



The Second Pu'er Forum on Asia-Pacific Forests

Forum Report

28 - 30 October 2025

Pu'er, China

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Abbreviations

APFNet	Asia-Pacific Network for Sustainable Forest Management and Rehabilitation
EUDR	European Union Deforestation Regulation
EUTR	European Union Timber Regulation
FAO	Food and Agriculture Organization of the United Nations
FSC	Forest Stewardship Council
GDP	Gross Domestic Product
GBF	Kunming–Montreal Global Biodiversity Framework
GDI	Global Development Initiative
GFN	Global Network for Sustainable Forest Management
IMF	International Monetary Fund
MOU	Memorandum of Understanding
MRV	Monitoring, Reporting, and Verification
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organization
NTFP	Non-Timber Forest Product
OECD	Organization for Economic Co-operation and Development
OSB	Oriented Strand Board
PEFC	Programme for the Endorsement of Forest Certification
PPP	Public–Private Partnership
REDD+	Reducing Emissions from Deforestation and Forest Degradation, plus conservation, sustainable management of forests, and enhancement of forest carbon stocks
SCO	Shanghai Cooperation Organization
SDGs	Sustainable Development Goals
SFM	Sustainable Forest Management
TRACES NT	EU Trade Control and Expert System – New Technology
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
VPA	Voluntary Partnership Agreement
VNTLAS	Vietnam Timber Legality Assurance System
WWF	World Wide Fund for Nature

Executive Summary

The Second Pu'er Forum on Asia-Pacific Forests, convened from 28 to 30 October 2025 in Pu'er City, brought together senior officials, technical experts, researchers, private sector representatives, and civil society organizations across the Asia-Pacific region and beyond. Through its high-level sessions, thematic sub-forums, enterprise exchanges, field demonstrations, and the Global Network for Sustainable Forest Management (GFN) Strategic Advisory Workshop, the Forum deepened regional cooperation on sustainable forest management and highlighted the importance of fostering harmony between humanity and nature.

The opening ceremony and high-level segment reaffirmed the role of forests as a strategic foundation for ecological civilization, climate and biodiversity objectives, and sustainable development. Delegates emphasized the need for stronger policy coherence, cross-sector coordination, and long-term investment to address persistent pressures such as deforestation, land degradation, climate-driven disturbances, and financing gaps. The Forum highlighted its alignment with major global agendas, including Global Development Initiative, the UN 2030 Agenda, Kunming–Montreal Global Biodiversity Framework, UN Decade on Ecosystem Restoration (2021-2030), etc.

In addition to the high-level segment, the thematic sub-forums yielded key outcomes across multiple dimensions of sustainable forestry. In the Forestry Industry Sub-Forum, participants analyzed the impacts of the EU Deforestation Regulation and evolving U.S. policies, emphasizing the need for industrial upgrading and digital traceability systems to meet global demand for deforestation-free supply chains. The “forest-pulp-paper-board” model from Yunnan Province demonstrates how integrated approaches can simultaneously advance ecological sustainability and economic growth. The Forest Policy Sub-Forum highlighted regional innovations including community-centered governance and integrated land use planning. Discussions in the Sustainable Forest Management and Carbon Sequestration Sub-Forum focused on strengthening carbon accounting standards and climate-smart practices to enhance forests’ climate role. The Nature Education Sub-Forum advocated for experiential learning to foster ecological awareness, while the Forestry Education Sub-Forum (GMS Presidents’ Forum) identified priorities such as digital teaching and industry-academia collaboration for modernizing forestry education. In the Biodiversity Conservation Sub-Forum, participants addressed issues such as habitat connectivity and launched the Initiative on Promoting the Enhancement of Forest Biodiversity Outside Protected Areas through Forest Management. The Global Network for Sustainable Forest Management (GFN) Strategic Advisory Workshop formally established the GFN Advisory Group and defined priority areas such as large-scale restoration and high-integrity forest carbon approaches to support APFNet’s strategic plan. The program also included field visits on Pu'er Day, showcasing practical models linking agroforestry, ecological conservation, and community-based green development.

Several cross-cutting priorities emerged from the discussions, highlighting the central role of forests in achieving climate, biodiversity, and green development goals. Key themes included the importance of community participation and equitable benefit-sharing for sustained conservation outcomes, alongside the transformative impact of innovation, digitalization, and science-based approaches on forest governance and industry dynamics. The need for deforestation-free and green value chains was emphasized, requiring enhanced capacities, robust traceability systems, and innovative financing models. Additionally, education, training, and skills development were identified as fundamental for the long-term

transformation of the forestry sector, while regional cooperation emerged as critical for addressing transboundary challenges and scaling successful models throughout the region.

The Forum successfully fostered a broad consensus among its diverse participants, comprising representatives from over 20 economies, demonstrating a dedication to enhance cooperation, mobilize knowledge, and expedite the transition toward climate-resilient, ecologically secure, and inclusive development. As a direct outcome, the Action Plan for the Pu'er Forum on Asia-Pacific Forests (2026-2027) was formulated, serving as a comprehensive roadmap to implement the understandings reached and further practical cooperation through concrete initiatives. This includes actively promoting the recently signed cooperative agreements, fostering young forestry scholar exchanges and specialized training programs, and advancing the Global Network for Sustainable Forest Management, thereby translating the Forum's shared vision into tangible actions.

1. Introduction

1.1 Background

Forests in the Asia-Pacific region play an indispensable role in advancing global goals on climate action, biodiversity conservation, and sustainable development. The region accounts for nearly one-fifth of the world's forest area, provides vital ecosystem services, and sustains the livelihoods of hundreds of millions of people. Yet, despite its rich forest resources, the region continues to face mounting pressures from land-use change, deforestation, unsustainable extraction, and the growing impacts of climate change, all of which threaten ecological security and constrain the sustainable growth of green economies. Strengthening forest management, restoring degraded landscapes, and accelerating the transition toward low-carbon and nature-positive development have therefore become urgent priorities for the region.

Building on the success of the First Pu'er Forum on Asia-Pacific Forests (2023), which convened policymakers, researchers, and industry representatives and resulted in the Pu'er Forum Action Plan 2023–2025, the Second Pu'er Forum, held from 28 to 30 October 2025 in Pu'er City, Yunnan Province, China, served as a regional platform for dialogue, partnership building, and knowledge exchange. It deepened cooperation under the Global Development Initiative (GDI) and aligned regional forestry action with major global frameworks, such as the United Nations 2030 Agenda for Sustainable Development, the Kunming–Montreal Global Biodiversity Framework (GBF), and the UN Decade on Ecosystem Restoration (2021–2030), etc.

The 2025 Forum was convened at a time when economies across the Asia-Pacific were updating national forestry and biodiversity strategies in support of their net-zero emission targets and broader climate commitments. Through high-level policy dialogues, thematic sub-forums on SFM, forestry industry development, education and capacity building, technological innovation, and biodiversity conservation, as well as the signing of multiple cooperation agreements, the Forum provided a vital opportunity to share policy innovations, promote forest-based solutions for climate mitigation and green growth and strengthen cross-border collaboration in research, education, and industry.

By fostering synergy between policy, science, and practice, the Second Pu'er Forum reaffirmed the region's collective commitment to advancing SFM, accelerating green transformation, and building a community of shared future that harmonizes people and nature.

1.2 Objectives

The Second Pu'er Forum on Asia-Pacific Forests was convened to provide a regional platform for strengthening policy dialogue, technical exchange, and practical cooperation in support of SFM and green development across the Asia-Pacific region.

Building on the outcomes of the First Pu'er Forum in 2023, the Second Forum pursued the following key objectives:

1. To solidify the Forum as a dynamic regional platform for fostering multi-stakeholder collaboration and facilitating knowledge and best practice exchange across forestry policy, technology, industry, and education, thereby actively promoting sustainable forest management and biodiversity conservation.
2. To strengthen regional partnerships and human capacity through targeted initiatives, including supporting young scholar exchanges and specialized training programs for forest communities, to address shared challenges like deforestation and land degradation and empower local stakeholders for green development.
3. To advance practical, science-based approaches and robust implementation mechanisms for sustainable forest management, contributing to ecosystem restoration and ensuring the long-term ecological security and climate resilience of forest resources across the Asia-Pacific region.
4. To establish a clear and actionable roadmap for future cooperation, culminating in the formulation and endorsement of the Pu'er Forum Action Plan for 2026–2027, to guide joint efforts in policy, capacity building, and industry innovation for inclusive and sustainable development.

Through these objectives, the Forum aims to translate shared commitments into concrete cooperation, reinforcing Pu'er as a hub for regional exchange and a driving force for SFM in the Asia-Pacific region.

1.3 Time and Venue

Time: 28 - 30 October 2025

Venue: Pu'er City, Yunnan Province, China

1.4 Organizers

The Second Pu'er Forum on Asia-Pacific Forests was jointly organized by the Forestry and Grassland Administration of Yunnan Province, the Pu'er Municipal People's Government and Asia-Pacific Network for Sustainable Forest Management and Rehabilitation, and co-organizers were Southwest Forestry University, Yunnan Academy of Forestry and Grassland, Renmin University of China, China National Forest Products Industry Association, the World Wide Fund for Nature Beijing Office, the Forestry and Grassland Administration of Pu'er City, and the People's Government of Simao District.

1.5 Participation

The Forum brought together nearly 300 participants, marking a significant increase compared to the inaugural event in 2023. Delegates included forestry officials from over 20 Asia-Pacific economies, as well as representatives from international organizations, research institutions, universities, and forestry-related enterprises. The diverse and multidisciplinary participation underscored the region's growing

dedication to collaborative dialogue, knowledge exchange, and strengthened partnerships in advancing SFM and related thematic priorities.

2. Opening Ceremony and High-Level Segment

2.1 Opening Ceremony

The Opening Ceremony of the Second Pu'er Forum on Asia-Pacific Forests was held on 28 October 2025 in Pu'er City. Chaired by Dr. Wang Chunfeng, Executive Director of APFNet, the session brought together senior leaders from China, Myanmar, and the host municipality, who reaffirmed their shared commitment to advancing SFM and strengthening regional cooperation.

Speaking on behalf of the Yunnan Provincial Government, Mr. Guo Dajin, Vice Governor of Yunnan Province, welcomed participants to Pu'er and underscored the province's role as a key ecological security barrier in China. He highlighted Yunnan's achievements in biodiversity conservation, forest ecological protection, and cross-border collaboration, and pointed to further opportunities for collaboration on forest restoration, climate action, and green development.

Mr. Li Yunqing, Vice Administrator of the National Forestry and Grassland Administration of China, reaffirmed the irreplaceable role of forests in addressing global climate and biodiversity challenges. He outlined China's progress in forest greening, protected area management, forest tenure reform, and green industry development, noting that China made significant contribution to reversing regional forest loss between 2007 and 2020. He reiterated China's commitment to openness, inclusiveness, and mutually beneficial cooperation.

On behalf of the foreign delegations, Mr. Hla Maung Thein, Permanent Secretary of the Ministry of Natural Resources and Environmental Conservation of Myanmar, expressed appreciation for China's long-standing support and highlighted Myanmar's ongoing efforts in SFM management, reforestation, biodiversity conservation, and climate mitigation. He emphasized that developing economies require additional technology, financial resources, and capacity support to effectively address shared environmental challenges.

Mr. Li Qingyuan, Secretary of the Pu'er Municipal Party Committee, extended a warm welcome to participants and highlighted Pu'er's achievements in ecological protection, conservation of flagship species such as Asian elephants, and development of green industry pathways. He called for enhanced policy coordination, public-private partnerships, and technological innovation to transform ecological advantages into drivers of sustainable growth.

Executive Director of APFNet Mr. Wang Chunfeng highlighted the Forum's theme "Strengthen Sustainable Forest Management, Promote Harmony Between Humanity and Nature", emphasized its relevance to global commitments under the UN 2030 Agenda, the Global Development Initiative, regional biodiversity, and climate

strategies. He called for deeper policy coordination, strengthened information exchange, and practical cooperation projects that deliver tangible ecological and social benefits across the Asia-Pacific region.

2.2 Signing of Cooperation Agreements and MOUs

The Forum witnessed the signing of a series of cooperative agreements. These included MOUs on forestry and grassland collaboration between the Yunnan Forestry and Grassland Administration and three provinces of Lao PDR (Oudomxay, Luang Namtha, Phongsaly), as well as agreements between Pu'er City and businesses on under-forest medicinal herb planting, wood-based panel production, and financing for national forest reserve projects.

2.3 Session One: High-Level Segment

The High-Level Officials Meeting, held under the theme “Building a Green Future: New Pathways for Sustainable Forestry Development in the Asia-Pacific” convened senior government representatives and international experts to exchange experiences and policy perspectives on advancing sustainable forestry in the region. Chaired by Mr. Zhao Shucong, President of the Chinese Society of Forestry, the session featured eight keynote presentations by delegates from China, Cambodia, Fiji, Indonesia, Myanmar, the Shanghai Cooperation Organization (SCO), international expert, and Yunnan Province. The presentations outlined national priorities, innovative approaches, and opportunities for enhanced regional collaboration toward a greener and more resilient Asia-Pacific.

2.3.1 Presentation by Mr. Suon Sovann, Director General of Forestry Administration, Ministry of Agriculture, Forestry and Fisheries, Cambodia

Mr. Suon Sovann expressed appreciation to the Government of China, the Yunnan Provincial Government, and APFNet for convening the Second Pu'er Forum, emphasizing its importance as a regional platform for strengthening cooperation and sharing innovative approaches to SFM. He recalled that the first Pu'er Forum laid a solid foundation for future collaboration among Asia-Pacific economies and contributed to advancing the implementation of the UN 2030 Agenda for Sustainable Development.

Mr. Suon Sovann outlined Cambodia's continued commitment to global climate goals and sustainable forestry. The Royal Government of Cambodia (RGC) submitted its Third Nationally Determined Contribution in 2025, targeting a 55 percent reduction in greenhouse gas emissions by 2035, and adopted both the Long-Term Strategy for Carbon Neutrality (by 2050) and the Climate Change Strategic Plan (2024–2033). Under the Pentagonal Strategy, Phase I (2023), the government aims to maintain at least 60 percent forest cover by 2050 through reforestation, community participation, and sustainable resource management, guided by the Circular Strategy on Environment (2023–2028) and the National Forest Program (2010–2029).

He highlighted ongoing efforts to modernize forest governance, including the drafting of a new Forestry Law, development of a National Forest Standard aligned with

Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC) principles, and promotion of green forest-based industries such as bamboo, rattan, and bioenergy. These initiatives demonstrate Cambodia's pursuit of a green, inclusive, and climate-resilient development pathway.

Mr. Suon Sovann stressed that SFM is not only an environmental goal but also a development imperative. He underscored the need for stronger regional cooperation, policy coherence, and innovative financing to translate commitments, such as the Glasgow Leaders' Declaration on Forests and Land Use into tangible actions that protect forests, biodiversity, and local communities.

He concluded by reaffirming Cambodia's readiness to collaborate closely with all regional partners to conserve forests, promote sustainable practices, and build a resilient and inclusive future for the Asia-Pacific region.

2.3.2 Presentation by Mr. Bulai Tevita, Conservator of Forests, Ministry of Forestry and Fisheries, Fiji

Mr. Bulai Tevita shared Fiji's national perspectives and recent progress in advancing SFM, emphasizing the economy's vision of "Sustainable Forests, Our Future" He noted that forests cover about 1.1 million hectares (61 percent) of Fiji's land area, consisting primarily of natural forests (82 percent), with pine and mahogany plantations accounting for 7 and 6 percent respectively.

He outlined that the forestry sector, one of Fiji's 21 key industries, contributes significantly to the economy through timber production, processing, and exports. Fiji's forest governance is guided by the Forest Act (1992), currently under review, and the 2007 Forest Policy, supported by a Forestry Strategic Plan aligned with the National Development Plan and the Sustainable Development Goals (SDGs).

Highlighting key achievements, he reported progress in the national tree-planting programme, launched in 2019 to plant 30 million trees in 15 years. To date, more than 17 million trees have been planted, contributing to climate mitigation, degraded land restoration, and community livelihoods. The sector aims to increase forest cover from 60% to 64% and to protect 17% of Fiji's total land area as Protected Areas for Biodiversity Conservation, alongside restoring 50,000 acres of mangrove ecosystems.

Mr. Bulai noted that Fiji's forest plantations, mainly managed by the Fiji Pine Group and the Fiji Hardwood Corporation Limited, are established as the main source of wood, with natural forest production kept very limited to protect this valuable resource, thereby reducing dependence on natural forests. Efforts are underway to certify mahogany under FSC standards, expand plantation areas through landowner partnerships, and diversify wood exports to Pacific markets. In 2024, pine chips accounted for nearly half of Fiji's wood export revenue, followed by mahogany and other species.

Addressing challenges, Mr. Bulai highlighted issues of land tenure, climate change impacts, and pest risks in monoculture plantations. The Ministry is responding through SFM, expanded reforestation, and promotion of non-timber forest products (NTFP) such as bamboo, sandalwood, coconut, and agarwood to enhance income

diversification. Fiji is also advancing research on engineered wood and mass timber to replace non-renewable construction materials.

Mr. Bulai concluded by reaffirming Fiji's commitment to SFM as a pillar of climate response and economic growth, and expressed appreciation to the Government of China, Yunnan Province, and APFNet for hosting the forum and facilitating regional knowledge exchange.

2.3.3 Presentation by Mr. Widiyanto Anugerah, Deputy Chairman of National Research and Innovation Agency, Indonesia

Mr. Widiyanto Anugerah delivered a presentation on "Promoting Bioeconomy for the Future of Sustainable Forestry in Asia and the Pacific", highlighting Indonesia's vision of advancing SFM through science, innovation, and inclusive growth. He described bioeconomy as the sustainable production and utilization of biological resources and related knowledge to create goods and services that drive low-carbon and circular development.

He noted that the bioeconomy is emerging globally as a key enabler of sustainable growth, with more than 50 economies adopting related strategies in the past decade. Advances in biotechnology, life sciences, and circular production are providing new opportunities to enhance resource efficiency and generate green jobs. The Food and Agriculture Organization of the United Nations (FAO) Strategic Framework 2022–2031 also recognizes bioeconomy for sustainable food and agriculture as a priority program area, reinforcing its growing international importance.

Turning to the Asia-Pacific context, Mr. Widiyanto observed that the region covers nearly 30 percent of global land area and supports over 4.7 billion people, yet faces accelerating ecosystem degradation and biodiversity loss. He emphasized that protecting and sustainably managing forests is vital to addressing these challenges, given the region's exceptional natural wealth and the diversity of its 17 global biodiversity hotspots.

In Indonesia, with 22 distinct forest-related ecosystems ranging from mangrove and peat forests to mountain and alpine zones, biodiversity and genetic resources form the backbone of the economy's forest-based bioeconomy. Indonesia has identified vast potential for bioprospecting, bioremediation, and biotechnology applications, drawing from its more than 14,000 recorded microbial isolates and numerous endemic plant and animal species.

Mr. Widiyanto outlined several strategic policy directions to advance an equitable and inclusive forest bioeconomy. These include positioning social forestry as the foundation for community participation, ensuring fair benefit sharing with indigenous and local groups, integrating gender and youth inclusion in decision-making, and developing circular local value chains through efficient biomass utilization, local processing, and market access. Social monitoring indicators such as increased household income and reduced land conflicts are used to assess progress.

He also highlighted ongoing challenges, including regulatory complexity, limited market infrastructure, and technological gaps. However, he pointed to emerging

opportunities in circular bioeconomy integration, biotechnology innovation, and waste-to-energy development as drivers of sustainable transformation.

In conclusion, Mr. Widiyanto called for strengthened regional cooperation, enhanced research collaboration, and inclusive partnerships to unlock the potential of the bioeconomy as a pathway toward sustainable forestry, equitable prosperity, and a resilient green future for the Asia-Pacific region.

2.3.4 Presentation by Mr. Hla Maung Thein, Permanent Secretary, Ministry of Natural Resources and Environmental Conservation, Myanmar

Mr. Hla Maung Thein expressed sincere appreciation to the Government of China, the Yunnan Provincial Government, and APFNet for convening the Second Pu'er Forum, recognizing it as a key platform for regional cooperation and exchange on sustainable forestry. He noted that the first Pu'er Forum laid a strong foundation for collaboration, and expressed confidence that this forum would further strengthen collective efforts toward an inclusive and sustainable future.

He reaffirmed Myanmar's commitment to environmental sustainability, biodiversity conservation, and climate action, highlighting that forests cover about 28.5 million hectares, or 42 percent of the economy's land area. He emphasized that Myanmar is transitioning from resource-intensive development to low-carbon, green growth, with forestry serving as a key sector for nature-based solutions to climate change.

Myanmar's green transition is guided by the Myanmar Sustainable Development Plan (MSDP) and the National Comprehensive Development Plan (NCDP), which promote inclusive green growth and integration of environmental priorities into all sectors. The Myanmar Reforestation and Rehabilitation Programme (2017–2027) aims to restore degraded forests and enhance ecosystem services, while the National Forest Master Plan targets 920,000 hectares of Community Forests by 2030, of which 456,000 hectares have been established.

