have increasingly returned to pre-pandemic status. However, the skills developed by faculty in the remote teaching environment have enabled increased access to course materials which benefits enrolled students. Students who have graduated after spending a part of their program during the pandemic appear to have similar career success to those who graduated prior to the pandemic, although detailed measures of this are not yet available.

Transition of Forestry Education from Traditional Forestry to Sustainable Forest Management

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ABSTRACT

Forest science education at tertiary level has had several challenges in Sub-Saharan Africa. The massification phenomenon of education seems to now also touch forest education at least in some African. countries. In many countries, the curriculum of the traditional forest education was adopted from the colonial past and was, therefore, heavily skewed toward production forestry silviculture. However, this has evolved in recent years to reflect the local forest management objectives Thus, the traditional forestry with silviculture of mono-crop plantations has given way to forest management reflecting the complex natural forest systems in Africa. This has also moved from conservation of the forest resource to forest management with people in the form of adaptive, participatory forest management. A modern day forester in Africa assumes a variety of roles that constantly challenge them to remain professionally relevant in a dynamic system including the continuously expanding number of stakeholders that need to be engaged in the forestry sector cuts across political, social and economic boundaries. The forester's job has shifted from simply managing trees and forests for timber to managing trees and forests to achieve the interests of various stakeholders. An example from South Africa, showed that, while the importance of traditional forestry competencies such as silviculture , forest health, forest operations and technology and the biology of trees was relatively high, the competencies given the highest ratings were written communication skills, oral presentation skills and computer literacy.

Abstract: Forestry Education in Vietnam: Transition from Traditional Forestry to Sustainable Forest Management

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ABSTRACT

The transition from traditional forestry to sustainable forest management has been drastically implemented by the Vietnamese government to catch up with the global trend. According to the latest provisions in Clause 19, Article 2 of the 2017 Forestry Law (effective from January 1, 2019), The following rules apply to this content: Sustainable Forest management is a form of forest governance that guarantees the accomplishment of forest development and conservation objectives, preserves, and enhances the values of the forest, enhances human livelihoods, safeguards the environment, and supports the preservation of national defense and security. As such, new policies, programs, and approaches as well as new institutional and individual capabilities (knowledge, attitudes, values, and skills) in forestry are needed. To maintain its relevance, Vietnam National University of Forestry, as a leading forestry university in Vietnam, has initiated changes in its academic programs so that it will be more responsive to sustainable forest management challenges. Training programs have concentrated more on increasing understanding of the economy and society in the triangle of sustainability: economic, social, and environmental. These updates also include frequent introduction of new national and worldwide sustainable development orientations. Besides, international training programs have been developed to provide students with a fresh perspective on how forestry is developing throughout the world.

Bridging the Gap: Forestry Education in the 21st Century through Short Field Expeditions for Urban Students

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ABSTRACT

Forestry and environmental science students with urban backgrounds often face a lack of field experience, hindering their ability to integrate theoretical knowledge into practical applications. Field courses have emerged as essential tools for fostering this integration. This plenary talk aims to present a comprehensive overview of activities and teaching objectives implemented to address this issue, highlighting the outcomes derived from short field expeditions. By examining the experiences of urban students engaged in forest and biodiversity conservation, this presentation sheds light on the transformative potential of these expeditions. The talk emphasizes the significance of such initiatives in narrowing the gap between urban students and their understanding of sustainable forestry practices, environmental conservation, and the crucial role of forests in maintaining biodiversity. The findings provide valuable insights for educators seeking to enhance forestry education in the 21st century by incorporating practical field experiences that foster a deeper connection between students and the natural world.

Don’t use the F-word; Deforesting Tertiary Education at the University of Melbourne.

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ABSTRACT

Since 1910, Forest Science education has been delivered through the Victorian School of Forestry at the University of Melbourne’s Creswick campus, where formal connections were established with the University of Melbourne in the 1940s. Since this time, the University of Melbourne have delivered tertiary level education to train professional Forest Scientists for the forestry sector. Largely this has been undertaken through the Bachelor of Forest Science, a four-year professional degree, however with the move to the ‘Melbourne Model’ in the mid-2000s, where generalist undergraduate degrees and vocational master programs pathways were established, Forest Science education moved to the graduate sphere and was delivered through the Master of Forest Ecosystem Science (MFES). More recently, the demand for forest science and forestry programs by students has decreased significantly as the sector has been suffering ‘image problems’, particularly in native forest production systems which have traditionally made up a significant part of the sector, however, the need for forest science skills and knowledge to manage forests in todays’ world is as important as ever as we take on the challenges of caring for forests and their multiple values in the face of changing climates. In 2019, The Master of Ecosystem Management and Conservation (MEMaC) and it nested program the Graduate Certificate of Bushfire Planning and Management replaced the MFES. The MEMaC broadens the scope of the MFES by preparing graduates for a wider range of land management employment pathways while retaining a forest flavour. At its core, the course acknowledges the need to prepare tomorrows’ land manager with an understanding the biophysical and the social aspects of land management and how to work across the local and landscape levels to address the problems of the future. The course aims to development key practical and technical