Aligned with the Paris Agreement, Myanmar aims by 2030 to increase Reserved Forests and Protected Public Forests to 30 percent and Protected Areas to 10 percent of total land area. Mangrove conservation remains a priority, supported by the National Integrated Coastal Management Programme and the ASEAN Leaders' Declaration on Blue Economy.

He noted ongoing efforts to update the National Biodiversity Strategy and Action Plan in line with the Kunming–Montreal Global Biodiversity Framework, and to implement the UN Decade on Ecosystem Restoration through habitat restoration and improved protected area management. Myanmar has so far designated two UNESCO Biosphere Reserves, seven Ramsar Sites, and eight ASEAN Heritage Parks, reflecting its strong commitment to biodiversity conservation and sustainable livelihoods.

Looking ahead, Myanmar plans to increase forest cover from 42 to 50 percent, while addressing financing and capacity challenges through stronger international cooperation. Mr. Hla Maung Thein concluded by expressing gratitude to APFNet for its long-standing support, including demonstration projects and scholarships

benefiting 41 young professionals, and reaffirmed Myanmar's determination to work closely with regional partners to achieve a sustainable and resilient green future.

2.3.5 Presentation by Mr. Hu Yuanhui, Director General of APFNet Coordination Center, National Forestry and Grassland Administration of China

Mr. Hu Yuanhui presented China's progress in forest and grassland conservation and its cooperation with Asia-Pacific partners.

He began by underscoring China's strong commitment on ecological conservation and restoration, noting that forests and grasslands form the ecological foundation of sustainable development. Guided by the principles of "Expanding, Improving and Protecting Forests" and recognizing forests as reservoirs of water, income, source, food depot, and carbon pool, China has achieved the world's fastest rate of forest growth. Forest coverage has increased from 18 percent in 2005 to more than 25 percent in 2025, contributing nearly one-quarter of global greening. Landmark examples such as the Saihanba Forest Farm illustrate successful large-scale restoration, while a new protected-area system centered on national parks now covers more than 18 percent of the economy's land area. Collective forestry reforms have also generated close to 300,000 business entities and provided employment for 47 million farmers.

He then reviewed China's work on SFM and green industry development. Major ecological programmes such as the Three-North Shelterbelt Program and the Natural Forest Protection Program have improved forest quality and advanced integrated landscape management. Regulatory tools, including strict protection and logging-quota systems, revised Forest Law provisions, and 368 SFM pilot sites, have strengthened sustainable management practices. China's forestry and grassland sector reached a total output value of USD 1.4 trillion in 2024. Forest-based tourism, economic forests, wood processing, and under-forest economies each exceeded one trillion yuan in output and jointly employed more than 60 million people.

Mr. Hu also emphasized China's commitment to advancing regional and international cooperation. Through APFNet and various bilateral frameworks, China has supported more than 60 regional projects worth USD 25 million and provided training for over 4,000 forestry officials. Demonstration projects and capacity-building activities have benefited thousands of local communities across the region, strengthening shared capacities for sustainable development and green growth.

Mr. Hu concluded by reaffirming China's readiness to collaborate with all regional partners to promote ecological civilization, foster practical cooperation, and jointly build a green Asia-Pacific where people and nature coexist in harmony.

2.3.6 Presentation by Mr. Khan Sohail, Deputy Secretary-General, Shanghai Cooperation Organization (SCO)

Mr. Khan Sohail, on behalf of the Shanghai Cooperation Organization (SCO), expressed appreciation to APFNet and the organizers for convening the Second Pu'er Forum, recognizing it as an important platform for advancing regional cooperation in SFM. He noted that forests, often called the "lungs of the planet," are vital for

biodiversity, economic well-being, and cultural heritage, yet face mounting global challenges such as climate change, wildfires, illegal logging, and land degradation.

He stressed that no economy can meet these challenges alone and underscored the need for stronger multilateral action. In this context, he highlighted SCO's growing engagement in environmental protection and sustainable development. In 2024, member states signed the Agreement on Cooperation in Environmental Protection, establishing a framework for collaboration in ecosystem conservation, green technology development, and climate adaptation. The SCO Green Belt Action Plan and related initiatives are also being implemented to promote shared environmental goals.

Mr. Khan noted that the Memorandum of Understanding signed in 2024 between the SCO Secretariat and the United Nations Environment Programme (UNEP) marked a milestone in aligning SCO's activities with the global environmental agenda. He further shared that 2025 has been declared the SCO Year of Sustainable Development, during which member states are pursuing new ecological and climate initiatives.

He reiterated SCO's readiness to strengthen cooperation with APFNet and other partners on sustainable forestry and joint environmental projects. In conclusion, Mr. Khan emphasized that through collective efforts, forests can continue to serve as enduring sources of life, stability, and prosperity for all nations of the region.

2.3.7 Presentation by Mr. Durst Patrick Bryan, International Forestry Expert

Mr. Patrick Durst presented an overview of the key trends shaping forestry development in the Asia-Pacific region, drawing on recent FAO assessments and regional data. He noted that the region contains about 814 million hectares of forest, or 20 percent of global forest cover, though distribution remains highly uneven, with two-thirds concentrated in four countries. On a per capita basis, the Asia-Pacific remains the least forested region in the world.

He highlighted that while the world has lost more than 200 million hectares of forest since 1990, the Asia-Pacific region recorded a net gain of about 53 million hectares, largely through the expansion of planted forests, which now represent nearly half of global plantation area. The region has also increased its protected areas by more than 50 percent since 1990, demonstrating growing policy attention to conservation, though natural forests continue to decline due to agricultural conversion and overharvesting.

Mr. Durst emphasized that community forestry has been one of the most important forces for forest recovery in the region. Experiences from countries such as Nepal, Indonesia, China, and Viet Nam illustrate how devolving forest management rights to local communities has improved forest cover, strengthened livelihoods, and reduced illegal activities, while increasing participation of women and youth in forest governance.

He observed that the region's growing population and economic development are creating rising demand for timber, fibre, and non-wood forest products, putting additional pressure on resources. The rapidly expanding middle class is driving

consumption of furniture, construction materials, paper, packaging, and bio-based products. At the same time, emerging technologies such as remote sensing, drones, and digital monitoring tools are transforming forest management and supply chains, while new markets such as carbon trading and eco-certification are opening opportunities for value addition.

Mr. Durst noted that forests are central to climate change mitigation and adaptation. Mechanisms such as Reducing Emissions from Deforestation and Forest Degradation, plus conservation, sustainable management of forests, and enhancement of forest carbon stocks (REDD+) and carbon markets have created new momentum, though carbon prices remain too low to stimulate large-scale investment. Encouragingly, 20 economies in the region have pledged to restore more than 100 million hectares of forests by 2030, reflecting renewed political commitment.

He concluded by identifying five priorities for the region: recognizing forests as integral to addressing global climate and development challenges, adopting integrated landscape approaches, ensuring equitable community benefits, strengthening governance and policy stability, and expanding regional collaboration through mechanisms such as APFNet, AFoCO, RECOFTC, ASEAN, and APEC. Mr. Durst emphasized that cooperation, innovation, and community participation remain the foundations for a sustainable and resilient forestry future in the Asia-Pacific.

2.3.8 Presentation by Mr. Guo Dajin, Vice Governor of Yunnan Province, China

Mr. Guo Dajin presented Yunnan's achievements and priorities in promoting sustainable forestry and green development under the theme "Strengthening Forest Management and Promoting Green Development". He highlighted that Yunnan, as one of China's most biodiverse provinces, has played a leading role in advancing ecological civilization guided by Xi Jinping Thought on Ecological Civilization.

He outlined three main achievements.

1. Ecological protection and biodiversity conservation: Yunnan has carried out extensive afforestation and forest restoration programs to preserve ecological balance and strengthen its globally significant ecosystems. The province has established several national nature reserves and botanical gardens, including the Ailao Mountain National Nature Reserve and the candidate area for Shangri-La National Park, showcasing its strong commitment to biodiversity protection.
2. Green industry development: Yunnan continues to increase the value of its ecological resources by promoting forest-based industries and sustainable livelihoods. In 2024, the total output value of the forestry and grassland sector exceeded 560 billion yuan, maintaining more than 20 percent annual growth for three consecutive years. The province is also advancing carbon sink trading and innovation in forest product value chains to boost the green economy.
3. Stronger forest governance: A province-wide "forest-chief" system has been established to improve monitoring, protection, and accountability. Yunnan has also strengthened its risk prevention and supervision mechanisms to ensure sustainable management of forest and grassland resources.

Looking ahead, Mr. Guo emphasized that Yunnan will continue to enhance biodiversity conservation, improve the management of forests, grasslands, and wetlands, and promote the high-quality development of its green industries. He reaffirmed Yunnan's readiness to deepen cooperation with Asia-Pacific partners to build a green and harmonious future for people and nature.

2.4 Synthesis of the High-Level Officials Meeting

The High-Level Officials Meeting provided a valuable platform for governments, international organizations, and experts to share policy experiences and strategic perspectives on advancing sustainable forestry across the Asia-Pacific region. Presentations from China, Cambodia, Fiji, Indonesia, Myanmar, the Shanghai Cooperation Organization, and Yunnan Province, together with insights from the international expert, collectively underscored the vital role of forests in addressing climate change, biodiversity loss, and green economic transformation.

Participants highlighted the region's progress in forest restoration, community-based management, policy reform, and green innovation, while recognizing persistent challenges such as deforestation, land degradation, and financing gaps. The meeting reaffirmed the shared commitment of all partners to strengthen cooperation, foster innovation, and promote inclusive, science-based approaches to SFM.

The session concluded with a shared recognition that the region's forestry challenges are interconnected and require coordinated solutions. Participants affirmed that continued collaboration, informed by science, innovation, and mutual learning, will be essential to strengthening SFM and supporting long-term ecological security and development across the Asia-Pacific.

2.5 Session Two: Pu'er Day Theme Event

Session Two of the main forum programme was dedicated to the Pu'er Day Theme Event, a signature component of the Pu'er Forum designed to showcase the city's unique ecological resources, vibrant coffee culture, and its emerging green development pathways. Organized in three parts, namely an indoor session, an on-site visit, and a welcome dinner, the event provided participants with an immersive understanding of Pu'er approaches to integrating forestry, agriculture, culture, tourism, and rural revitalization.

2.5.1 Indoor Session

Part I of the Pu'er Day event was facilitated by Mr. Li Xudong, Executive Vice Mayor of the Pu'er Municipal Government.

The indoor segment began with the screening of a promotional video on Pu'er, offering participants a visual introduction to the municipality's distinctive ecological landscapes, cultural heritage, and coffee-based rural development initiatives. This was followed by the Enterprise Sharing Session, during which two selected enterprises from Pu'er shared their practices and innovations, demonstrating business models that interlink ecological conservation, green growth, and community development.

The first enterprise presentation was delivered by Mr. Yang Jiandong from APP (China), introducing the Jintong (Pu'er) Green Wood-Based Panel and Home Furnishing Industrial Park. APP, part of the Sinar Mas Group, is one of the world's leading forest and paper enterprises, with extensive pulp, paper, and plantation operations across China and Indonesia. In Yunnan, the company manages about 940,000 mu of plantations with a standing stock of over 13 million m³, applying high-standard, technology-driven, and SFM practices that have produced strong growth performance in the Pu'er region.

Mr. Yang highlighted the company's strategic cooperation with the Pu'er Municipal Government and the Yunnan Provincial Forestry and Grassland Administration, which aims to link resource advantages with industrial development through four areas of collaboration, including the construction of a large-scale wood-based panel and home furnishing industrial park. Located in the Lancang provincial-level industrial zone, the planned 3,368-mu park will integrate the full value chain from log processing to high-end customised home furnishings, supported by green manufacturing and digital production. Phase I, now under construction, covers 254 mu with an annual designed capacity of 600,000 m³ of high-quality panels, expected to reach full production in 2026.

The project seeks to build a model of high-value utilisation of Pu'er forestry resources, promoting economic, social, and ecological benefits. It aims to generate a total industrial output of around RMB 10 billion, create more than 20,000 jobs, support rural revitalisation, and contribute to carbon sequestration and biodiversity conservation. The presentation concluded with an invitation for strategic partners to join in advancing a modern, green forestry industry in Pu'er.

The second enterprise presentation was delivered by Mr. Tao Xuefeng from the Yunnan Mekong Group, highlighting the company's long-standing commitment to ecological conservation and green tourism development. Since its establishment in Yunnan in 1995, the Group has adhered to a "protect first, develop minimally" philosophy, developing landmark ecological tourism sites such as Xishuangbanna Primitive Forest Park, Wild Elephant Valley, the Yunnan Wildlife Park, Pu'er Sun River National Park, and the Tea Horse Ancient Trail. The company positions itself as a leading advocate of green tourism in China, integrating conservation, recreation, culture, and education.

Mr. Tao described how the Group embeds biodiversity protection into its tourism model. In Sun River Park, for example, only 0.43 km² of the 216 km² area has been developed, ensuring that over 97 percent of the original forest remains intact. Infrastructure is designed with minimal ecological disturbance, including elevated walkways, permeable designs, and restrictions on motor vehicles. The Group has established a "rescue - breeding - education" mechanism and has rescued more than 12,000 wild animals, including 63 rare species. Their efforts were internationally recognised when the park was designated China's first "World Peace Park" in 2017.

The company also promotes innovative "forest+" tourism models, combining forest wellness, culture, and education. The Red Panda Manor Resort and related facilities

offer immersive wellness experiences, generating significant tourism appeal; in 2024, Sun River Park received more than 600,000 visitors with revenues exceeding RMB 73 million. In the Tea Horse Ancient Trail area, cultural performances and traditional experiences such as campfire tea ceremonies deepen visitors' appreciation of local heritage and ecological values.

Mr. Tao noted that the company's projects generate strong social benefits through employment and skills training, directly supporting more than 3,000 jobs, 90 percent of which are held by local ethnic minority residents. Through training programmes, villagers have become forest experience guides, animal caretakers, and cultural interpreters, earning two to three times more than from traditional farming. Looking ahead, the Group intends to use Pu'er as a base to work with Mekong-region countries to establish a Lancang-Mekong Forest Wellness Alliance, sharing China's experience in forest management and ecological tourism to support regional cooperation.

The indoor session concluded with a Signing Ceremony, marking new cooperation agreements between Pu'er-based enterprises and partner institutions to promote investment, green industry development, and cross-sectoral collaboration.

2.5.2 Site Visits

Following the indoor session, participants joined field visits organized along four designated routes. These visits provided first-hand exposure to Pu'er coffee sector development, ecological agriculture, integrated value chains, and community-based rural revitalization efforts.

3. Forest Industry Sub-Forum

This chapter presents the proceedings of the Forest Industry Sub-Forum, summarizing the key discussions, presentations, and outcomes of the session.

3.1 Introduction

The Forest Industry Sub-Forum of the Second Pu'er Forum on Asia-Pacific Forests was held on 29 October 2025. Co-organized by the China National Forest Products Industry Association and the Pu'er Municipal Forestry and Grassland Bureau, the session brought together policymakers, business leaders, researchers, and representatives of international organizations from across the region.

The sub-forum provided an important platform for policy dialogue and industrial cooperation under the theme "Global Forest Products Trade Dynamics and Asia-Pacific Economic Cooperation". Participants examined shifting global trade patterns, emerging compliance requirements, and innovative models for strengthening sustainable and resilient forest product supply chains. Discussions also focused on enhancing regional economic and trade linkages and identifying practical pathways for green, high-value industrial development.

Reports delivered by experts from international organizations, research institutions, and enterprises analyzed global market trends, policy developments, and implications of new regulatory frameworks, including the EUDR. Government representatives from Yunnan Province and Pu'er City shared their experiences in promoting green transformation, improving value-added production, and advancing ecological benefits within the forestry industry.

The sub-forum also included a Dialogue Session, where representatives from industry and academia exchanged practical cooperation measures and recommendations for strengthening cross-border industrial partnerships. The programme concluded with a field visit to Pu'er Yunjing Feilin New Materials Co., Ltd., which provided participants with firsthand exposure to Yunnan's approaches to green manufacturing and sustainable forestry industry development.

3.2 Thematic Presentations

The keynote presentation session of the sub forum was moderated by Mr. Zhu Changqing, Assistant to the President of the China National Forest Products Industry Association.

Delivering the opening remarks on behalf of the organizers, Ms. Li Dongyan, Secretary-General of the China National Forest Products Industry Association, extended a warm welcome to all delegates and expressed appreciation for the support of participating governments, organizations, and enterprises in promoting regional forestry cooperation. Her address acknowledged the valuable contributions of partners to advancing sustainable forest product trade and conveyed strong expectations for further strengthening economic and trade collaboration across the Asia-Pacific region.

3.2.1 Industry Policies, Current Status of Forest Product Trade, and Challenges

Mr. Phuc Xuan To, Consultant for the Vietnam Timber and Forest Products Association and the Ministry of Agriculture and Rural Development of Vietnam

Mr. Phuc Xuan To opened the technical session with an analytical overview of Vietnam's position in the global forest product trade, highlighting the economy's rapid rise as the second-largest exporter of timber products in Asia after China. Drawing from Vietnam Customs data, he outlined the steady expansion of export value from 2010 to 2024, driven largely by wood furniture, wood chips, and plywood, which together constitute the backbone of the economy's timber industry. Vietnam's export markets remain highly concentrated, with the United States accounting for more than 50% of total revenue, followed by Japan, China, and the EU.

He emphasized that Vietnam's growing integration into the global timber market brings both opportunities and vulnerabilities. Recent U.S. tariff adjustments under Section 232 investigations have significantly affected key product groups such as upholstered furniture, kitchen cabinets, and plywood, collectively representing about 80% of export revenue to the U.S. Meanwhile, Vietnam continues to deepen its cooperation with other markets through initiatives like the Voluntary Partnership Agreement (VPA) with the European Union, the development of the Vietnam Timber

Legality Assurance System (VNTLAS), and the Timber Agreement with the United States.

On the import side, Vietnam remains heavily dependent on raw material supplies from diverse sources, including high-risk countries. Imports of logs and sawn timber reached nearly 6 million m³ (RWE) in recent years, though the proportion from “non-positive” (potentially unsustainable) sources has declined from 40% in 2022 to 25% by mid-2025, reflecting ongoing policy reforms to strengthen legality verification and supply-chain transparency.

Mr. Phuc concluded by noting that while markets such as the EU (4% of exports) are less dominant, they set increasingly stringent standards, especially under the EUDR, requiring certified and traceable sourcing. He urged regional cooperation to help producers, especially small and medium-sized enterprises, adapt to emerging compliance demands, diversify markets, and build sustainable and resilient supply chains.

3.2.2 Impacts of U.S. Forestry Industry Policies on China’s Forest Product Industry and Response Measures

Ms. Sun Xiufang, Senior Advisor, Forest Trends

Ms. Sun Xiufang provided a comprehensive overview of recent developments in the United States forestry and trade policies and analysed their implications for China’s forest products industry. She explained that global forest product trade is undergoing profound transformation, with U.S. tariff and regulatory policies becoming increasingly unpredictable and influential. Under the new administration, import tariffs on wood and wood-based products have been expanded through Section 232 and Section 301 investigations. As of October 2025, new tariff measures have been formally implemented, including ten percent on softwood and sawn timber, twenty-five percent on upholstered furniture (to be raised to thirty percent in 2026), and twenty-five percent on kitchen cabinets and components (to be raised to fifty percent in 2026).

Ms. Sun compared the U.S. approach to forest governance with that of the European Union, particularly the emerging “zero-deforestation” frameworks. While the U.S. FOREST Act focuses on banning imports linked to illegal deforestation and provides flexible compliance requirements, the EUDR imposes broader restrictions covering all types of deforestation and requires full traceability and geolocation of supply chains. Both approaches, however, point toward a global trend toward deforestation-free supply chains.

She highlighted that the U.S. government continues to enforce the Lacey Act as a non-tariff tool to regulate imports and prevent illegal logging, even during government shutdowns. Federal-level progress on the Fores Act remains stalled in Congress, but state-level efforts in New York and California have attempted to introduce similar laws. Meanwhile, enforcement agencies such as U.S. Customs, the Department of Justice, and the FBI have strengthened monitoring and penalties for high-risk imports.

For Chinese enterprises, these developments imply stricter scrutiny, higher compliance costs, and intensified competition. Ms. Sun advised that enterprises should prepare for more rigorous legality verification, establish transparent and traceable supply chains, and participate in compliance and sustainability training through industry associations. She also recommended diversifying export markets to reduce dependency on the United States, upgrading products toward environmentally friendly and higher value-added categories, and strengthening brand visibility through international trade fairs and digital marketing.

In conclusion, Ms. Sun noted that U.S. policy remains in a state of uncertainty, combining green transition goals with trade protectionism. She emphasized that the Chinese forestry sector must respond proactively by enhancing compliance systems, improving product competitiveness, and closely following the evolution of both U.S. and EU policies, as the emerging global trade environment will reward early movers who align with sustainable and transparent practices.