based skills sets as well as the knowledge and theories that underpin them creating graduates who can act, manage and lead. This presentation will draw on the review that was undertaken to establish the MEMaC and how this program is received while shedding light on the deforestation of education and why we don't use the f-word 'forestry' anymore.

Challenges and Opportunities of Online Forestry Education at Kasetsart University, Thailand

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ABSTRACT

In late 2019, the world experienced the significant impact of the COVID-19 outbreak. This situation led to extensive disruptions in traditional teaching and learning approaches across the globe, including within Thailand's educational landscape, notably impacting the Faculty of Forestry at Kasetsart University. The sudden shift to online learning and teaching brought forth a multitude of challenges and opportunities. KUFF, Thailand, like many other places, encountered difficulties in adequately preparing educations, students, and educational institutions to effectively cope with this transformative shift.

According to the survey conducted among forestry students regarding online learning an detaching, several significant challenges were confirmed. These included difficulties in understanding the context of the lessons, issues with unreliable internet connectivity, struggles with time management, concerns about online examinations, decreased motivation, challenges with assignment organization and evaluation, and distraction posed by the home environment. Furthermore, a prevalent concern among students was the perceived incompetence of some lecturers due to their limited technical proficiency, online teaching skills, and constraints in using technology, which subsequently impacted the quality of audio and video during online session.

These challenges brought about by online learning and teaching present an opportunity to implement essential pedagogical review while providing additional support, both in-kind and in-cash. By taking a realistic approach and recognizing the limitations and possibilities of available technologies, education institution can develop strategies that do not rely solely on a single technology but encompass a diverse range of technological

tools. This inclusive approach ensures that all students' individual needs and circumstances are carefully considered and catered to. By combining pedagogical adjustments with appropriate support, we can create a more effective and equitable online learning and teaching environment for students.

Think globally and act locally in forestry: how to connect the sky view to on-the-ground operation in forest management

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ABSTRACT

The Covid-19 pandemic posed serious challenges to all aspects of forest science education. For three years between April 2020 and Spring of 2023, many field-based labs had to be cancelled or modified to minimize the risk of infection through close contacts. This was particularly serious during 2020, but overnight field classes that utilize lodges and/or long bus rides could not be offered even during 2021 and 2022. At Kyoto University, we started to provide alternatives, for example, bringing branch samples to the University campus the day to provide alternative “tree-species identification course”. However, this was not optimal in terms of learning the “trees” and not just leaves and twigs. Many classes were taught online, which often resulted in better participation from students who lacked other types of activities that compromise their focus on studies in pre-covid time. Meanwhile, there has been remarkable advances in application of remote sensing technologies, whether especially air- or satellite-born LiDAR, affordable drones, 360° camera, etc., that allow assessments of forested areas and forest structure. We are not integrating these methods in field lab classes to help them see both trees and forests to train students who can connect the sky-views to the ground.

Transforming Forestry Education in the Philippines: Navigating the Demands of an Evolving World

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ABSTRACT

Forestry education plays a crucial role in preparing future professionals to address the challenges of a rapidly changing world. This presentation examines the transformation of forestry education in the Philippines to meet the demands of an evolving global landscape. Using the case of the oldest forestry school in country, the College of Forestry and Natural Resources, University of the Philippines Los Baños, as a case, the presentation delves into the impacts of online education during the COVID-19 pandemic and explores the potential benefits of integrating online learning in the forestry curriculum. Additionally, the paper discusses the application of Artificial Intelligence (AI) in forestry teaching and learning, highlighting its role in data analysis, personalized learning, and conservation efforts. Moreover, it emphasizes the importance of multidisciplinary forestry education, emphasizing collaborations with environmental sciences, engineering, and social sciences for sustainable forest management. Finally, the presentation explores the transition from traditional forestry education to a focus on sustainable forest management practices, incorporating climate change adaptation and mitigation strategies.