3.2.3 Global Perspectives on the Green Home Furnishing Industry: Current Situation, Challenges, and Response Strategies

Dr. Huang Anmin, Researcher, Chinese Academy of Forestry; Secretary-General, National Innovation Alliance for Green Home Furnishing Supply Chains

Dr. Huang Anmin presented a comprehensive analysis of the green home furnishing industry from both global and domestic perspectives, focusing on its development status, challenges, and strategic responses. He introduced the concept of green home furnishing as an integrated system encompassing environmentally friendly materials, energy-efficient production, and health-oriented product design. Drawing attention to the growing consumer demand for sustainable and safe home environments, he outlined the key national and industry standards governing green materials, air quality, product safety, and environmental performance. These include a series of standards on formaldehyde emissions, indoor air quality, and green product evaluation that together form the technical foundation for China's green home industry.

Dr. Huang reviewed the current state of China's forest-based industries, noting the rapid growth of sectors such as engineered wood, custom furniture, flooring, and wooden doors, while also identifying structural issues related to raw material supply, low innovation capacity, and the predominance of small and medium-sized enterprises. He pointed out that the industry still faces challenges in technology adoption, standardization, brand building, and digital transformation. To address these gaps, he emphasized the need for scientific innovation, improved product quality, enhanced environmental performance, and the establishment of a robust and unified green industry standard system.

Policy alignment was highlighted as another key driver. Dr. Huang referred to several recent national policy directives that promote green and high-quality development in manufacturing and urban housing, including the "Opinions on Promoting Urban High-Quality Development (August 2025)" and the Work Plan for Stabilizing Growth

in Light Industry (2025-2026). He stressed that these provide significant momentum for expanding domestic demand through renovation markets, while also encouraging export-oriented growth through initiatives such as the Belt and Road and the Regional Comprehensive Economic Partnership (RCEP) cooperation.

In outlining future directions, Dr. Huang proposed five focal areas for enterprises: improving product quality and environmental performance, strengthening design and technological innovation, adopting digital and intelligent manufacturing, implementing green production systems, and enhancing branding and service standards. He also noted the rising importance of personalized, intelligent, and eco-friendly products as emerging trends shaping consumer behaviour. Dr. Huang concluded by calling for closer cooperation across the supply chain, stronger industry self-regulation, and greater international engagement to advance the vision of building a green home furnishing industry that supports both sustainable living and high-quality economic growth.

3.2.4 Challenges and Solutions for Chinese Enterprises under the EU Deforestation Regulation

Ms. Chen Hongliu, Bureau Veritas Certification (Beijing) Co., Ltd.

Ms. Chen Hongliu introduced the key provisions and compliance implications of the EUDR, which officially took effect in June 2023 and will be fully implemented from December 2025. The Regulation aims to curb global deforestation and forest degradation by ensuring that products placed on or exported from the EU market are both legally produced and deforestation-free. It replaces the earlier European Union Timber Regulation (EUTR), expanding its coverage to seven major commodities including wood, coffee, cocoa, soy, palm oil, cattle, and rubber, along with their derivatives such as paper, furniture, and leather goods.

Ms. Chen explained that under the EUDR, companies are required to meet three core obligations before trading relevant products in the EU: ensuring the products are deforestation-free, confirming their legality according to the laws of the producing economy, and submitting a due diligence statement covering product origin, production date, and geographic coordinates of the plot of land where the materials were sourced. She clarified the phased implementation timeline, with large operators expected to comply by 30 December 2025, and small and medium-sized enterprises by 30 June 2026.

Outlining the challenges faced by Chinese exporters, Ms. Chen noted that meeting traceability and documentation requirements remains one of the most significant barriers. Each export batch must be traceable to specific harvesting plots and verified through reliable data on land use and legality. She highlighted that non-compliance could result in serious penalties, including product withdrawal, confiscation, or suspension of sales in the EU market. To support enterprises, the EU has established an integrated information system, EU Trade Control and Expert System – New Technology (TRACES NT), and a central risk classification database that categorizes

countries by risk level. China, she noted, is currently listed as a low-risk economy, while four others are classified as high-risk.

Ms. Chen elaborated on the role of third-party certification and verification systems in supporting compliance. Although the EUDR does not require certification, schemes such as FSC, PEFC, and other independent verification programs can serve as supplementary evidence of legality and deforestation-free sourcing. She encouraged Chinese enterprises to strengthen their due diligence systems, participate in EUDR-related training, and consider voluntary pre-assessment and audit services offered by accredited certification bodies such as Bureau Veritas.

In conclusion, Ms. Chen emphasized that enterprises should begin preparations well before the enforcement date by mapping their supply chains, collecting geolocation data, and enhancing internal compliance capacity. She underscored that proactive adaptation, transparency, and continuous engagement with certification and monitoring platforms will be essential for Chinese exporters to maintain market access and competitiveness under the evolving global trade framework for sustainable forest products.

3.2.5 China's Strategic Responses under the Transformation of Global Forest Product Trade

Mr. Chen Yong, Director, Institute of Forestry Science and Technology Information, Chinese Academy of Forestry

Mr. Chen Yong presented an in-depth analysis of the shifting landscape of global forest product trade and outlined China's strategic responses to emerging policy and market challenges. He began by reviewing global economic trends, noting that according to recent International Monetary Fund (IMF) and Organization for Economic Co-operation and Development (OECD) forecasts, global Gross Domestic Product (GDP) growth in 2025 is projected at around 3.2 percent, driven mainly by Asia-Pacific economies that are expected to contribute up to 60 percent of total global growth. Despite this, he cautioned that trade prospects remain uncertain due to geopolitical tensions, trade protectionism, and tightening environmental regulations.

Mr. Chen provided a detailed overview of recent trends in global forest product markets, observing that global trade reached a record 312.5 billion USD in 2022 before slowing due to international conflicts and policy shifts. Regional patterns vary widely: Asian markets remain the most dynamic but are undergoing supply diversification; European markets are restructuring under new environmental regulations; North American trade is increasingly shaped by tariff policies; and Oceania is transitioning toward higher value-added wood products.

Turning to China, Mr. Chen reported that the economy's forest product trade reached 181.7 billion USD in 2024, with exports slightly declining by 1.5 percent and imports increasing by nearly one percent in early 2025. He highlighted a notable contraction in raw log and sawn timber imports, alongside stronger trade performance with Belt and Road economies, where trade volume rose by more than five percent in the first three quarters of 2025. He attributed these changes to global demand fluctuations,

stricter import controls, and domestic adjustments in the real estate sector that have reduced demand for construction timber while stimulating growth in high-value furniture, panels, and wood-based materials.

Mr. Chen identified three key pressures shaping China's forest product trade: external policy barriers such as new tariffs, anti-dumping measures, and the EU Deforestation Regulation; domestic structural adjustments under the dual-carbon targets and green transformation; and internal industry constraints related to cost, efficiency, and technological upgrading. To address these challenges, he proposed five major response strategies.

First, China should actively expand emerging markets, particularly within the Belt and Road region, to diversify export destinations and reduce dependency on the United States and the EU. Second, the economy should focus on stimulating domestic demand through policy reforms that promote green consumption, urban renewal, and the development of eco-friendly housing. Third, increasing domestic wood supply through SFM and improved utilization of plantation resources can help reduce import reliance. Fourth, innovation and technology upgrading are critical to transforming traditional wood products into high-performance materials such as cross-laminated timber and bio-based composites. Finally, China should engage more deeply in international rule-making and cooperate with partners to address new trade frameworks, including zero-deforestation supply chains.

In conclusion, Mr. Chen emphasized that the transformation of global forest product trade represents both a challenge and an opportunity for China. By advancing technological innovation, enhancing market diversification, and strengthening compliance with international environmental standards, China can position its forest sector for long-term competitiveness and contribute to sustainable global forest governance.

3.2.6 Development of Yunnan's Forestry and Grassland Industry

Mr. Dong Dekun, Director of the Reform, Science, Technology and Industry Department, Yunnan Forestry and Grassland Bureau

Mr. Dong Dekun presented an overview of Yunnan Province's forestry and grassland industry, emphasizing its vast natural resource base, rich biodiversity, and growing contribution to the provincial economy. He described Yunnan as both a "kingdom of plants and animals" and a "world garden," noting that the province is home to 63 percent of China's higher plant species and ranks first nationwide in biodiversity. Its forest land area reaches 371 million mu, of which 333 million mu are forested, with a total standing stock volume of 2.374 billion cubic meters and a forest coverage rate of 57.87 percent.

Highlighting the province's strong industrial foundation, Mr. Dong reported that Yunnan's forestry and grassland industries achieved an output value of 562.65 billion yuan in 2024, with projections exceeding 650 billion yuan for 2025. The main industrial clusters are concentrated in Pu'er, Xishuangbanna, Baoshan, Lincang, and Dehong, where the processing and value-added utilization of forest and grassland

resources continue to expand. Major subsectors include timber processing, nuts and spices (such as walnut, macadamia, and Sichuan pepper), under-forest medicinal plants, and ornamental flowers. Commercial flower cultivation alone accounts for one-third of the global market, with Yunnan varieties such as rhododendrons, camellias, lotus orchids, and roses contributing to its international reputation.

He further outlined the province's policy framework supporting high-quality development, citing the 14th Five-Year Development Plans for the overall forestry and grassland sector as well as for specific industries, including walnuts, macadamia nuts, pepper, and under-forest Chinese medicinal plants. Complementary regulations and guidance documents, such as the Compilation of Regulations and Policies on Forest and Grassland Resource Conservation and Utilization in Yunnan Province, were also prepared to guide implementation and promote sustainable industrial practices.

In conclusion, Mr. Dong emphasized that Yunnan's forestry and grassland industry development strategy is guided by three key directions: advancing ecological conservation and resource efficiency, promoting industrial upgrading through science and technology, and fostering innovation-driven green growth. By strengthening processing capacity, enhancing product competitiveness, and aligning industrial growth with biodiversity protection, Yunnan aims to become a national model for balancing ecological sustainability with economic prosperity in the forestry sector.

3.2.7 Integration of Three Industries, Innovation-Driven Development, and Policy Guidance: Thirty Years of Yunjing's Growth and Green Practice

Mr. Wang Yingwen, Assistant to the General Manager of Yunjing Paper, General Manager of Jinglin Company, and Acting Chairman of Yunjing Feilin

Mr. Wang Yingwen shared the three-decade journey of Yunjing Paper Industry Group, illustrating how the company has grown from a small forestry enterprise in Pu'er into one of China's leading forest-based industrial groups through integration, innovation, and effective policy guidance. Established in 1994, Yunjing Paper is a subsidiary of Yuntou Group and is recognized as a national key forestry enterprise. It ranks among the top four domestic producers of commodity wood pulp and is the largest household paper manufacturer in Southwest China.

Mr. Wang emphasized that the company's success is built on three fundamental pillars. The first is the integration of primary, secondary, and tertiary industries, following the model of "forestry as the foundation, industrial processing as the driver, and services as the enabler." Through its "forest-pulp-paper-board" integrated strategy, Yunjing has established a full industrial chain that covers raw material cultivation, pulp and paper production, and high-end wood-based panel manufacturing. The company manages over one million mu of raw material forest, produces 300,000 tons of pulp and 54,000 tons of household paper annually, and generates more than 2 billion yuan in total output value. This integration model directly supports over 1,500 local jobs, provides seasonal employment to more than

10,000 workers, and contributes approximately 40 billion yuan to local economic activity each year.

The second pillar is innovation-driven development, which has strengthened Yunjing's core competitiveness. The company collaborates with research institutes such as the Yunnan Academy of Forestry to improve tree breeding, planting, and forest management technologies. It has established China's largest *Pinus kesiya* var. *langbianensis* seed orchard, promoted fast-growing eucalyptus varieties, developed patented forest fertilizers, and implemented precision silviculture. These innovations have significantly enhanced productivity, forest coverage, and resource sustainability in the Pu'er region. In the manufacturing process, Yunjing applies clean production systems and advanced equipment that meet national first-class energy standards, while wastewater discharge levels remain only half the national limit. The company's "Three Needle" and "Yunxiang" brands have been awarded national recognition for quality and sustainability.

The third pillar is policy guidance and institutional support, which have enabled Yunjing to align closely with China's green development and industrial transformation agenda. The company has benefited from national and provincial policies promoting intelligent manufacturing, green production, and industrial upgrading. It has also invested 8.5 billion yuan in establishing Yunjing Feilin New Materials Company, which produces high-performance oriented strand board (OSB) for furniture and interior use, thereby extending the value chain and enhancing profitability.

Concluding his presentation, Mr. Wang highlighted Yunjing's future vision to continue integrating innovation with ecological responsibility. The company aims to consolidate Yunnan's position as a center for forest-based green materials, strengthen international market linkages, and contribute to the realization of China's dual-carbon goals. Through SFM, technological advancement, and inclusive local engagement, Yunjing Paper exemplifies how industrial development can coexist harmoniously with ecological conservation and community well-being.

3.3 Dialogue Session: Practical Cooperation Measures and Recommendations for Asia-Pacific Enterprises under Global Forest Products Trade Dynamics

The Dialogue Session, moderated by Ms. Zhang Junzuo from the UK–China Cooperation Programme on International Forestry Investment and Trade, focused on the theme "Practical Cooperation Measures and Recommendations for Asia-Pacific Enterprises under Global Forest Products Trade Dynamics." The discussion explored how enterprises across the region can strengthen cooperation amid increasing trade tensions and emerging international compliance requirements by enhancing resource complementarity, policy coordination, and the joint development of green standards.

Five panellists representing multinational corporations, research institutions, and leading forestry enterprises shared their perspectives on issues such as the impact of emerging trade regulations, innovation in green materials and adhesives, industry–academia cooperation, and the balance between ecological and economic

goals. The speakers included Mr. Andreas Kemper (TAG Chemicals), Mr. Wang Yingwen (Yunjing Feilin New Materials Co., Ltd.), Prof. Zhou Xiaojian (Southwest Forestry University), Prof. Zhang Shifeng (Beijing Forestry University), and Mr. Xu Jun (Millennium Boat Group).

The session featured exchanges on corporate strategies for adapting to new regulations such as the EU Deforestation Regulation and the Carbon Border Adjustment Mechanism, enhancing supply chain transparency, and promoting innovation and cooperation across the Asia-Pacific forestry sector. Participants also discussed ways to align research outcomes with industrial application, improve competitiveness through technological advancement, and strengthen regional resource and market linkages.

The session concluded with broad agreement on the need for continued dialogue between enterprises, research institutions, and policy bodies to foster sustainable industrial development. This exchange set the stage for the afternoon field visit to Pu'er Yunjing Feilin New Materials Co., Ltd., where participants observed practical applications of integrated green industry development in Yunnan Province.

3.4 Field Visit

In the afternoon, participants visited Pu'er Yunjing Feilin New Materials Co., Ltd., a key enterprise of the Yunjing Paper Group located in Pu'er City. The visit complemented the sub-forum discussions and provided an opportunity to observe the region's approaches to integrating forestry production with green industrial innovation. Participants were introduced to the company's work in forest-based materials, paper manufacturing, and engineered wood products, reflecting Yunnan's broader efforts to promote sustainable resource utilization and value-added processing within the forestry and grassland sector.

3.5 Synthesis and Conclusions

The Forestry Industry Sub-Forum highlighted the profound transformation underway in the global forest products sector and underscored the need for Asia-Pacific economies to strengthen cooperation in response to emerging regulatory, market, and sustainability challenges. Across keynote presentations, dialogue discussions, and the field visit, participants converged on the importance of building transparent, resilient, and environmentally responsible supply chains that can adapt to shifting global trade dynamics, including the impacts of new tariff measures and the implementation of the EU Deforestation Regulation.

Speakers emphasized that future competitiveness will depend increasingly on technological innovation, digital and intelligent manufacturing, higher environmental standards, and stronger alignment between industry, research, and policy. Experiences shared by Yunnan Province and leading enterprises, such as Yunjing Paper, demonstrated how integrated value chains, clean production systems, and science-driven forest management can jointly enhance ecological integrity and industrial competitiveness.

Participants also agreed on the necessity of diversifying markets, accelerating green transformation, improving product traceability, and strengthening cross-border collaboration to navigate evolving compliance frameworks. The Dialogue Session further highlighted opportunities for regional cooperation in developing green standards, advancing research–industry partnerships, and promoting high-quality development of forest-based industries.

Overall, the sub-forum reinforced the strategic role of sustainable forestry and green manufacturing in the Asia-Pacific region’s economic transition. By fostering open exchange and practical cooperation, the session contributed to the broader objectives of the Pu’er Forum in promoting harmonious development between people and nature and advancing a resilient, innovative, and competitive forest-based economy across the region.

4. Forest Policy Sub-Forum

This chapter summarizes the proceedings of the Forest Policy Sub-Forum, including economy presentations, thematic discussions, and regional insights on policy innovation, SFM, and the interface between economic development and ecological conservation.

4.1 Introduction

The Forest Policy Sub-Forum of the Second Pu’er Forum on Asia-Pacific Forests was held on 29 and 30 October 2025 at the APFNet Pu’er Base, bringing together senior government officials, researchers, practitioners, and institutional representatives from across the region. Guided by the theme “Promoting SFM: Policy Innovation and Economic Synergy” the sub-forum provided a collaborative space for examining contemporary forest policy trends, emerging governance challenges, and innovative solutions from diverse national contexts.

The programme combined field visits, economy presentations, and structured discussions, providing participants with opportunities to exchange practical experiences and explore emerging policy tools. The first day began with a study visit to the Tropical Forestry Research Institute in Puwen Town, allowing delegates to observe demonstration efforts on forest restoration, research applications, and local management approaches.

During the indoor sessions, representatives from Cambodia, China, Indonesia, Myanmar, Sri Lanka, Turkmenistan, Uzbekistan, Fiji, Mongolia, Thailand, and Vietnam presented national experiences, covering themes such as SFM, policy reforms, forest landscape restoration, desertification control, biodiversity conservation, carbon neutrality strategies, climate resilience, and forest-based food systems. Presentations highlighted a broad spectrum of policy innovations, ranging from private-sector-oriented restoration frameworks to community forestry models,

national carbon sink strategies, multi-use forest management, and cross-sectoral mechanisms linking forestry with rural development and green economic growth.

A dedicated discussion on balancing economic development with forest ecological conservation provided further insight into shared regional challenges. Delegates underscored the essential role of integrated policy frameworks, economic incentives, technological innovation, multi-stakeholder collaboration, and adaptive governance in navigating these policy trade-offs. The dialogue reaffirmed that SFM requires coordinated action at national, regional, and international levels, supported by continuous learning and open exchange of knowledge.

The sub-forum demonstrated the collective commitment of Asia-Pacific economies to advance policy coherence, promote innovation in forest governance, and strengthen cooperation in addressing the complex drivers of forest loss and landscape degradation. The experiences shared through the presentations and discussions will contribute to ongoing regional efforts to build resilient, inclusive, and economically viable forest sectors capable of supporting sustainable development for future generations.

4.2 Thematic Presentations

The formal indoor sessions were facilitated by Prof. Liu Jinlong of Renmin University of China, who moderated the economy presentations and guided the discussion sessions throughout the two-day programme.

4.2.1 Policy innovations for private sector led forest and landscape restoration

Mr. Kim Sobon, Deputy Director, Department of Forest Plantation and Private Forest Development, Forestry Administration, Cambodia

Mr. Kim Sobon delivered a detailed presentation on Cambodia's efforts to enhance forest landscape restoration (FLR) through targeted policy reforms and strengthened private sector engagement. He began by outlining Cambodia's national commitment to achieving 50% forest cover by 2030, noting persistent deforestation pressures driven by agricultural expansion and economic land concessions. He emphasized that large-scale restoration cannot be achieved without meaningful participation from the private sector, backed by clear and predictable policy frameworks.

He then presented the legal architecture underpinning private-sector-led FLR, highlighting three key instruments: the Forestry Law (2002), which establishes the Permanent Forest Reserve and provides legal recognition for private forests; the Land Law (2001), which defines land classification and tenure arrangements; and the division of jurisdiction between the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Environment (MoE). Together, these laws create the foundation for private investment while clarifying roles across state institutions.

Mr. Sobon elaborated on three major policy innovations that Cambodia has introduced to stimulate private sector involvement in FLR:

1. Guidelines on Private Forest Registration, which provide legal certainty and incentives such as technical support, reduced export taxes, and exemption from transport permits, thereby lowering investment risks for private forest developers.
2. Cambodia's Nested System for REDD+ Projects, a multi-scale framework that allows sub-national and private-sector-led initiatives to generate high-integrity carbon credits aligned with national MRV systems. This innovation enables private actors to benefit from carbon finance while contributing to national emission-reduction goals.
3. Partnership Forestry and Public–Private Partnerships (PPP), which enable collaborative restoration on degraded state forest land. This approach strengthens community–private sector linkages, supports community-based enterprises, and formalizes local forest management structures.

He concluded by outlining Cambodia's pathway to FLR success, stressing the importance of legal certainty, economic incentives, strengthened value chains, and blended financing instruments. Emerging opportunities, such as carbon markets, agroforestry development, and rising domestic timber demand, were contrasted with key challenges, including land tenure complexity, high upfront costs, policy implementation gaps, and technical capacity needs. He emphasized that operationalizing the nested REDD+ system, streamlining tenure processes, and expanding integrated value chains will be central to achieving Cambodia's forest restoration targets.

4.2.2 Sustainable Forest Management and Biodiversity Conservation in China

Prof. Lei Jingpin, Director, Sustainable Forestry Development & Research Center, Chinese Academy of Forestry

Prof. Lei Jingpin delivered an extensive presentation on China's progress, innovations, and future directions in SFM and biodiversity conservation. She emphasized that forests lie at the core of global sustainable development, highlighting their centrality to the SDGs and the UN Strategic Plan for Forests (2017–2030), particularly its six Global Forest Goals aimed at reversing forest loss, strengthening ecosystem services, and enhancing governance.

She noted ongoing global pressures on forests, with approximately 10 million hectares lost annually, affecting the livelihoods of 3.2 billion people and diminishing ecosystem services valued at more than 10 percent of global GDP. Prof. Lei underscored that forest biodiversity, including genetic, species and ecosystem levels, is fundamental to ecosystem stability, as forests host 80 percent of terrestrial biodiversity and supply 75 percent of global freshwater.

Turning to China's national efforts, she outlined a wide spectrum of actions aligned with the UN Forest Instrument, including major initiatives related to SFM, desertification control, biodiversity conservation and forest based industries. She highlighted China's rapidly growing bamboo sector, which is expected to reach an output value of CNY 500 billion by 2025, and noted significant achievements in large scale desertification prevention, including the treatment of 12.4 million hectares of severely degraded land.

Prof. Lei emphasized China's commitment to expanding and strengthening protected areas, noting that a three tier classification system is being established and that national parks are expected to represent approximately 18 percent of China's land area by 2025. The newly established national park system, which includes Sanjiangyuan and the Northeast Tiger and Leopard National Park, demonstrates integrated protection, ecological restoration and unified management. Positive conservation outcomes include rising populations of giant pandas, crested ibises, Hainan gibbons and significant recovery of prey species.

The presentation also highlighted China's active engagement with the Montréal Process, using its criteria and indicators as a framework for national reporting, policy development, and international collaboration. Prof. Lei noted China's efforts to link the Montréal Process with other regional and global mechanisms, including cooperation with UNECE and European partners on forest sustainability challenges.

Several case studies were presented, showcasing China's practical experience with SFM through improved forest management plans, mixed-age forest models, and pilot demonstration sites. The Northeast Tiger and Leopard National Park illustrated successful integration of conservation, community engagement, and high-tech monitoring, leading to significant reductions in poaching and measurable improvements in ecological health.

Prof. Lei acknowledged a set of persistent challenges, including forest degradation, climate change impacts, invasive species, pollution, financial constraints, and technological gaps in biodiversity monitoring. Addressing these issues will require advanced tools, such as AI, satellite imagery, and integrated data platforms, along with strengthened governance and improved biosecurity mechanisms.

In outlining the future direction, she emphasized expanding protected areas, enhancing international cooperation, improving integrated forest management under climate change, and strengthening scientific research to support adaptive management. She concluded by calling for deeper collaboration, knowledge sharing, and collective commitment to safeguarding forest ecosystems for future generations.

4.2.3 Forest for Food Policy in Multiple Streams View: Lessons for Policy Innovation and Economic Synergy in Indonesia

Dr. Yanto Rochmayanto, Senior Researcher, National Research and Innovation Agency, Indonesia

Dr. Yanto Rochmayanto presented an analytical overview of Indonesia's emerging policy framework linking forests with national food security. He began by highlighting the state of global food insecurity, noting that in 2024 an estimated 8.2 percent of the world's population faced hunger, with Asia and Africa accounting for the largest affected populations. He also explained that food price inflation has sharply undermined purchasing power in low income countries, thereby intensifying vulnerabilities. These trends reinforce the need to view forests as essential contributors to food system resilience.

He outlined ten key reasons why forests play a central role in transforming food systems, including the nutritional value of tree based foods, provision of wild foods and fodder, support for pollination, soil restoration, climate regulation, and the role of tree based systems in bridging seasonal food gaps for rural populations. He emphasized research findings showing that millions of households depend on forests for diverse sources of nutrition and climate resilience.

Dr. Rochmayanto then applied the multiple streams framework to explain how Indonesia's Forest for Food policy has evolved. In the problem stream, he identified persistent issues such as high dependence on rice, 62 districts vulnerable to food insecurity, and environmental pressures, including deforestation, peatland degradation and limited water accessibility. He presented data on rehabilitation efforts and peatland restoration, showing both progress and remaining gaps.

In the policy stream, he reviewed the trajectory of forest and food related policies, ranging from early timber oriented forest management to newer approaches such as social forestry, multi business forestry, and forest based food estates. He explained that social forestry has expanded significantly, now covering over 10 percent of forest areas, and includes schemes such as village forests, customary forests, community forestry plantations and forestry partnerships. These innovations reflect Indonesia's shift toward more community-based and multifunctional forest governance.

In the political stream, he noted growing political commitment to food, water and energy security. The national forest estate now represents a major potential resource for food production, with assessments showing 20.6 million hectares suitable for food or renewable energy development, including opportunities in non-concession areas, concession areas and social forestry sites.

The presentation highlighted two major policy outputs. The first involves integrating food production into the social forestry programme, where more than 1.9 million hectares have been identified as suitable for food crops, including upland rice. The second is the expansion of multi business forestry, a policy that allows a single license to cover multiple activities, such as timber, non-timber products and environmental services. This creates incentives for concession holders to incorporate food production within SFM frameworks.

Dr. Rochmayanto also described the contributions of National Research and Innovation Agency (BRIN) in policy research, national planning, international negotiations and collaboration with ministries and scientific institutions. These efforts support evidence based policymaking and strengthen Indonesia's role in global discussions on climate change, biodiversity and sustainable development.

In his concluding remarks, Dr. Rochmayanto noted several implications for forest planning and management, including the need for stronger value chain development, improved market access, multi-use forest management models, integration of geospatial and decision support technologies and broader community participation. He underscored that Indonesia's Forest for Food policy provides important lessons for linking forest governance with economic development, climate resilience and food

security. He also called for stronger regional support in financing, infrastructure, research collaboration and knowledge sharing.

4.2.4 Overview of forest policy and sustainable forest management in Myanmar

Mr. Thein Saung, Assistant Director, Forest Department, Ministry of Natural Resources and Environmental Conservation, Myanmar

Mr. Thein Saung delivered a detailed overview of Myanmar's forest resources, policy framework, and national efforts to advance SFM. He began by outlining key features of the economy, noting Myanmar's extensive forest cover, diverse ecosystems, and the significant role of forests in supporting rural livelihoods. He also drew attention to the continued challenges posed by deforestation and forest degradation, driven by illegal logging, fuelwood extraction, agricultural expansion, mining, hydropower development, and natural disasters.

He presented the national policy landscape that guides SFM, including the Myanmar Sustainable Development Plan, the Forest Policy of 1995, the National Forest Master Plan, the Forestry Sector Comprehensive Development Plan, and a wide array of environmental and climate related laws and strategies. These instruments provide the foundation for forest protection, conservation, sustainable use, community participation, and public awareness. He highlighted the six policy imperatives of the national forest policy, which cover protection, sustainability, basic needs, efficiency, people's participation, and public awareness.

Mr. Saung then provided a thorough explanation of institutional and technical measures supporting SFM. These include the continuous expansion and management of the Permanent Forest Estate, the application of the Myanmar Selection System, reduced impact logging practices, and strict adherence to annual allowable cuts. He also outlined the significant investment in state owned plantations, private sector plantations, and community forestry development. The progress achieved through the Community Forestry Instructions and the Community Forestry Strategic Plan was emphasized, with community forestry seen as essential for livelihood improvement, forest restoration, and enhanced local participation.

The presentation further examined biodiversity conservation initiatives, ecosystem restoration, mangrove protection, and the expansion of protected areas. He outlined the objectives and achievements of major national programmes such as the Myanmar Reforestation and Rehabilitation Programme and the Reestablishing Natural Habitats Programme. He also described ongoing work related to REDD+ readiness, the national forest monitoring system, the forest reference emission level, and the development of national strategies for climate mitigation. Additional reforms, including restrictions on raw log exports, reductions in annual allowable cuts, and introduction of legality assurance systems under the Myanmar Timber Legality Assurance System, were also discussed.

In closing, Mr. Saung affirmed that SFM remains a national priority closely aligned with the Myanmar Sustainable Development Plan. While the economy continues to face financial and technical limitations, he expressed Myanmar's willingness to

strengthen cooperation with regional partners in order to advance forest conservation, sustainable economic development, and shared environmental objectives across the Asia Pacific region.

4.2.5 Sustainable Forest Management, Policy Innovation and Economic Synergy in Sri Lanka

Prof. Wasantha Kumara Liyanage, Deputy Conservator of Forests, Forest Department, Sri Lanka

Prof. Wasantha Kumara Liyanage provided an in depth overview of the policy landscape, institutional arrangements, and emerging innovations shaping SFM in Sri Lanka. He first outlined the ecological and socio economic significance of the economy's forests, noting that forest cover remains close to one third of the national land area, with natural forests accounting for the majority of this extent and hosting exceptional levels of biodiversity. He explained that forest cover has declined over time due to multiple pressures, including agricultural expansion, encroachment, urban and infrastructure development, fragmentation of forest patches, and illegal timber extraction. He highlighted the growing concerns related to human wildlife conflict and the persistent difficulty of balancing immediate economic needs with long term ecological sustainability.

The presentation then reviewed the national policy and institutional framework, which includes the Forest Ordinance, the Fauna and Flora Protection Ordinance, the National Environment Act, the National Forest Policy, the National Environmental Action Plan, and the Forestry Sector Master Plan. Prof. Liyanage explained the three overarching objectives of the National Forest Policy of 1995, which emphasize conservation, increased productivity and tree cover, and enhanced contributions of forestry to rural livelihood development. He further outlined the policy direction for managing both state owned and private forest resources, noting that conservation remains the primary function of natural forests while regulated multiple use forestry and community-based plantation development play complementary roles in meeting national needs.

Prof. Liyanage presented key priorities of the Forestry Sector Master Plan for 2023 - 2033, which covers biodiversity conservation, soil and water protection, industrial plantations, tree resources outside forests, nature based tourism, non-timber forest products, wood industry development, bio energy, forestry research, and human resource development. He also discussed ongoing policy innovation, including national commitments to increase forest cover under the Nationally Determined Contributions, expansion of community forestry and farmer woodlots, the development of national forest stewardship standards, and the growing use of ecosystem valuation and payment for ecosystem services as tools for conservation financing. Integrated landscape approaches were highlighted as important for addressing land use conflicts and strengthening the interface between forests, agriculture, and watershed management.

The presentation concluded with an overview of the economic opportunities associated with sustainable forestry, including carbon finance through REDD+ programmes, nature based tourism, non-timber forest product value chains, sustainable timber certification, and the use of remote sensing and data systems for improved monitoring and planning. Prof. Liyanage recommended scaling up community forestry with stronger legal recognition of community rights, expanding restoration financing mechanisms, strengthening protection of primary forests and ecological corridors, supporting livelihood based alternatives to conversion, and improving governance and tenure clarity. He emphasized that Sri Lanka's forests represent essential natural capital for the economy's future and called for collective regional partnerships, innovation, and data-informed governance to advance sustainable development.

4.2.6 Afforestation and Activities on Combatting Desertification in Turkmenistan

Mr. Nury Atamyradov, Head of Scientific, Technical and Information Department, National Institute of Deserts, Flora and Fauna, Ministry of Environmental Protection, Turkmenistan

Mr. Nury Atamyradov presented an overview of Turkmenistan's forest conditions, national programmes, and ongoing measures to combat desertification. He began by outlining the distribution of forest types across the economy, noting that desert forests form the largest share of the national forest estate (forest fund), followed by mountain forests, riparian forests, shelterbelts, and forest plantations. He explained that forestry administration is carried out through seven forestry enterprises with responsibility for seedling production, afforestation, and the cultivation of agricultural crops as part of their self-financing model. He then introduced the National Forestry Programme for the period 2021 - 2025, which focuses on improving ecological conditions, restoring forest ecosystems, conserving biodiversity, strengthening scientific research, enhancing the legislative base, and expanding international cooperation.

Mr. Atamyradov described key programme activities, including the creation of forest park zones, the establishment of protective forest areas, afforestation in the Avaza tourist zone on the Caspian coast, afforestation in the Aral Sea region, the production of quality seedlings, and forest inventory and monitoring. He reported that Turkmenistan plants approximately three million seedlings each year, covering coniferous, deciduous, fruit bearing, vine, and desert adapted species. He highlighted major achievements, such as the expansion of forest park zones in the foothills of the Kopetdag Mountains and around settlements, the creation of shelterbelts, large scale planting efforts along the Garagum River, and substantial afforestation work in the Aral Sea region aimed at stabilizing soils and reducing the impact of salt laden dust storms.

The presentation concluded with several proposals for strengthened cooperation with APFNet. These include establishing protective forest zones in the Aral Sea region to mitigate dust storms, expanding plantations of high yielding pistachio, almond, and olive species, promoting afforestation in desert and mountain landscapes using water

saving technologies, stabilizing shifting sands along transport corridors, restoring riverbanks along the Amudarya through planting indigenous species, and cultivating rare medicinal plants listed in Turkmenistan's Red Data Book. Mr. Atamyradov emphasized that these priorities reflect Turkmenistan's commitment to SFM and its readiness to collaborate with regional partners to address shared environmental challenges.

4.2.7 Forests of Uzbekistan: Importance, Condition and Projects

Mr. Nematov Golib, Head of International Relations Department, Agency for Afforestation and Expansion of Green Areas and Combating Desertification, Ministry of Ecology, Environmental Protection and Climate Change, Uzbekistan

Mr. Nematov Golib presented a concise overview of the status of Uzbekistan's forests and the ambitious national plans to expand forest cover as part of the economy's long term sustainability agenda. He began by emphasizing the ecological and economic importance of Uzbekistan's forests, noting their critical role in protecting soils, combating desertification, regulating climate, and preserving biodiversity. He added that forests support rural livelihoods by providing timber, medicinal plants, nuts, honey, and other resources, while also offering new opportunities for ecotourism and recreation. He then outlined the current condition of the national forest estate (forest fund), which covers approximately twelve point one million hectares, representing about one quarter of the economy's land area. Desert forests account for the vast majority of this extent, followed by mountain forests and tugai forests located along floodplains and river valleys. He noted that forest landscapes face significant pressures, including land degradation, illegal logging, and widespread desertification.

Mr. Nematov Golib described Uzbekistan's strategic goals for the period up to 2023, focusing on large scale afforestation and the restoration of degraded landscapes. The national plan envisions increasing the forest area to 6.7 million hectares by 2030, with afforestation efforts concentrated primarily in desert regions. He highlighted the target of 1.5 million hectares of new forest plantations between 2025 and 2023, which will include saxaul and other desert adapted species, as well as pistachio, almond, walnut, plane tree, elm, Japanese pagoda tree, poplar, and willow in suitable areas. He explained that the programme aims to produce more than 900 million seedlings and saplings and to harvest over 9000 tons of seeds to support this scale of planting. Additional measures include establishing protective forest belts, conducting terraced planting on mountain slopes, and expanding nurseries and modern laboratory facilities.

The presentation also covered ongoing investment efforts, including financial support from the World Bank, the PROGREEN initiative, and other international partners. Uzbekistan plans to mobilize significant grant financing to complement national investments and accelerate afforestation and restoration. Mr. Nematov highlighted key initiatives such as the National Green Space Programme, which aims to plant two hundred million trees each year, the restoration of tugai forests along major river systems, and the development of ecotourism and recreational zones. He concluded by stating that forests are central to Uzbekistan's sustainable future and that meaningful

progress requires coordinated efforts among government institutions, the private sector, and civil society.

4.2.8 Building an Adaptive Forest Management System for Carbon Neutrality: Pathways and Implementation

Mr. Wang Yixiang, Zhejiang A and F University, China

Prof. Wang Yixiang delivered a comprehensive presentation on how China is advancing an adaptive forest management system to support the achievement of national carbon neutrality objectives. He began by emphasizing the growing strategic value of forest carbon sinks, noting that China's successive international commitments have elevated forest stock targets and transformed forest carbon sinks from an ecological service into a core component of national climate governance. He explained that although China has made significant progress in expanding forest area, future gains will increasingly depend on improving management quality rather than simply increasing plantation area. He also identified several cognitive and practical constraints that limit carbon sink effectiveness, including the tendency to underestimate ecological thresholds, the assumption that carbon storage remains constant over time, and the limited recognition of risks associated with climate extremes and ecological disturbances.

Prof. Wang then introduced the four defining characteristics of forest carbon sinks, which he described as integrity, saturation, fluctuation, and permanence. He explained that ecosystem integrity is fundamental because vegetation, soil, and microorganisms jointly determine the stability of carbon sinks, and any disruption may lead forests to shift from a carbon sink to a carbon source. He highlighted the concept of saturation, noting that forests have an upper limit of carbon storage and that sequestration gradually slows as stands mature. He illustrated the challenge of fluctuation by presenting global examples of droughts and wildfires, showing how climate variability can rapidly reduce carbon stocks. He also discussed permanence, explaining that long term carbon sequestration requires sustained forest health, long lived native species, and effective protection against disturbances such as fire, pests, and extreme weather events.

Building on this framework, Prof. Wang outlined the structure of an adaptive forest management system designed to enhance carbon sink stability and resilience. He described a set of management strategies that align with the four core characteristics, including holistic protection of natural forests, optimization of species composition, the development of mixed and uneven aged forests, enhancement of soil carbon through reduced disturbance, tending and thinning of young and middle aged stands, selective regeneration in overmature forests, and the creation of stable landscape patterns that reduce vulnerability to fires and pests. He emphasized the importance of full cycle forest management that spans natural growth, sustainable harvesting, and the production of long lasting wood products that store carbon over extended periods.

Prof. Wang concluded by identifying key research and policy priorities needed to support adaptive forest management. These include strengthening national carbon

sink monitoring systems, improving understanding of ecological processes and critical thresholds, enhancing regional cooperation in carbon cycle research, and developing advanced modelling and remote sensing tools. He also called for innovations in policy and market mechanisms, such as improved carbon accounting methodologies, ecological compensation, green finance instruments, and risk management systems that provide long term incentives for SFM. He emphasized that China's path toward the dual carbon goals requires an integrated approach grounded in scientific management, ecosystem protection, and the long term enhancement of forest carbon sinks.

4.2.9 Forest Policies - Fiji

Mr. Naikatini Alivereti Neisava, Deputy Conservator of Forests, Ministry of Forestry, Fiji

Mr. Naikatini Alivereti Neisava presented an extensive overview of Fiji's forestry governance framework, strategic priorities, and national initiatives aimed at advancing SFM. He began by outlining the mandate of the Ministry of Forestry, which functions as both a regulatory and service institution responsible for policy formulation, enforcement of forestry legislation, delivery of extension and advisory services, sector monitoring, and the implementation of Fiji's international commitments. He highlighted the breadth of the economy's policy and legislative framework, which includes the Forest Policy of 2007, the REDD+ Policy, the Climate Change Act, the Environment Management Act, Codes of Practice for Timber Harvesting and Processing, and several cross sectoral policies related to agriculture, land use, and national development. These frameworks collectively guide SFM, climate action, biodiversity conservation, and the integration of forestry into broader national planning processes.

Mr. Neisava explained Fiji's forestry strategic goals and priorities, which aim to establish sustainable life cycle management of forest resources, enhance socio economic benefits, strengthen contributions to the global environment, and improve institutional service delivery. He outlined key national targets, including the commitment to plant 30 million trees over 15 years, the intention to increase forest cover from 60 to 64 four percent, expansion of protected areas, restoration of 50,000 acres of mangrove ecosystems, and greater engagement of youth and women in forestry related enterprises. He emphasized that these priorities align with Fiji's climate mitigation and adaptation goals, including the Nationally Determined Contributions, the Low Emissions Development Strategy, and the National Adaptation Plan.

The presentation also detailed major development policies, strategies, and initiatives designed to operationalize these goals. These include the review and modernization of forestry legislation, promotion of sustainable forest harvesting and conservation, development of forest inventories and carbon measurement systems, and support for community-based forestry, wood and non-wood product development, and small and medium enterprises. Mr. Neisava highlighted ongoing investments in forest monitoring systems, remote sensing and geographic information technologies,

research and training programmes, and partnerships for private sector engagement in plantation development and value addition. He also noted the importance of strengthening forest governance, improving sector coordination, enhancing gender inclusive participation, and developing policies that support carbon trading, urban forestry, and the management of mahogany and pine resources. He concluded by reaffirming Fiji's commitment to SFM, climate resilience, and the creation of long term socio economic benefits through inclusive and well governed forestry initiatives.

4.2.10 Forestry sector in Mongolia & “Billion Trees” National Movement – Cooperation with Private Sector and International Organizations

Mr. Nachin Baatarbileg, National Forest Agency, Government of Mongolia

Mr. Nachin Baatarbileg provided a detailed overview of Mongolia's forestry sector and the implementation of the National Billion Trees movement, highlighting the economy's efforts to address desertification, restore degraded landscapes, and strengthen forest governance. He began by outlining the mission of the National Forest Agency, which focuses on securing environmental sustainability, preventing resource degradation, expanding forest cover, and promoting SFM for the benefit of present and future generations. He emphasized key policy priorities, including forest resource research, protection against fires and pests, improved monitoring, and the development of an enabling legal environment that supports sustainable utilization and strong forest governance. He explained that Mongolia is working to build national capacity for the production of high quality seeds, nursery development, reforestation, and afforestation as essential foundations for increasing forest cover.

Mr. Baatarbileg highlighted the role of professional forestry organizations, noting that more than six hundred licensed entities are engaged in forest thinning, cleaning, harvesting, non-timber production, forest inventory, protection, and reforestation. He also reported that by 2023, over 3.7 million hectares of land had been placed under the management of more than 1200 community-based forest units. He explained that participation by citizens, communities, and private companies in forest planting activities has increased significantly since the launch of the Billion Trees movement.

The presentation provided an update on the implementation of the national campaign, noting that more than eighty three million trees have been planted through both direct planting and offset programmes. Mr. Baatarbileg outlined four national goals of the movement, which include strengthening urban forests, reducing desertification and sandstorms, supporting food security through agroforestry, and expanding forest cover to counter land degradation. He also highlighted significant contributions made by the mining sector, provincial governments, financial institutions, and community groups.

Mr. Baatarbileg presented examples of international partnerships that support Mongolia's forest restoration efforts. These include the long running Mongolia Korea Green Belt programme, which has promoted anti-desertification planting, nursery establishment, training, and the development of friendship parks. He also described two ongoing AFoCO supported projects, one aimed at establishing high capacity

nurseries and improving reforestation, and another focused on strengthening community-based enterprises through non-timber forest products. Further cooperation has been developed through a forest partnership with the European Union and through joint commitments made by the leaders of Mongolia and China to expand collaboration on combating desertification, dust storms, and land degradation. He concluded by reaffirming that the Billion Trees movement is central to Mongolia's long term environmental strategy and that expanded national and international cooperation remains essential for achieving sustainable forest restoration at scale.

4.2.11 Forestry Policy: Forest Management - Policy and Economy in Thailand

Ms. Wisuthra Intongkaew, Director of Planning and Information Office, Royal Forest Department, Thailand

Ms. Wisuthra Intongkaew presented an extensive overview of Thailand's forest management policies, national strategies, and institutional arrangements guiding sustainable forestry. She began by outlining Thailand's overarching development framework, including the National Strategy for the period 2018 to 2037 and the Thirteenth National Economic and Social Development Plan, which collectively aim to promote ecofriendly development, strengthen climate resilience, and enhance sustainable economic growth. She noted that the national target for forest cover is forty percent of total land area and explained that this includes conservation forests, economic forests, and community forests. Thailand's forest cover currently stands at approximately thirty one percent, meaning that significant expansion is required to meet long term national objectives.

Ms. Intongkaew highlighted the main objectives of the National Forestry Policy, which include ensuring ecological balance, preventing the destruction of forest resources, promoting fair and sustainable utilization of forest products, and strengthening the overall forest resource management system through science based planning, innovation, and broad stakeholder participation. She explained that these objectives are aligned with national reform plans, international forestry commitments, and Thailand's broader goals for becoming a low carbon and climate resilient society. She outlined the primary causes of deforestation, such as urban expansion, agricultural growth, infrastructure development, forest fires, and natural disasters, and described the mechanisms Thailand uses to address them, including strengthened law enforcement, forest rehabilitation, community forestry programmes, private sector engagement, promotion of ecotourism, and the adoption of new technologies.

The presentation also provided a detailed explanation of the institutional architecture governing the forestry sector. The Royal Forest Department is responsible for forests outside the protected area system, focusing on conservation, rehabilitation, research, biodiversity surveys, community forestry, and forest land management. The Department of National Parks, Wildlife and Plant Conservation manages protected areas, while the Department of Marine and Coastal Resources oversees mangroves and coastal ecosystems. The Forest Industry Organization promotes sustainable commercial use of forest resources. Ms. Intongkaew explained the complementary roles of the different agencies and noted that their cooperation is guided by a

comprehensive legal framework that defines responsibilities for forest management, conservation, and sustainable use.

Ms. Intongkaew then outlined the National Forest Development Master Plan, which serves as the operational instrument for achieving the National Forestry Policy. It defines clear forest cover targets, sustainable management strategies, financing mechanisms, monitoring and evaluation systems, and linkages to other national plans. She described Thailand's integrated approach to achieving its goals through three core workstreams, namely protecting and preserving forests, planting and restoring forests, and producing economic and innovative forestry products and services. This includes promoting community forestry, expanding economic timber plantations, enhancing forest monitoring, adopting modern technology, and improving forest governance and institutional capacity. She concluded by emphasizing the importance of partnerships among government agencies, communities, the private sector, civil society, educational institutions, and the media in ensuring SFM and addressing transboundary challenges. She expressed Thailand's interest in regional cooperation, knowledge sharing, innovation, and joint problem solving to support sustainable and inclusive forestry development across the Asia Pacific region.

4.2.12 Forestry Sector in Vietnam: Current Situation and Strategic Development Directions

Mr. Pham Duy Long, Vietnam Forestry Administration

Mr. Pham Duy Long presented a comprehensive overview of Vietnam's forestry sector, highlighting current forest conditions, recent achievements, and long term strategic directions. He began by outlining the steady increase in forest cover over the past three decades, with national forest area now reaching approximately 14.86 million hectares and a forest cover rate of more than 42 percent. Natural forests account for about ten million hectares, while plantation forests cover nearly five million hectares. He described the diverse management structure, noting that forests are administered by protection and special use forest boards, economic entities, households, communities, and local authorities, each contributing to forest management, conservation, and sustainable use.

Mr. Long then highlighted key achievements during the 2021 to 2025 period, including an annual average of more than 260,000 hectares of concentrated plantation, the development of 440,000 hectares of large timber forests, and the certification of more than 500,000 hectares under SFM standards. He also noted Vietnam's strong global position in forest product trade, with export values averaging more than fifteen billion USD per year. The sector has also made significant advances in payments for forest environmental services, with annual revenue exceeding three thousand billion Vietnamese Dong, and in climate finance, as demonstrated by the transfer of 10.3 million forest carbon credits in 2023.

The presentation then outlined Vietnam's major national programmes and policy frameworks, including the Forestry Development Strategy for the period 2021 to 2030 with a vision to 2050, the National Forestry Planning framework, the Sustainable

Forestry Development Programme, and the One Billion Trees initiative. He explained that the sector's long term vision is to build a modern and competitive forestry industry that generates high value products, integrates into global value chains, and contributes substantially to sustainable development, biodiversity conservation, and climate change mitigation.

Mr. Long also detailed the specific objectives and targets set for 2025 and 2030, which include expanding forest cover to 42 to 43 percent, increasing export revenues, enhancing forest environmental services, expanding SFM certification, restoring natural forests, and improving livelihoods for communities, particularly ethnic minority groups living near forest areas. He highlighted the strategic orientation for forest land planning, with more than fifteen million hectares designated as forest land, including special use forests, protection forests, and production forests. Priorities include improving forest quality, developing large timber plantations, strengthening forest infrastructure, and promoting modern wood processing industries.

Mr. Long concluded by outlining key tasks and solutions to advance sustainable forestry development. These include strengthening forest protection and conservation, modernizing monitoring systems through remote sensing and digital tools, promoting value chain development and circular forestry business models, improving forestry policies and legal frameworks, enhancing human resource capacity, and expanding international cooperation to mobilize resources for forest protection, restoration, and green growth. He affirmed Vietnam's commitment to building a resilient forestry sector that supports climate objectives, sustainable livelihoods, and long term national development goals.

4.2.13 China's Forest Governance in Transition: For Harmonization of People and Nature

Prof. Liu Jinlong, School of Agricultural Economics and Rural Development, Renmin University of China

Prof. Liu Jinlong delivered a wide ranging and conceptually rich presentation examining China's forest governance within the broader context of global environmental change, societal transformation, and shifting governance paradigms. He began by explaining that China's forest governance seeks to achieve both improved forest quality and enhanced nature conservation through comprehensive and integrated approaches that balance development and protection. He highlighted China's central policy principle of promoting harmony between people and nature, which serves as the foundation for ecological civilization and informs China's contributions to global ecological security.

Prof. Liu then discussed global trends shaping forest landscape change, noting that forests worldwide are undergoing profound transitions influenced by demographic and economic shifts, urbanization, technological advancement, climate change, and evolving geopolitical conditions. He illustrated this through the concept of global forest frontiers, which include land use change, conservation trade-offs, climate impacts, justice and rights issues, changing governance models, and the rapid

expansion of knowledge through innovations such as remote sensing and artificial intelligence. He reviewed forest transition theory and its various explanatory pathways, such as economic development, forest scarcity, globalization, state policies, and smallholder engagement, while acknowledging critiques that highlight the complexity of real world patterns.

Prof. Liu also addressed the global challenges associated with biodiversity loss, environmental degradation, and inequality. He presented evidence that the scale of human economic activity has exceeded the carrying capacity of the planet, leading to degradation of natural resources and substantial biodiversity decline. He linked these challenges to consumption driven economic systems and argued that they require new governance approaches grounded in ecological sustainability, equity, and systemic change.

Turning to China's response, Prof. Liu explained the philosophical and ideological foundations of ecological civilization, which integrates traditional Chinese ecological culture, people centered development, scientific innovation, and modern governance principles. He described ecological civilization as China's vision for a sustainable global future and as an integrated system that combines political, economic, social, and cultural transformation. He noted that the concept is embedded in national policy frameworks and guides China's domestic and international environmental commitments.

Prof. Liu further outlined the analytical approaches and knowledge systems underlying forest governance research, emphasizing the importance of locally grounded knowledge, case based inquiry, and an understanding of power dynamics between the state, communities, and markets. He presented examples of evolving management paradigms, comparing industrial forestry, multiple use forestry, ecosystem based management, and social forestry, and explained how each addresses different policy problems and relies on distinct knowledge bases and actor coalitions. He also identified ongoing challenges in the preservation of traditional forest related knowledge, including the erosion of customary practices, weakening of community-based institutions, loss of traditional ecological knowledge, and diminishing local control over forest resources.

Prof. Liu concluded by reiterating that forest governance in China is evolving toward more inclusive, multi actor, and ecosystem based approaches that seek to balance ecological health with human development. He stressed that achieving harmony between people and nature requires continuous learning, scientific innovation, preservation of cultural traditions, and adaptive governance capable of responding to both national and global environmental challenges.

4.3 Discussion Session: Balancing Policy Conflicts Between Economic Development and Forest Ecological Conservation

The discussion session, moderated by Prof. Liu Jinlong, explored practical approaches to reconciling economic growth with forest ecological conservation. Delegates

contributed written inputs followed by a moderated roundtable dialogue, resulting in several converging viewpoints.

Participants agreed on the importance of integrated policy frameworks that simultaneously address conservation and development objectives. Many delegates noted that zoning systems, coordinated land use planning, and coherent regulatory frameworks are essential for reducing conflicts between sectors. They emphasized that policies must be consistent across government agencies to avoid fragmented implementation.

The discussion highlighted the increasing value of economic incentives and market based mechanisms in aligning financial interests with environmental goals. Examples included payments for ecosystem services, carbon credit schemes, green investment instruments, and certification systems for sustainable forest products. Participants stressed the need to establish dedicated financing channels to support communities engaged in conservation activities.

Technological innovation emerged as a central theme. Delegates underscored the role of remote sensing, geographic information systems, and artificial intelligence in monitoring forest change, detecting illegal activities, and guiding resource allocation. Participants supported the creation of regional platforms to facilitate data sharing and promote common monitoring standards.

Collaboration among governments, the private sector, civil society, and local communities was repeatedly identified as critical for effective forest governance. Delegates encouraged the development of public and private partnerships for restoration initiatives and the expansion of community-based management models that enable equitable sharing of benefits.

International cooperation was also recognized as a key factor in addressing transboundary conservation challenges. Participants expressed support for joint training programmes, shared learning events, and strengthened engagement through organizations such as APFNet, FAO, and the United Nations Forum on Forests.

Capacity development and public awareness were identified as essential foundations for SFM. Delegates emphasized the importance of improving technical skills among forest practitioners and policymakers, while also promoting public understanding of the economic and ecological value of forests.

Finally, the discussion underscored the need for adaptive governance systems capable of responding to climate variability, changing socioeconomic conditions, and emerging scientific knowledge. Participants recommended periodic reviews of existing strategies and greater flexibility in policy design.

In his concluding remarks, Prof. Liu Jinlong affirmed that achieving a balance between economic development and forest conservation requires an integrated approach that brings together regulatory measures, financial incentives, scientific innovation, and broad based collaboration. He encouraged delegates to incorporate these insights into national policymaking and to strengthen opportunities for continuous dialogue through regional and international platforms.

4.4 Filed Visit

Following the indoor discussions, participants undertook a field visit to the APFNet Pu'er Base, where they observed ongoing research, demonstration activities, and practical applications of SFM.

4.5 Synthesis and Conclusions

The discussions and presentations of the Forest Policy Sub-Forum highlighted the increasingly complex forest governance landscape across the Asia-Pacific region. Despite diverse national contexts, several common themes emerged clearly. Economies emphasized the need to balance economic development with ecological sustainability, advancing policies that link conservation with livelihood enhancement, rural development, and green economic opportunities. Momentum is also growing toward diversified governance models, including social forestry, multi-use forestry, and landscape-based approaches that position forests as essential to food security, climate resilience, and carbon neutrality.

A second recurring theme was the expanding role of science, technology, and data-driven management. Delegates underscored the importance of remote sensing, GIS, artificial intelligence, and improved monitoring systems as essential tools for effective forest protection, restoration, and policy evaluation. Several economies expressed strong interest in enhancing regional platforms for shared learning, harmonized monitoring, and technical cooperation.

The sub-forum further underscored the importance of inclusive and multi-stakeholder governance. Engagement of communities, private enterprises, civil society, and youth was highlighted as critical for sustaining forest policies and restoration programmes. Participants also noted the need to strengthen capacity development, expand public awareness, and mobilize financial instruments such as ecosystem service payments, carbon markets, and green investment mechanisms.

There was broad consensus that the region's forest-related challenges cannot be addressed through isolated national actions. Transboundary ecosystems, climate-related risks, and shared development aspirations require coordinated and sustained regional cooperation. The insights generated during the sub-forum provide a strong foundation for advancing dialogue, promoting policy alignment, and supporting joint initiatives under APFNet and other international platforms.

Overall, the Forest Policy Sub-Forum reaffirmed a shared regional commitment to building forest sectors that are ecologically sound, economically competitive, socially inclusive, and resilient to future uncertainties. The knowledge exchanged in Pu'er will continue to inform national strategies and inspire deeper collaboration toward a sustainable and nature-positive future.

5. Nature Education Sub Forum

This chapter presents the proceedings of the Nature Education Sub Forum, highlighting experiences, practices and collaborative insights shared by experts and practitioners on advancing nature education across diverse ecological settings.

5.1 Introduction

The Nature Education Sub-Forum was convened on 29–30 October 2025 as part of the Second Pu'er Forum on Asia-Pacific Forests. Bringing together experts and practitioners from research institutes, national parks, educational organizations, forest farms, and civil society, the sub-forum provided a platform to examine emerging practices, challenges, and opportunities in nature-based learning across diverse ecological and cultural contexts. The programme combined thematic presentations, a field visit, and a working group discussion, each contributing insights on how immersive experiences, scientific interpretation, and community engagement can foster deeper public connections with nature and support ecological conservation.

The sub-forum was facilitated by Ms. Wang Qian, Director of the Capacity Building Division of APFNet. She guided the programme throughout the day, ensuring smooth coordination of presentations, discussions, and exchanges among participants.

5.2 Thematic Presentations

Mr. Zhao Shucong, Chairman of the Chinese Society of Forestry (CSF) delivered welcome remarks to open the Sub Forum. He acknowledged the importance of nature education in strengthening public understanding of ecological conservation and highlighted its role in promoting SFM. He welcomed the participants and expressed appreciation for their contributions to advancing nature based learning across the region. He also noted that the CSF and APFNet have maintained a close cooperative relationship for a long time. The hosting of this Nature Education Forum in Pu'er has taken the cooperation between CSF and APFNet to a new dimension.

5.2.1 Nature Education with Herpetology

Prof. Kevin R. Messenger, Nanjing Forestry University

Prof. Kevin Messenger presented his long term experience in using herpetology as an entry point for nature education, particularly for children. Drawing on nearly two decades of research in China, during which he has discovered several new species of reptiles and amphibians, he emphasized the scientific value and ecological importance of “herps.” He noted that China hosts nearly nine hundred species of reptiles and amphibians and highlighted their essential roles in ecological food webs, medical research and maintaining ecological balance.

Prof. Messenger observed that public attitudes towards reptiles, especially snakes, are often shaped by fear and misunderstanding rather than by direct experience. He stressed that simply providing information is not enough to inspire conservation

awareness. Instead, meaningful exposure to wildlife is necessary to cultivate curiosity, empathy and long term interest in nature. He explained that children usually react with excitement and wonder when encountering reptiles in real life and that fear is often learned from adults rather than innate.

He highlighted growing scientific evidence on the benefits of human connection with nature, including improved wellbeing and stronger conservation support. He noted that such connections are increasingly weakened by modern urban lifestyles, making nature education especially important for younger generations.

Prof. Messenger then presented his practical approach to engaging children aged six to ten through immersive field based activities. His programme combines a simple introduction to local species, an evening walk to observe amphibians and other wildlife, supervised opportunities for children to safely catch a frog and a morning session to learn about species differences before releasing the animals. He explained that the goal is to create experiences that are both educational and enjoyable, fostering positive associations with nature from an early age.

He also touched on efforts to influence local communities, noting that during fieldwork he actively communicates with villagers to discourage the killing of snakes and to promote respect for wildlife. He concluded by emphasizing that people protect what they love, love what they understand and understand what they study. He shared his recent publications on Chinese snakes as part of his commitment to strengthening public knowledge and appreciation of herpetofauna.

5.2.2 Review and Prospects of Nature Education in China

Ms. Yong Yi, Director, Nature Education Strategy Research Center, Fudan Planning and Design Institute

Ms. Yong Yi provided a comprehensive overview of the evolution, current status and future directions of nature education in China. Drawing from her extensive professional experience in national parks, protected areas and environmental interpretation planning, she traced the transformation of nature education from early informal practices to a rapidly expanding and increasingly structured field.

She began by outlining the historical development of nature education, linking it to global environmental awareness movements and the emergence of environmental education. She noted that China's nature education sector experienced a significant turning point around 2014, when growing public interest in reconnecting children with nature led to rapid expansion of institutions and programmes across the economy. Subsequent developments, including the China Nature Education Forum in 2017 and the first national nature education conference in 2019, marked important steps toward mainstreaming the field and strengthening professional standards.

Reviewing the current landscape, she highlighted data from the China Nature Education Development Report which recorded more than twenty one thousand institutions engaged in nature education nationwide. Participation motivations remain varied, with strong interest in experiential and knowledge based activities, though attention to nature conservation is still comparatively limited. She emphasized that

nature education today operates in a context of shifting public needs, expanding regional initiatives and increasing integration with rural revitalization, ecological product development and green industry transformation.

Ms. Yong elaborated on the key missions that nature education carries in the present era. She stressed that nature education serves as an important bridge between conservation and society by creating meaningful visitor experiences, enhancing public understanding and encouraging participation in ecological protection. She also highlighted its growing relevance for modern education transition, noting that the values, competencies and teamwork skills fostered through nature based learning align with global educational shifts endorsed by organizations such as UNESCO. In addition, she underscored nature education as an emerging pathway for high quality forestry development, contributing to ecosystem services, employment opportunities and the multi-functional roles of protected areas.

Looking ahead, Ms. Yong outlined several priorities for strengthening the sector. She encouraged decision makers to personally experience nature education in order to better understand frontline challenges and to provide support for young practitioners and women working in the field. She called on managers to adopt system oriented thinking, emphasizing the importance of capacity building, rigorous talent development and avoiding fragmented or overly restrictive approaches. For practitioners, she advocated for embracing diversity, innovation and customized programming. She also highlighted the need for new partners to engage with patience and professional commitment, contributing to the long term competitiveness and core values of the sector.

Ms. Yong concluded by emphasizing that nature education plays an increasingly important role in connecting communities, enhancing the social functions of protected areas and contributing to China's broader ecological civilization goals. She expressed optimism for the continued growth of the sector, noting that those who love nature will always connect and move forward together.

5.2.3 Beijing Nature Education: Practices and Exploration

Ms. Zhao Anqi, Beijing Forestry Society

Ms. Zhao Anqi presented an extensive overview of Beijing's progress in nature education, drawing on more than a decade of professional experience in science communication, policy development and programme implementation. She began by outlining the policy foundations that have shaped the city's recent expansion of nature education. Key national and municipal directives emphasize ecological civilization, the development of a garden city and the use of nature education as an important means to enhance public understanding of ecological protection. She noted that Beijing's favorable conditions, including rich forest resources, extensive parks and green spaces and a growing demand for high quality ecological experiences, have created strong momentum for the sector.

Reviewing Beijing's development pathway, Ms. Zhao highlighted a clear evolution from the introduction of early concepts, through coordinated multi stakeholder

development, to the emergence of an innovation oriented stage. She explained that progress has been supported by the establishment of an alliance of nature experience institutions, the introduction of professional standards, the development of model bases and the steady expansion of public activities. Over time, these efforts have contributed to shaping a distinctive “Beijing model” of nature education.

She then presented the practical work undertaken across several dimensions. One major focus has been the development of integrated nature education curricula tailored to different age groups, particularly primary and secondary school students. These curricula combine ecological knowledge, experiential learning, hands on activities and inquiry based components to cultivate scientific thinking, ecological ethics and teamwork skills. Ms. Zhao illustrated how different types of activities such as cognition, exploration, games, art, labor and field investigation are introduced progressively as students advance in their learning.

She also described the extensive network of nature education bases supported by the government. During the current planning period, Beijing established eighty certified science popularization bases across municipal parks, forest farms and nurseries. These bases provide professional educators, indoor and outdoor facilities, interpretive systems and diverse learning environments. Examples include forest experience centers, wetland parks, cultural themed forests and demonstration forests for traditional ecological practices.

Ms. Zhao highlighted both traditional and emerging programmes. Long standing activities include forest music concerts, forest classrooms, youth camps, forest culture initiatives, reading programmes and volunteer services. Current priorities focus on innovative projects such as the “Water Basin Plan,” which engages youth in ecological monitoring through infrared cameras across Beijing’s mountainous areas; the “Handcrafted Beijing Greenway,” which trains local instructors in sustainable trail building; and the “Oaks for Leopards” initiative, which brings together government agencies, Non-Governmental Organization (NGOs), research institutions and enterprises to restore habitats and promote biodiversity conservation. These initiatives have attracted significant public and media attention and demonstrate how nature education can support ecological restoration and species protection.

In addition, she discussed Beijing’s role in developing policies, standards and guidance materials. The Beijing Forestry Society has contributed to the drafting of standards for nature education bases, forest culture facilities, interpretation signage and national level guidelines. She also showcased the publication of several instructional books and manuals, covering nature interpretation principles, activity design, safety management and case studies from Beijing and other regions. These materials support the professionalization of the field and strengthen training for practitioners.

The presentation further highlighted talent development efforts, including structured interpretation training, volunteer capacity building, competitions to improve communication skills and the creation of a vibrant network of partners from NGOs, universities, parks and international organizations.

Ms. Zhao concluded with reflections on future directions. She emphasized the need to promote resource sharing, expand integration with formal education, strengthen professional training systems and deepen international cooperation. She also pointed to opportunities to enhance digital engagement and to foster the development of new green industries linked to nature based learning. Her vision for the future is of a vibrant, open and diverse nature education ecosystem in which participation, collaboration and shared development contribute to building a more harmonious relationship between people and nature.

5.2.4 From Rainforest to City: Insights from the Xishuangbanna Tropical Botanical Garden for Urban Nature Education

Prof. Hu Huabin, Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences

Prof. Hu Huabin explored how the Xishuangbanna Tropical Botanical Garden serves as both a natural laboratory and a methodological foundation for nature education, and how its experience can inform urban settings. He began by addressing the growing disconnect between people and nature, particularly among urban children. He described “nature deficit” as a widespread modern condition linked to decreasing outdoor experiences, increasing screen dependency and limited engagement with biodiversity. This trend underscores the importance of nature education as a key contributor to ecological awareness, emotional connection and problem solving abilities.

He introduced the Xishuangbanna Tropical Botanical Garden as a living natural museum with a long history of scientific, educational and conservation missions. Founded in 1959, the garden spans more than one thousand hectares and hosts over thirteen thousand plant species across thirty eight specialized collections. It supports rich biodiversity, including mammals, birds, amphibians, reptiles, spiders and butterflies. Its integrated role as a research base, tourism destination and cultural center has strengthened its capacity for nature education over several decades. Dedicated environmental education units, trained interpretation teams and collaborations across departments further enhance its ability to design and deliver high quality programmes.

Prof. Hu illustrated the garden’s practice of nature education through three main approaches. Immersive rainforest experiences allow participants to explore characteristic ecological phenomena such as strangler fig formation, buttress roots, cauliflory and water shedding leaf tips, engaging all five senses to make ecological knowledge vivid and memorable. Night time exploration activities introduce participants to nocturnal biodiversity such as fireflies and frogs, broadening understanding of ecological processes that cannot be observed during the day. Interactive workshops encourage hands on learning through activities such as herbarium preparation, experiments on seed dispersal and cultural experiences like traditional Dai palm leaf scripture making.

He also presented the widely followed case of a young child, Azheng, whose remarkable botanical knowledge demonstrates how deep curiosity, access to resources, parental support and continuous exposure can stimulate exceptional learning in natural sciences. This case, highlighted through social media interactions, reflects how nature education can be reinforced through creative expression and community engagement.

Turning to cities, Prof. Hu outlined several constraints that limit the development of urban nature education. These include fragmented green spaces, limited ecosystems, insufficient professional guides and a tendency toward simple knowledge based activities rather than experiential learning. He noted that many initiatives focus on identifying a few plant species or organizing park visits without deeper sensory engagement or emotional connection.

In response, he proposed bringing “rainforest wisdom” into cities through the “three entry” plan, which encourages nature education to enter cities, schools and communities. Examples include mobile exhibitions, themed science events, and partnerships with urban botanical gardens and collaborations with schools to establish campus botanical gardens or biodiversity themed activities. He highlighted initiatives such as the rainforest themed exhibition launched in Zhengzhou, biodiversity themed installations in Kunming’s metro system and community-based conservation programmes in Kunming and Xishuangbanna that promote rare and endangered plant protection. Partnerships with enterprises, schools and research networks also help strengthen public participation and create replicable models.

Prof. Hu concluded that the key to urban nature education lies not in the size of green spaces but in shifting perspectives. By adapting ecological knowledge, sensory engagement and experiential methods from rainforest environments, cities can cultivate meaningful connections between people and nearby nature. He emphasized that the ultimate purpose of nature education is to strengthen the bond between people and nature, enabling every urban resident, especially young people, to find spaces for exploration, appreciation and stewardship. This vision aligns with the broader goal of moving from distancing to reconnecting and ultimately to coexisting with nature.

5.2.5 Forest Experience and Nature Education – APFNet Pu’er Base

Prof. Shen Lixin, APFNet Pu’er Training Base

Prof. Shen Lixin introduced the distinctive nature education practices of the APFNet Pu’er Base and Wanzhangshan Forest and Nature Experience Center, drawing on its unique ecological, cultural and landscape resources. He explained that forest experience serves as the foundation for the base’s education model, enabling participants to explore natural phenomena, appreciate forest culture and deepen their understanding of ecosystems. He emphasized that such immersive engagement is particularly effective for young people, helping them cultivate environmental awareness, respect for nature and healthy personal development.

He highlighted the exceptional advantages of Yunnan as a location for nature education. The province’s diverse topography, abundant forest resources, favorable

climate and rich biodiversity create ideal conditions for field-based experiential learning. Its cultural diversity and long history of harmonious coexistence with nature further enrich the educational value of outdoor programmes. These attributes make Yunnan a region with unparalleled potential for integrating ecological knowledge, cultural experience and environmental appreciation.

Prof. Shen provided an overview of the Pu'er Base facilities, which include eco-style wooden houses representing different Asia Pacific economies, cultural exhibition spaces, ethnic cultural areas, field camping sites and the Forest and Nature Experience Center. Together, these facilities form a multifunctional platform that integrates training, recreation, ecological culture and science popularization. The base is located within the Wanzhangshan Forest Farm and covers a core area of six thousand mu, surrounded by tropical and subtropical forest types that support a wide array of plant and animal species.

He showcased the wide range of educational activities offered at the base. These include forest hiking, wildlife observation, mushroom foraging, night-time insect exploration, firefly viewing, bird photography, tea harvesting and processing, and nature-themed arts and crafts. A series of thematic modules supports learning across different dimensions such as natural recreation, artistic creation, scientific inquiry, forest adventure and nature therapy. Examples include observing insect mimicry, identifying wild vegetables and medicinal plants, studying tree phenology, making specimens, conducting small scientific experiments, participating in hands-on workshops and engaging in guided explorations of forest habitats.

Prof. Shen illustrated the emotional and sensory impact of these activities. He described how forest hiking introduces participants to rainforest microclimates, bird calls and shifting light patterns, while mushroom foraging and night insect exploration provide opportunities to appreciate ecological relationships and observe species behavior firsthand. The presentation included multiple images that capture the diversity of field activities and the enthusiasm of participants.

He also highlighted the base's extensive programme of youth camps, family activities and international exchange events. These range from parent-child forest adventures and summer science camps to art workshops, cultural experiences and university field courses. The presentation show children and young adults engaging in exploration, creative work, scientific experiments and outdoor skill building. These activities aim to build confidence, curiosity and environmental stewardship among younger generations.

Prof. Shen concluded by emphasizing the importance of safety management in nature education. He outlined the need to recognize environmental risks, ensure adequate facilities and adopt appropriate organizational measures across different types of activities. He reiterated that well-designed nature education programmes rely on careful planning, responsible management and collaboration among organizers, educators and local communities to create meaningful and safe experiences for diverse participants.

5.2.6 Nature Education with Local Characteristics: Hainan Jianfengling Tropical Rainforest

Mr. Shang Liulang, Experimental Station of the Tropical Forestry Research Institute, Chinese Academy of Forestry

Mr. Shang Liulang presented a comprehensive overview of the nature education work undertaken at the Jianfengling Base, located within one of China's most intact and ecologically rich tropical rainforest regions. He began by outlining the geographical and ecological significance of the Jianfengling area, which is recognized as one of the largest remaining continuous tracts of primary tropical rainforest at the northern edge of the Asian tropics. Known as a "gene bank" of tropical biodiversity, the region hosts complex forest structures, steep ecological gradients and diverse habitats that make it a valuable site for environmental education.

He then introduced the Experimental Station of the Tropical Forestry Research Institute, established in 1962 and adjacent to the Jianfengling National Forest Park. The station covers more than seven hundred hectares and includes tropical natural forests, experimental planting zones for precious tree species, laboratories and educational facilities. It also manages specialized platforms such as a national forestry science education base, a national field observation station, a germplasm resource garden and a butterfly exhibition hall that displays over five hundred specimens. These facilities underpin the station's long standing work in ecological monitoring, scientific research, species conservation and science communication.

Mr. Shang highlighted the station's strong integration of scientific research with public education. Long term partnerships with primary and secondary schools support summer science camps and themed learning activities on forest ecology and tropical biology. Collaboration with Hainan University and other higher education institutions enables the station to serve as an internship and practical training base. Joint events with the Jianfengling Management Bureau of the Hainan Tropical Rainforest National Park promote public understanding of rainforest ecosystems and strengthen conservation awareness among local communities.

The presentation detailed the design of the station's nature education curriculum, which is organized around three core thematic strands. The first strand focuses on rainforest ecosystems, introducing learners to forest structure, ecological functions and distinctive rainforest phenomena such as buttress roots, aerial gardens, strangler figs and cauliflory. Programme modules include vertical stratification exploration, night walks and immersive ecological observation.

The second strand focuses on tropical tree diversity and germplasm conservation. Activities include ecological gradient investigations along the elevation zones of Jianfengling, guided visits to the tree garden to observe rare and endangered species and hands on monitoring exercises that introduce participants to basic ecological measurement techniques.

The third strand emphasizes species identification and appreciation of biodiversity through activities centered on butterflies, insects, birds and other fauna. Examples

include observing complete metamorphosis in butterflies, creating nature based art, practicing scientific specimen preparation, conducting bird watching and designing personal conservation pledges.

Mr. Shang described a wide range of activity formats tailored to different groups, including schoolchildren, university students, families, community members and visiting educational groups. Many of these activities are delivered jointly with surrounding parks, communities and partner organizations, forming a localized network of nature education sites. The station also pursues the parallel goals of bringing nature education into schools and integrating science education with green industry development in surrounding communities.

He illustrated the significant progress achieved in recent years, noting investment in educational materials, specimen preparation, field teaching tools and professional capacity building. A large body of photographs throughout the presentation documents activities such as plant classification exercises, nature journaling, field investigation, butterfly and insect observation, community outreach events and collaborative workshops with teachers and students. These efforts have greatly expanded the influence of nature education in the region, with participation growing across nearby cities and counties such as Sanya and Ledong.

Mr. Shang concluded with reflections on lessons learned. He noted that educational teams have strengthened their professional skills, deepened their understanding of nature education philosophy and improved their ability to build emotional connections with participants. He highlighted the importance of experiential learning, careful activity design, safety management and collaboration across government, research institutes, schools and communities. Looking forward, he proposed building a regional nature education hub that integrates scientific research, ecological experience, cultural heritage and community development, positioning Jianfengling as a leading model for tropical rainforest nature education in China.

5.2.7 Nature Education with Local Characteristics: Wangyedian Nature Education Case Study

Mr. Ma Chenggong, Wangyedian Nature Education and Study Service Center

Mr. Ma Chenggong presented the nature education practices developed at the Wangyedian Base in Chifeng, Inner Mongolia. He first introduced the background of the site, noting that a multifunctional forestry demonstration project was established in 2011 with support from APFNet, and in 2019 the Wangyedian Base was formally created as an APFNet demonstration and training site. Since then, it has served multiple roles including an international exchange platform, a model for SFM, a nature education classroom and a base for meetings and training.

The Wangyedian Nature Education Service Center was founded to operationalize the base's educational mission. Registered as a local non-profit organization, it functions as the physical institution responsible for course delivery, programme design and activity coordination. Mr. Ma highlighted the leadership and instructional team, whose members possess strong forestry knowledge, practical field experience and

diverse skills in interpretation, activity design, ecological education and team coordination.

He described a strong partnership with the Hainan Nature Foundation and APFNet, which provides financial support for teacher training, curriculum development, equipment procurement, activity costs, and public communication. In return, the center delivers educational programmes, produces teaching materials and provides practical feedback grounded in field operations. This long term two way cooperation has established a sustainable model in which funding, practice, evaluation and improvement form a continuous cycle.

Mr. Ma presented the natural and ecological features of the Wangyedian region, emphasizing its high forest cover, transitional flora between North China and Northeast China, and rich biodiversity including hundreds of plant species and a variety of mammals and birds. The base benefits from a humid microclimate created by extensive forest cover and holds significant ecological, cultural and economic value for surrounding communities.

He then highlighted the substantial progress achieved since the establishment of the nature education center. More than twenty categories of study programmes have been independently developed, with over thirty thousand participants attending activities in recent years. The programmes aim to help learners form emotional connections with nature, understand ecological relationships and develop a sense of environmental responsibility.

The presentation provided an overview of the core curriculum modules. “Connecting with Nature” introduces learners to common tree species, plant morphology and the ecological ties between plants and human life. Activities such as leaf collection, plant specimen preparation and artistic leaf collages enhance observational and practical skills. The “Nature Notebooks” module encourages participants to record discoveries through drawing and writing, deepening sensory engagement and ecological appreciation. “Town Treasure Hunt” integrates cultural experiences by guiding students to explore the unique architectural styles and traditional cultural elements represented in the base’s wooden houses. Astronomy activities use telescopes to observe the night sky and stimulate curiosity about the natural world. The “Forest Guardians” module builds awareness of forest fire prevention through demonstrations, professional guidance and hands on firefighting equipment use, enabling participants to learn key safety and self-rescue skills.

Mr. Ma showcased several thematic activities, including nature art workshops, interactive leaf collage creation, outdoor investigations, creative games and hands on science demonstrations. He emphasized that effective nature education is not simply about transferring knowledge but about fostering emotional connections, empowering participants to become active explorers and placing ecological values at the center of all activities.

In reflecting on the outcomes, he noted that participants of all ages demonstrate significant growth in concentration, curiosity, teamwork and environmental awareness.

For educators, the programme has strengthened interdisciplinary skills, improved activity design and enhanced the ability to translate scientific research into accessible educational experiences.

Mr. Ma concluded by sharing several recommendations for sustaining long term development. He emphasized the need to balance professionalism with enjoyable learning formats, to design age appropriate and participatory activities, to improve infrastructure and material support, and to strengthen multi stakeholder collaboration involving government, schools, communities and social organizations. He further highlighted the importance of maintaining educational integrity, expanding outreach and feedback mechanisms and ensuring that nature education continues to serve the wider goal of promoting ecological conservation.

5.3 Field Visit

As scheduled in the programme, participants undertook a field visit to the APFNet Pu'er Base and the Wanzhangshan Forest and Nature Experience Center, where they observed the surrounding forest environment and the facilities used for nature education activities. The visit provided context for the subsequent discussions and allowed participants to gain a clearer understanding of the site's ecological features and educational functions.

5.4 Group Discussion

A group discussion on nature education activity design was held on the morning of 30th October at the Natural Bookstore of the Experience Center. Drawing on insights from the earlier field visit and their own professional experience, experts from the nature education sector exchanged views on strengthening the future development of the Pu'er Base and the Experience Center. The discussion focused on developing practical and actionable proposals aligned with the base's positioning and its role in promoting ecological awareness.

Participants emphasized the importance of building a distinct nature education brand that reflects the unique ecological and cultural features of Pu'er. Suggestions included strengthening public outreach through diverse communication channels, organizing popular nature themed activities and creating a platform to showcase and share achievements in nature education.

The discussion also highlighted the need for systematic curriculum development. Experts recommended closer collaboration with schools, communities and educational institutions to design age specific thematic courses and to integrate local ecological, cultural and agricultural resources into study programmes. Strengthening the alignment between nature education, school based practical activities and study tours was identified as a key priority.

Regarding facility improvement, the working group proposed enhancing the functionality and identity of the Experience Center through measures that support teaching, ensure safety and compliance and highlight local characteristics. These include creating dedicated zones for nature experience, ecological observation and

Pu'er tea culture, equipping spaces with appropriate storage facilities and installing bilingual interpretive signage. The establishment of small exhibition areas featuring plant specimens, traditional tools and other local materials was recommended to make activities more engaging and intuitive.

Experts also underscored the importance of building a skilled and motivated interpretation team. They proposed forming a mentor structure combining full time staff, part time practitioners and volunteers, supported by a standardized service system and incentive mechanisms to encourage high quality delivery.

Finally, the group discussed approaches to strengthening interactive and experiential learning. Participants agreed that nature education should move beyond one way knowledge transmission by promoting guided interaction, collaborative exploration and hands on activities. Such approaches were seen as essential for stimulating curiosity, building deeper understanding of nature and fostering values of harmony between people and the natural environment.

5.5 Synthesis and Conclusions

The Nature Education Sub-Forum underscored the growing importance of nature-based learning in strengthening public ecological awareness and fostering deeper connections between people and the natural environment. Presentations from Pu'er, Beijing, Jianfengling in Hainan, Wangyedian in Inner Mongolia, and other regions demonstrated how local resources, scientific knowledge, and cultural traditions can be transformed into engaging educational experiences. Across these examples, participants emphasized the value of immersive field activities, experiential learning, and well-designed curricula that inspire curiosity and support personal development.

Discussions highlighted that effective nature education programmes depend on professional teams, appropriate facilities, and close collaboration among government agencies, research institutions, protected areas, schools, and social organizations. The working group identified several priorities for advancing the Pu' er Base, including strengthening its educational identity, improving activity design, enhancing spaces for teaching and interpretation, and building systematic partnerships with schools and communities.

Looking ahead, the sub-forum called for continued efforts to expand professional capacity, broaden public participation, and promote innovative and locally grounded approaches. By integrating ecological knowledge with meaningful experiences and deepening cooperation across sectors, nature education can play an increasingly important role in supporting ecological conservation and cultivating long-term stewardship of forests and biodiversity.

6. Sustainable Forest Management and Carbon Sequestration

Sub-Forum

This section describes the Sustainable Forest Management and Carbon Sequestration Sub Forum, summarizing the context, session flow, and major insights shared by participants.

6.1 Introduction

The Sub Forum on Sustainable Forest Management and Carbon Sequestration was convened on 29 – 30 October 2025 as one of the key thematic sessions of the Second Pu'er Forum on Asia Pacific Forests. Jointly organized by the Yunnan Academy of Forestry and Grassland, APFNet, and the Forestry and Grassland Administration of Pu'er City, the sub forum brought together more than eighty participants from government agencies, research institutions, international organizations, national forest farms, and the private sector across the Asia Pacific region. Discussions focused on emerging trends, technological innovations, and practical experiences related to strengthening SFM and enhancing forest carbon sinks.

The programme consisted of a field visit to key research and demonstration sites in Xishuangbanna, followed by indoor technical sessions at the Jianhua International Hotel in Pu'er City. The field visit provided first hand exposure to advanced practices in high efficiency cultivation of tropical high value tree species, forest vegetable germplasm collections, and SFM models. The visit was facilitated by Dr. Wang Lei of Yunnan Academy of Forestry and Grassland.

During the indoor sessions, thirteen experts from China and other Asia Pacific economies delivered keynote presentations and technical reports. Their contributions showcased economy experiences, institutional innovations, technological advancements, and applied case studies. The presentations reflected a wide range of regional approaches from China, Vietnam, Cambodia, Myanmar, Thailand, Indonesia, Fiji, and Malaysia, illustrating diverse challenges and growing opportunities in advancing SFM and forest based climate action.

Overall, the Sub-Forum served as an important platform for sharing policy innovations, market-based approaches, community-level practices, and cutting-edge monitoring technologies such as LiDAR and remote sensing. The insights generated contribute valuable perspectives to ongoing regional efforts in achieving climate goals through enhanced forest carbon sinks and SFM.

6.2 Session One

The first part of the afternoon indoor session on 29 October was facilitated by Dr. Jiang Chunqian and followed by Dr. Bai Yanfeng (who facilitated the second part), both are from Chinese Academy of Forestry.

6.2.1 Welcome Remarks

Prof. Zhong Mingchuan, President, Yunnan Academy of Forestry and Grassland

Prof. Zhong Mingchuan warmly welcomed participants to the Sub-Forum and expressed appreciation for their engagement in advancing this important theme of the Pu'er Forum. She underscored the significance of the forum's overarching vision, "Strengthening Forest Management and Promoting Harmonious Coexistence between Humanity and Nature", and reaffirmed the need for continued dialogue, collaboration, and shared learning.

She highlighted Yunnan Province's remarkable ecological value, noting its recognition as one of the world's 34 biodiversity hotspots. Although the province accounts for only 4.2% of China's land area, it hosts more than half of the nation's higher plant species, earning it the reputation of both a "kingdom of plants" and a major "green carbon reservoir". Yunnan's forests store approximately 985 million tons of carbon and sequester nearly 49 million tons annually, reflecting its critical role in national and global climate action.

Prof. Zhong outlined the scientific and technological achievements of the Yunnan Academy of Forestry and Grassland over its 66-year history, including long-standing partnerships with APFNet, UNDP, ITTO, INBAR, and other international organizations. She highlighted key accomplishments such as regional demonstration models in the Greater Mekong Subregion, precision forest quality improvement projects across Yunnan, and the Academy's growing use of AI and multi-source remote sensing to support full-cycle, multi-objective forest management. She emphasized integrated approaches that combine carbon enhancement, biodiversity conservation, and community development.

She also stressed the Academy's deepening engagement in international cooperation. This includes hosting the China-ASEAN Forestry Science and Technology Cooperation Mechanism Office and the APFNet Youth Scholar Exchange Center, as well as facilitating increasing two-way exchanges, ranging from SANFRI scholars visiting Yunnan to Chinese experts contributing to technical cooperation in Fiji, Cambodia, Laos, Vietnam, and other economies.

Looking ahead, Prof. Zhong underscored that forest carbon sinks are central to global climate governance, and noted that China's recent establishment of unified national standards, including the Land Ecosystem Carbon Sink Accounting Guidelines, will further strengthen scientific quantification and policy driven carbon enhancement actions. She affirmed the Academy's commitment to scientific rigor, technology driven solutions, and strengthened collaboration to safeguard the region's "precious green carbon reservoir" and to contribute to global climate efforts.

She concluded by wishing the sub-forum great success and all participants an enjoyable and productive stay in Yunnan.

6.2.2 Keynote Presentation: China's Practices in Forest Carbon Sinks for Addressing Climate Change

Dr. Jiang Chunqian, Researcher, Chinese Academy of Forestry

Dr. Jiang Chunqian delivered a comprehensive keynote presentation highlighting China's evolving strategies, scientific progress, and policy frameworks related to forest carbon sinks and climate change. He began by outlining China's updated nationally determined contribution for 2035, which aims to reduce net greenhouse gas emissions by 7 - 10 percent from the peak level, increase national forest stock volume to 24 billion cubic meters, and establish a climate adapted society.

He presented a detailed overview of global and national climate trends, noting that the year 2024 was the warmest on record and that China's long term warming rate has exceeded the global average. He also highlighted the rising frequency of extreme weather events and the continued increase in sea level along China's coastal regions. These trends, he stressed, demonstrate the urgency of strengthening forest based climate mitigation.

Dr. Jiang reviewed the status of China's forest resources, emphasizing more than four decades of consecutive growth in both forest area and timber volume. China now has a forest coverage rate of more than twenty five percent and remains the fastest growing forest resource economy globally. He also presented data on plantation expansion, forest age structure, and vegetation greening trends, all of which contribute to China's growing forest carbon sequestration capacity.

He then outlined the composition and dynamics of global forest carbon sinks, observing that while forests absorb almost half of global fossil fuel emissions, this benefit is significantly offset by tropical deforestation. In contrast, China's terrestrial ecosystems continue to demonstrate a stable and positive carbon sink trend. Dr. Jiang introduced recent findings on China's vegetation, soil, and biomass carbon stocks, along with projections indicating additional future sequestration potential under different afforestation scenarios.

A substantial portion of his presentation focused on carbon accounting methods used in China and internationally. He explained mainstream approaches such as biomass based methods, stock volume methods, Eddy covariance techniques, model based simulations, and the application of IPCC methodologies. He noted the growing importance of high quality carbon accounting standards for both national reporting and the development of forest carbon projects.

Dr. Jiang also reviewed the development of China's carbon credit trading mechanisms. He described the evolution from early participation in the Clean Development Mechanism to the establishment of the national carbon emissions trading system and the reinstatement of the China Certified Emission Reduction mechanism. He highlighted examples of provincial trading schemes, such as those in Fujian and Zhejiang, and illustrated how local pilot activities are generating measurable economic and ecological benefits.

Finally, he addressed future challenges in enhancing forest carbon sinks. These include limited land availability for new afforestation, variations in forest quality, the need for improved measurement and monitoring systems, and constraints in the scale and efficiency of carbon credit trading. He emphasized that overcoming these challenges will require continued scientific innovation, stronger technical capacity, and more coordinated policy support.

6.2.3 Forest Carbon under the Global Voluntary Greenhouse Gas Scheme

Dr. Zhang Xiaoquan, Chief Scientific Officer, The Nature Conservancy China Program

Dr. Zhang Xiaoquan delivered an in-depth presentation on the current state of forest carbon markets under global voluntary greenhouse gas schemes. He began by outlining the rapid expansion of global carbon pricing initiatives. According to recent assessments, there are now eighty carbon pricing instruments in operation worldwide, including carbon taxes and emissions trading systems. These mechanisms cover more than two thirds of global gross domestic product and a significant share of global emissions. Revenues from carbon pricing exceeded one hundred billion US dollars in 2024, and a large proportion of these revenues is being reinvested in environmental and development programs.

He explained the differences between emissions trading systems and carbon taxes. Emissions trading systems guarantee a mitigation outcome by setting an overall cap, while taxes provide price certainty and are often easier to implement. Many jurisdictions now allow limited use of carbon credits for compliance, although the level of acceptance varies greatly across regions.

Dr. Zhang then provided an overview of global carbon crediting mechanisms. He noted that voluntary carbon markets continue to expand, with more than ten thousand registered projects across a wide range of sectors. Forestry and land use projects account for a substantial portion of total credits issued and remain the largest single category of nature-based carbon removal. He explained that while some traditional REDD+ projects have seen reduced issuance due to updates in methodologies designed to ensure environmental integrity, nature-based removal activities such as improved forest management and afforestation have continued to grow.

He described geographic and sectoral patterns in project distribution, highlighting that China hosts one of the largest numbers of voluntary carbon projects across multiple sectors. He also presented trends in credit retirements, showing increasing demand from both compliance buyers and voluntary buyers, particularly for nature-based removal credits. Credits originating from forest carbon removal tend to have higher prices and greater price resilience, reflecting their strong environmental value and market confidence.

Dr. Zhang devoted part of his presentation to explaining the integrity challenges facing voluntary carbon markets. These challenges include concerns about additionality, leakage, measurement accuracy, and the credibility of claims associated with some credit types. He referenced recent media investigations and academic

studies that have questioned the performance of certain categories of carbon offsets. In response, several international initiatives have intensified efforts to strengthen the quality standards of voluntary credits. These include the Integrity Council for the Voluntary Carbon Market, the Voluntary Carbon Market Initiative, and the Science Based Targets Initiative.

He highlighted that the Integrity Council has released a Core Carbon Principles framework, which sets out ten science based criteria for defining high quality carbon credits. Major crediting standards, such as Verra and the Gold Standard, are increasingly aligning their methodologies with these principles. Projects that meet these rigorous standards are seeing higher prices and stronger buyer confidence. Recent market data shows that prices for high quality nature based removal credits can be up to forty percent higher than those of lower quality credits.

In closing, Dr. Zhang emphasized that voluntary carbon markets will continue to play an important role in mobilizing finance for climate mitigation, especially in the forestry sector. However, maintaining high integrity, improving transparency, and strengthening methodological rigor are essential for ensuring that forest carbon projects deliver real and verifiable climate benefits.

6.2.4 Sustainable Forest Management for Climate Change Mitigation in Vietnam

Dr. Vu Tan Phuong, Director, Vietnam Forest Certification Office

Dr. Vu Tan Phuong provided an overview of Vietnam's climate change mitigation efforts through SFM. He began by presenting Vietnam's national greenhouse gas profile, noting that the land use, land use change, and forestry sector already functions as a significant net sink. Vietnam has set clear national targets through the Law on Environmental Protection and a series of government decisions aimed at achieving net zero emissions by the year 2050. These policies include action plans on reducing methane emissions, expanding renewable energy, reversing deforestation, and implementing the Nationally Determined Contributions (NDCs) in agriculture, rural development, and forestry.

He explained that Vietnam's updated NDCs has increased both unconditional and conditional emission reduction targets for the period 2021 to 2030. The land use and forestry sector plays an essential role in meeting these commitments. He also noted that progress toward the net zero target will require substantial investment and strengthened implementation capacity.

Dr. Phuong then provided key statistics on Vietnam's forestry sector. The economy has a forest cover of about forty two percent, with a total area of nearly fifteen million hectares distributed among conservation forests, protection forests, and production forests. Forests in Vietnam store approximately 2.2 billion tons of carbon dioxide, most of which is contained in natural forests. Annual removals have exceeded emissions from the forestry sector, contributing significantly to national climate goals. The forestry sector also supports a large and diverse wood processing industry, which generates substantial export revenue.

He highlighted Vietnam's strong growth in SFM and certification. By 2024, more than 700,000 hectares had been certified, representing about one third of all certified forests under the Vietnam Forest Certification Scheme. He explained that Vietnam's forest sector is closely integrated with international markets, particularly through exports of furniture, plywood, and woodchips, and that certification is essential for compliance with the requirements of the European Union Deforestation Regulation and other legality frameworks.

Dr. Phuong outlined Vietnam's strategy and targets for SFM by 2030. These include ensuring that all timber entering domestic and export markets comes from legal and sustainably managed sources, expanding certified forest area, applying sustainable practices across all forest areas managed by organizations, and contributing up to twenty percent of the emission reduction target under the NDCs. He also noted the goal of increasing forest cover and enhancing the value of plantations through improved management and reduced emissions.

He then introduced the Vietnam Forest Certification Scheme, explaining its rapid development and its recognition by the Programme for the Endorsement of Forest Certification. He outlined the structure of the scheme, its governance arrangements, and the range of standards and guidelines applied in SFM, chain of custody, legality assurance, and certification procedures. He emphasized the importance of building capacity among forest owners, processing enterprises, auditors, and other stakeholders.

Dr. Phuong also described ongoing work toward establishing a national forest carbon standard. This standard will govern the development of carbon projects in the forestry and land use sectors, including projects on afforestation, reforestation, improved natural forest management, improved plantation management, and agroforestry. It outlines requirements on accounting, monitoring, safeguards, validation, verification, and project eligibility, aligned with national carbon market development.

In conclusion, he identified several priorities for SFM and emission reduction in Vietnam. These include improving productivity and carbon performance in smallholder plantations, strengthening capacity for certification and chain of custody, promoting the use of certified materials in industry, developing forest carbon projects, and exploring broader certification opportunities such as biodiversity and ecosystem services.

6.2.5 Fiji's Experience in Carbon Sequestration Projects

Mr. Naikatini Alivereti Neisava, Deputy Conservator of Forests, Ministry of Forestry, Fiji

Mr. Naikatini Alivereti Neisava presented Fiji's national experience in advancing carbon sequestration, highlighting the unique context of a small island developing state that is highly vulnerable to climate impacts. Fiji has committed to achieving net zero emissions by the year 2050, as set out in its Low Emission Development Strategy. The forestry sector plays a central role in this commitment because forests serve as major carbon sinks and provide essential ecosystem services for the resilience of

island communities. Fiji's work is guided by the Climate Change Act of 2021, which establishes clear legal provisions related to carbon property rights.

He outlined the strategic foundations required under global REDD+ frameworks. These include a national strategy, a forest reference emission level, a national forest monitoring system, and safeguards information. He noted that international REDD+ arrangements have unlocked substantial results based payments worldwide, demonstrating the value of forest based mitigation strategies for developing economies.

Mr. Neisava then described Fiji's carbon sequestration program in the agriculture, forestry, and other land use sector. This program aims to enhance carbon removals, reduce emissions from deforestation and forest degradation, and strengthen climate resilience. Key initiatives include the Fiji Forestry Emissions Reduction Program with support from the Forest Carbon Partnership Facility (FCPF), and the national campaign to plant thirty million trees in fifteen years. These initiatives combine ecological restoration with livelihood improvements and economic value creation through carbon markets.

He explained the implementation strategy of the Ministry of Forestry, which focuses on creating enabling conditions for emissions reduction activities. This includes strengthening REDD+ policy frameworks, updating forest legislation, developing safeguards instruments such as environmental and social management frameworks, establishing transparent benefit sharing mechanisms, and putting in place grievance redress mechanisms. Fiji also prioritizes integrated land use planning, SFM, agroforestry, and alternative livelihoods. Monitoring, evaluation, verification, and administrative coordination form essential components of the program's delivery.

The presentation highlighted a wide range of economic, social, and environmental co benefits. These include opportunities to generate revenue through results based payments, new livelihood options through agroforestry, investment from the private sector, and community capacity building. Benefit sharing arrangements ensure that landowners, leaseholders, and local communities receive a fair portion of carbon related income, supported by commitments to free, prior, and informed consent. Environmental co-benefits include improvements in biodiversity conservation, water regulation, soil stability, and overall ecosystem health.

Mr. Neisava provided insights into the mass mobilization campaign to plant thirty million trees. The campaign has already reached more than nineteen million trees in less than five years, driven by strong public participation and partnerships with major forestry companies. Practical lessons from the field underscore the need to improve survival rates, adjust species selection to withstand cyclones and local conditions, and empower communities through nursery development and seedling production.

He also described Fiji's Emission Reduction Program under the FCPF. Fiji is the first small island developing state to sign an Emission Reduction Payment Agreement. The program covers ninety percent of Fiji's land area and aims to reduce two point five million tons of carbon dioxide over five years. It integrates afforestation, SFM, native

forest conservation, and climate smart agriculture. The program has already achieved verified emission reductions of more than 900,000 tons.

The presentation also reviewed lessons from REDD+ and carbon market implementation, including the need to navigate customary land tenure systems, ensure legal clarity on carbon sequestration property rights, and strengthen benefit sharing approaches. Fiji is now expanding its work to include blue carbon opportunities such as mangrove and seagrass restoration.

In his concluding reflections, Mr. Neisava emphasized Fiji's future priorities. These include aligning forest based actions with national resilience strategies, expanding high integrity participation in carbon markets under Article Six of the Paris Agreement, improving monitoring systems, strengthening institutions, integrating climate resilience into project design, and securing long term financing for initiatives such as the tree planting campaign.

6.2.6 Sustainable Forest Management Through REDD+ Project Implementation in Cambodia

Mr. Vantha Khorn, Vice Chief, Forest Industry and Utilization of NTFP Office, Forestry Administration, MAFF, Cambodia

Mr. Vantha Khorn introduced Cambodia's national context for REDD+ and provided an overview of progress made through the Tumring REDD+ Project, which serves as a practical case of SFM in action.

He began by outlining Cambodia's forest cover status in 2022, noting the distribution of major forest types and the economy's long-term decline in forest cover over past decades. He highlighted the key drivers of deforestation, including agricultural expansion, infrastructure development, illegal logging, mining, fuelwood collection, and forest fires. He also summarized the economy's forest management models under the Ministry of Agriculture, Forestry and Fisheries, the Ministry of Environment, and the Fisheries Administration.

Mr. Vantha described Cambodia's national REDD+ readiness and implementation pathway, beginning with the establishment of the first pilot project in 2008 and progressing through readiness, implementation, and current result-based payment phases. He explained the four required national elements for REDD+, including the National REDD+, the National Forest Monitoring System, the Forest Reference Emission Level, and the Safeguard Information System.

The presentation highlighted the Tumring REDD+ Project as a key example of how REDD+ contributes to SFM. The project protects more than 67,000 hectares of forest, supports over 2,500 families, and conserves more than 100 species of birds and 64 species of mammals. It has generated significant emission reductions and strengthened community engagement in forest protection.

He outlined the project's six strategic objectives, which include securing forest land tenure, strengthening protection and law enforcement, promoting awareness and institutional capacity, improving livelihoods, managing in-migration, and enhancing monitoring and verification of carbon, biodiversity, and social aspects. The project

has achieved measurable outputs such as forest law enforcement actions, boundary demarcation, forest restoration, agroforestry development, biogas installations, and monitoring through remote sensing and field inventories.

In closing, Mr. Vantha outlined the way forward for Cambodia's REDD+ work. Future efforts will focus on producing loss reports, pursuing jurisdictional or sub-national REDD+ approaches, and generating additional forest carbon contributions to support the economy's updated NDCs.

6.2.7 From Green Mountains to Carbon Sinks — Sustainable Development of Saihanba Forest Farm

Mr. Yu Shitao, Manager, Saihanba Mechanical Forest Farm, China

Mr. Yu Shitao presented the experience of Saihanba Forest Farm in advancing SFM while practicing China's Two Mountains theory. He began by introducing the geographical characteristics and ecological significance of Saihanba, located at the southern edge of the Hunshandake Sandy Land in Hebei Province. Once a barren and wind-eroded landscape, the area now supports one of China's most successful large-scale forest restoration efforts and functions as an important ecological barrier for the Beijing – Tianjin – Hebei region.

He highlighted the harsh climatic and ecological conditions in which the forest was established, including long winters, high winds, and poor soils. Despite these constraints, Saihanba has achieved a forest coverage of more than eighty percent and a total growing stock exceeding ten million cubic meters. He attributed this transformation to the perseverance, scientific approach, and strong ecological commitment of several generations of forestry workers.

Mr. Yu outlined five guiding principles underpinning Saihanba's sustainable development. First, the forest farm has consistently expanded forest cover by applying innovative afforestation techniques, improving survival rates, and restoring degraded land. Second, it has strengthened forest quality and productivity through structured forest management plans, selective thinning, multi-stage tending, and improved stand structure. Third, the forest farm has prioritized resource protection and forest fire prevention through a comprehensive surveillance and early warning system, a multi-level forest chief system, and improved pest control measures.

The fourth focus is leveraging science and technology to support high-quality forestry development. Saihanba has collaborated with national research institutions and universities, established a dedicated ecological research institute, and developed new technologies in seedling production, forest tending, and disaster response. Finally, Mr. Yu described the farm's efforts to enhance local livelihoods and foster green development. These include carbon sequestration projects such as CCER and provincial carbon products, eco-tourism development, forest by-product utilization, and investments in infrastructure and housing to improve worker wellbeing.

He concluded by emphasizing that Saihanba's journey reflects China's broader ecological civilization vision. By integrating ecological restoration, scientific management, and green industry development, Saihanba has transformed a

once-degraded landscape into a resilient forest ecosystem that supports carbon sequestration, biodiversity, and community development.

6.3 Session Two

The second session of the sub forum was held on the morning of 30 October 2025 at the same venue and was moderated by Dr Fahmuddin Agus, Senior Soil Scientist at the National Research and Innovation Agency of Indonesia.

6.3.1 The Trajectories of Land Cover Change and Their Implications for Carbon Emissions and Sequestration in Indonesia

Dr. Fahmuddin Agus, Senior Soil Scientist, National Research and Innovation Agency (BRIN), Indonesia

Dr. Fahmuddin Agus presented an in-depth analysis of land cover change in Indonesia and its implications for carbon emissions and sequestration. He explained that Indonesia's land cover has undergone significant shifts over the past two decades, largely driven by the rapid expansion of plantations, particularly oil palm. Using land cover datasets from 2006 to 2022, he outlined how agroforestry areas, upland agriculture, and grasslands have been the main land types converted into plantations.

He introduced Indonesia's land cover change matrix, which uses satellite-based activity data combined with carbon stock differences to estimate emissions. Dr. Agus highlighted the varied carbon stocks of different land cover classes. Primary forests and primary mangroves contain the highest carbon stocks, while shrubs, degraded lands, savannas, and agricultural areas hold much lower stocks. The conversion of high-carbon lands to low-carbon land uses generates emissions, whereas the conversion of low-carbon lands to higher-carbon plantations contributes to net sequestration.

His analysis showed that in earlier periods plantation expansion resulted in high emissions due to conversion of forests. More recently, however, expansion has increasingly occurred on lands with low carbon stocks, leading to lower net emissions and in some periods net sequestration. He emphasized that intensifying production on existing agricultural land is a key strategy for protecting high-carbon forests and reducing land use change emissions.

Dr. Agus noted that peatland conversion remains a major challenge. Drained peatlands release large amounts of carbon through decomposition and present high fire risk. He stressed that raising water tables is an effective way to reduce peat emissions. Approaches include canal blocking and paludiculture, although implementation challenges remain related to crop tolerance and market viability.

He also discussed opportunities for increasing soil carbon in mineral soils through organic matter application, mulching with pruned oil palm fronds, biochar production, and reduced tillage. While these practices can enhance long-term carbon storage, he noted that widespread adoption requires incentives, since benefits may not be immediately tangible for farmers.

In conclusion, Dr. Agus underlined the importance of directing agricultural expansion toward low-carbon areas, strengthening peatland restoration, and integrating soil carbon enhancement into future national carbon accounting. These measures collectively support Indonesia's efforts to lower land use change emissions while improving carbon sequestration across diverse landscapes.

6.3.2 Carbon Sink Capacity of Planted Forests in Yunnan — A Spatial Pattern Analysis

Prof. Wen Qingzhong, Senior Engineer, Yunnan Institute of Forest Inventory and Planning

Prof. Wen Qingzhong presented a detailed assessment of the carbon sink capacity of planted forests in Yunnan Province, based on high-resolution remote sensing data and field-based forest inventory monitoring. He emphasized the strategic importance of planted forests for China's dual-carbon goals, noting that planted forests are more manageable and responsive to silvicultural interventions compared to natural forests.

He began by outlining the status of planted forests in Yunnan. The province holds more than five million hectares of planted forests with a standing volume of 448 million cubic meters, accounting for a significant share of China's national plantation resources. Yunnan's planted forests are characterized by diverse species composition, with Yunnan pine being the most widespread, followed by rubber plantations. Most stands are young or middle-aged, which implies substantial growth potential for future carbon accumulation.

Prof. Wen explained that the study analyzed plantation carbon density and carbon sink productivity by integrating climate variables, soil properties, stand structure, and age classes. The results showed that plantation productivity is positively correlated with favorable climate conditions such as precipitation, average temperature, and humidity, as well as with soil depth and humus thickness. Productivity is negatively correlated with higher elevations, rocky terrain, and coarse soil textures. Stand density also plays an important role. Carbon density increases with density up to a threshold, beyond which overcrowding leads to a decline. Similarly, carbon density increases with stand age but stabilizes in mature and over-mature stages.

He then presented the spatial distribution of Yunnan's plantation carbon resources. Areas in southwest Yunnan, particularly Pu'er and Dehong, exhibit the highest carbon densities due to favorable climate conditions and limited harvesting. Northwestern regions such as Lijiang and Nujiang also maintain high carbon accumulation where plantations have been preserved over long periods. In contrast, eastern Yunnan shows lower carbon density and productivity because of widespread karst landscapes and poorer site conditions.

Based on these findings, Prof. Wen proposed strategies for improving plantation carbon sink productivity. He recommended optimizing spatial layouts and aligning plantation development with national carbon neutrality timelines, improving stand management by adjusting density, structure, and age composition, and identifying site-suitable species through big-data analysis. He also highlighted the need to define

a balanced approach to carbon and timber objectives by establishing economic maturity standards that integrate carbon sequestration, harvesting cycles, and material substitution benefits. Finally, he emphasized enhancing the conversion of forest carbon into long-life harvested wood products, which extend carbon storage beyond the forest and contribute to climate mitigation.

These insights provide a scientific basis for targeted interventions aimed at accelerating plantation carbon sink productivity and strengthening Yunnan's contribution to national climate goals.

6.3.3 Forest Plantations, Carbon Assessment, and the Potential of *Betula alnoides* as a Carbon Sink Resource

Dr. Mohd Khairun Anwar Uyup, Forest Research Institute Malaysia

Dr. Mohd Khairun Anwar Uyup presented a combined study examining carbon stock assessment approaches and the anatomical, physical, and mechanical properties of *Betula alnoides*, a plantation species grown in Yunnan Province. The presentation also linked these findings to broader forest carbon concepts and Malaysia's national climate commitments.

He first highlighted the long-standing role of forest plantations in supporting the wood industry and the growing relevance of nature-based carbon removal. He noted that *Betula alnoides*, widely distributed across temperate regions of Asia, is an important plantation species in Yunnan due to its timber value and suitability for industrial applications.

The study analyzed samples collected from ten to twenty-five-year-old *Betula alnoides* trees grown in Dehong Prefecture. Dr. Uyup described the full chain of field and laboratory procedures, including harvesting, log preparation, sawing, anatomical sectioning, microscopy, and mechanical testing. Results showed that fiber morphology, vessel characteristics, density, modulus of rupture, modulus of elasticity, and compression strength all increased with age. By age fifteen, mechanical properties already approached values seen in 25-year-old trees, indicating that the species reaches industrially relevant strength at relatively young ages. The findings suggest that *Betula alnoides* is highly suitable for pulp and paper, parquet, furniture, and other timber products, and compares favorably with species such as *Pinus yunnanensis* and *Cunninghamia lanceolata*.

The presentation then shifted to forest carbon concepts, emphasizing the distinction between carbon stock and carbon sequestration. The speaker outlined Malaysia's forest definitions, land classifications, and greenhouse gas categories under its NDCs. He described the carbon pools within forest ecosystems, explained carbon calculation methods, and provided national data on above-ground carbon stocks across major forest types including inland forests, peat swamp forests, mangroves, plantations, and agricultural landscapes.

Examples from the Forest Research Institute Malaysia were also shared. Long-term monitoring in its forest park demonstrated changes in carbon stocks across multiple stand strata, with high-performing planted stands storing more than four hundred

megagrams of carbon per hectare. The analysis also included rates of carbon sequestration at the landscape scale, reinforcing the significant contribution of well-managed plantations.

In conclusion, Dr. Uyup emphasized that plantation species such as *Betula alnoides* provide both industrial timber value and meaningful carbon storage potential. Combined with accurate forest carbon assessment methods and improved forest management, plantation resources can support national climate objectives and contribute to sustainable, low-carbon development.

6.3.4 Community Forest Management in Thailand

Ms. Secson Kawaypanik, Director, Community Forest Management Office, Royal Forest Department, Thailand

The presentation provided an overview of Thailand's forest area distribution and highlighted the role of community forestry in protecting and managing forest resources nationwide. The speaker began by outlining forest cover patterns across the economy's major regions. Western Thailand retains the highest proportion of forest area at nearly sixty percent, followed by the northern and eastern regions. In contrast, the northeastern region shows significantly lower forest cover. Overall, Thailand's forest area is recorded at more than one hundred million rai, representing about one third of the economy's total land area.

The presentation then introduced the concept of community forestry as practiced by the Royal Forest Department. Community forests are defined as forests managed by communities, for communities, and through community participation. The model emphasizes that participants must be involved at every stage of the process. This includes information sharing, collective decision making, joint implementation of activities, benefit sharing, and community-led monitoring and evaluation.

A series of slides illustrated Thailand's participatory mechanisms and the Ministry's support measures for strengthening community forest management. These include collaboration among local stakeholders, financial support from government sources, partnerships with the private sector and international organizations, and the application of technology and innovation in managing forest areas. The presentation also referenced the implementation of wildfire prevention measures, which form an essential component of community-based forest protection efforts.

The speaker concluded by reaffirming the importance of strong community participation in sustaining healthy forest landscapes and strengthening integrated forest management across Thailand's diverse ecological regions.

6.3.5 Forest Carbon Storage and Carbon Sink Potential Analysis at the Forest Farm Level — the Case of Wangyedian Experimental Forest Farm

Mr. Ma Chenggong, Deputy Director, Wangyedian Experimental Forest Farm, Inner Mongolia

Mr. Ma Chenggong presented an in-depth analysis of forest carbon storage and carbon sink potential using the Wangyedian Experimental Forest Farm as a practical

case study. He began by introducing the long-standing collaboration between Wangyedian Forest Farm and APFNet, which has been ongoing since 2011 through a multifunctional forestry demonstration project. This cooperation led to the development of the “Wangyedian Model” centered on transforming manmade forests toward near-natural conditions, increasing the ecological and economic value of natural forests, developing forest-based industries, and establishing multifunctional forest landscapes suitable for SFM in semi-arid, warm temperate regions.

He explained that Wangyedian has explored various ways to convert ecological strengths into economic value. Current initiatives include under-forest cultivation of edible fungi, medicinal plants, and wild vegetables, along with preparations for engaging in forest carbon trading. To support this, APFNet launched a dedicated project in 2021 to estimate carbon stocks and assess carbon sequestration potential at the forest farm level.

Mr. Ma described the scope and significance of the project. As one of over four thousand state-owned forest farms in China, Wangyedian represents an important unit in national forest management. Its ability to scientifically enhance carbon stocks contributes meaningfully to China’s climate goals. Yet research at the forest farm scale remains limited, prompting APFNet to undertake a detailed field-based study combining forest resource surveys, carbon accounting methodologies, and long-term management planning.

He outlined the project’s main components and achievements. First, a comprehensive inventory was conducted using stratified sampling, establishing 186 permanent plots covering key forest types and age classes, as well as 7,800 temporary plots to determine accurate area proportions. Inventory data showed that the forest farm manages over 25,000 hectares of land, with more than 95 percent under forest cover. The total standing volume exceeds three million cubic meters, providing a robust baseline for carbon assessments.

Second, the project used multiple methods to calculate ecosystem carbon stocks. By the end of 2023, Wangyedian’s total carbon stock reached more than 4.6 million tons. Soil carbon accounted for the largest share, followed by the tree layer, while shrubs, herbs, and litter contributed smaller proportions.

Third, modelling using the Forest Simulation Optimization System projected long-term carbon sequestration under different management scenarios. Simulations showed that moderate annual harvesting combined with natural regeneration can sustain forest growth, increase total standing volume by nearly forty percent over one hundred years, and stabilize carbon sequestration at an average of around 10,000 tons per year.

Mr. Ma then described the resulting management plan for 2023 to 2036. The plan promotes near-natural and classified management approaches, combining regeneration, thinning, and mixed-forest cultivation to support high-quality forest development and maintain a balance between timber production and ecological functions. Simulations for the full one-hundred-year period also projected stable

carbon accumulation and substantial timber output, demonstrating the feasibility of long-term multifunctional management.

In conclusion, he noted that this project is the first systematic carbon stock and carbon sink potential study undertaken in a state-owned forest farm in Chifeng City. It provides a scientific foundation for Wangyedian's future involvement in carbon trading and offers a reference model for similar forest farms across northern China. The project also strengthened professional capacity, with forest technicians now equipped to conduct carbon surveys, monitoring, and forest management planning based on high-quality field data.

6.3.6 Sustainable Forest Management for Climate Change Mitigation

Dr. Yu Ya Aye, Assistant Director, Forest Department, Myanmar

Dr. Yu Ya Aye presented Myanmar's national commitments for climate change mitigation and highlighted the central role of SFM in achieving the economy's NDC targets. She began by outlining Myanmar's conditional and unconditional emission reduction goals across key sectors, noting that the forestry sector contributes the largest share of mitigation potential. Under the unconditional target, Myanmar aims to reduce deforestation by 25 percent by 2030, with a cumulative emission reduction of more than 123 million tons of CO₂ equivalent. Under the conditional target, a 50 percent reduction in deforestation is expected to yield more than 256 million tons in cumulative reductions.

She noted that the forestry commitments are derived from the long-term National Forestry Master Plan and aligned with Myanmar's Forest Reference Emission Level submitted to the UNFCCC. The economy's forest sector emits a net 50 million tons of CO₂ equivalent per year based on the 2005 to 2015 baseline, making forest conservation and restoration critical components of climate action. Key strategies include expanding reserved and protected forests, implementing the national reforestation and rehabilitation programme, strengthening community forestry and social forestry, restoring natural habitats, conducting nationwide greening campaigns, conserving watersheds and mangroves, and implementing REDD+.

Dr. Yu outlined important policy shifts supporting SFM. These include periodic logging bans, significant reductions in annual allowable cuts, and a ban on log exports. She also summarized the legal and strategic frameworks underpinning SFM, such as the Forest Policy, National Land Use Policy, National REDD+ Strategy, Biodiversity and Protected Areas Law, and comprehensive forest management and development plans.

The presentation showed long-term forest cover trends, indicating a decline from nearly 58 percent in 1990 to about 42 percent in 2025. She also presented the current legal classification of forest land, which includes reserved forests, protected public forests, and a protected areas system covering more than six percent of the economy. Myanmar aims to designate up to 40 percent of its land as permanent forest estate and protected areas, with a broader national target of restoring forest cover to 50 percent.

Dr. Yu provided detailed insights on the Myanmar Reforestation and Rehabilitation Programme, a ten-year initiative that has implemented more than half of its planned activities. The programme promotes natural regeneration, conservation of natural forests, community forestry, private plantations, state-owned plantations, capacity building, and job creation. Community forestry efforts are guided by the Community Forestry Strategic Plan, which targets more than 900,000 hectares by 2030.

She also highlighted social forestry initiatives, nationwide greening campaigns, and habitat restoration activities under the Re-establishing Natural Habitats Programme. These actions include forest boundary demarcation, wildlife protection, patrol operations, ecotourism development, mangrove restoration, erosion control, and watershed conservation.

The presentation further described Myanmar's REDD+ readiness and implementation progress. The economy has developed a National REDD+ Strategy, a Forest Reference Emissions Level, a National Forest Monitoring System, and a Safeguard Information System. Several large, long-term carbon projects are currently being implemented in the voluntary carbon market, including mangrove reforestation and a major REDD+ pilot project generating substantial emission reductions through community engagement, forest patrols, reforestation, and livelihood support.

Dr. Yu concluded by identifying priority capacity needs for achieving NDC goals, including strengthening measurement, reporting and verification systems, enhancing institutional coordination, improving technical skills for carbon accounting, and expanding national forest inventory work. Myanmar seeks regional cooperation and international support for REDD+ implementation, community forestry, SFM, biodiversity conservation, and improved access to global climate finance mechanisms.

6.3.7 Application of LiDAR Technology in Forest Carbon Mapping

Dr. Du Liming, Institute of Forest Resource Information Techniques, Chinese Academy of Forestry

Dr. Du Liming presented recent advances in LiDAR-based methods for forest carbon estimation, focusing on developments in multi-platform LiDAR systems and innovations associated with China's Terrestrial Ecosystem Carbon Inventory Satellite. She began by outlining China's national targets for forest volume under its NDC commitments for 2030 and 2035. China has already surpassed the 2030 target ahead of schedule, reaching more than twenty billion cubic meters of forest growing stock by 2024. She emphasized the relevance of Paris Agreement Article Six for future carbon market participation and the importance of accurate measurement, reporting, and verification systems.

Dr. Du introduced the principles of forest carbon estimation, contrasting traditional field-based measurements with emerging LiDAR techniques. While conventional methods rely on diameter, height, and species parameters combined with allometric equations, she noted that such approaches are labor intensive and insufficient for large-scale assessments. LiDAR technologies, in comparison, enable

three-dimensional digitization of forest structure through detailed height and canopy information.

She demonstrated a range of LiDAR platforms currently used in China, including airborne systems, UAV-based LiDAR, backpack and handheld LiDAR, and under-canopy UAV systems. Examples from field campaigns in Saihanba Forest Farm illustrated how combining above-canopy and under-canopy data enhances the accuracy of forest structure reconstruction.

A substantial portion of the presentation focused on the LiDAR Biomass Index, a method developed to estimate aboveground biomass using height and crown metrics derived from point cloud data. Dr. Du explained that the LBI correlates strongly with tree structural attributes and biomass. Calibration studies have demonstrated high model accuracy, with R^2 values exceeding 0.9 for several species. Validation across multiple forest types in China and internationally confirmed that the LBI performs consistently across diverse climates, densities, and stand conditions.

She also described recent advances in individual tree segmentation, including new algorithms based on spectral clustering, supervoxel methods, material transport paths, and deep learning networks. The ITS Net model, trained on a large multi-sensor, multi-platform annotated dataset, demonstrated superior detection accuracy in challenging forest conditions and across differing LiDAR sources.

Dr. Du then introduced the capabilities of the TECIS satellite, launched in 2022. This is the first mission to integrate multi-beam LiDAR and multi-angle optical sensors specifically for forest carbon mapping. Key parameters such as footprint size, laser energy, beam configuration, and orbit distribution allow large-scale coverage with high vertical and spatial resolution. Using TECIS data collected over Saihanba, the research team developed carbon estimation models at the footprint level, where deep neural networks achieved the highest accuracy.

The presentation concluded with an integrated forest carbon mapping framework combining TECIS LiDAR and multi-angle optical data. Verification at multiple spatial scales, ranging from nearly one kilometer to plot level, demonstrated strong performance and reliable estimation. Dr. Du summarized that LiDAR enables high-precision carbon monitoring, the LBI method provides a scalable and accurate approach for biomass estimation, and TECIS represents an important milestone for regional and national forest carbon accounting. Future work will expand the LBI to more species and broader areas, and further enhance digital MRV capabilities for forest carbon.

6.4 Synthesis and Conclusions

The Sub-Forum on Sustainable Forest Management and Carbon Sequestration offered a focused platform for sharing national experiences, scientific advances, and practical approaches to strengthening forest based climate action in the Asia-Pacific region. The combination of field visits and technical presentations enabled participants to observe both on-the-ground practices and the scientific and policy frameworks that support them.

Discussions highlighted several common themes. Participants underscored the need to align SFM practices with national climate commitments, particularly through improved forest quality, restoration initiatives, and strengthened community participation. economy experiences demonstrated that policy reforms, targeted programmes, and community-based approaches remain central to reducing deforestation, increasing forest cover, and improving ecosystem resilience.

Advances in monitoring technologies emerged as another key theme. Presentations on LiDAR, remote sensing, and new biomass modelling approaches illustrated how high resolution data can enhance the accuracy of forest carbon estimates and support transparent MRV systems for both national reporting and carbon market participation.

The sessions also underscored the growing importance of regional cooperation, capacity development, and knowledge exchange. The diverse insights shared by experts from across the Asia Pacific highlight strong potential for deeper technical collaboration, harmonized methodologies, and more coordinated action to enhance forest carbon sinks.

Overall, this sub-forum reaffirmed that SFM and enhanced forest carbon sinks are indispensable to climate mitigation and resilient development across the region. The knowledge and experiences shared during the sessions provide a strong basis for deeper cooperation, improved technical capacity, and more integrated forest based climate action in the years ahead.

7. The Second Presidents' Forum of Forestry University/Institute in the Greater Mekong Sub-region (GMS) - Forestry Education Sub-Forum

This section provides a summary of the Second Presidents' Forum of Forestry University and Institutions in the Greater Mekong Sub region and its accompanying Forestry Education Sub Forum, highlighting the discussions, experiences, and perspectives that support the advancement of forestry education and regional cooperation.

7.1 Introduction

The Forestry Education Sub Forum, convened as the Second Presidents' Forum of Forestry Universities and Institutes in the Greater Mekong Sub Region, was held on 29 and 30 October 2025 in Pu'er City as part of the Second Pu'er Forum on Asia Pacific Forests. Co organized by Southwest Forestry University and APFNet, the Sub Forum brought together presidents, senior faculty members, researchers, and experts from leading forestry universities, research institutions, and regional organizations across the Lancang-Mekong region.

Guided by the theme “Technology Leads, Talent Drives, Industry Empowers: New Pathways for Forestry Synergistic Development”, the Sub Forum provided a platform to strengthen cooperation in forestry higher education and promote closer integration among education, research, and industry. More than forty delegates from Cambodia, China, Lao PDR, Myanmar, Thailand, Viet Nam, and the Mekong Institute participated in a two day programme that included field visits, keynote speeches, technical exchanges, institutional dialogues, and progress reviews under the Presidents’ Forum.

Building on the momentum of the inaugural meeting in 2023, participating institutions have advanced regional collaboration through expanded academic partnerships, joint research initiatives, mobility programmes, and new models of cooperative education. These efforts have contributed to the gradual formation of a shared GMS forestry education community with increasing institutional maturity and strategic clarity.

Discussions during the Sub Forum centered on three core themes: technological innovation for modern forestry, internationalized talent cultivation, and industry - academia partnerships that support transformation of forestry value chains. Presentations highlighted developments in digital and smart forestry, biodiversity and ecosystem research, wood science and engineering, gender and education, landscape planning, desertification control, community-based forestry, and interdisciplinary studies linking forestry with governance and legal frameworks. The diversity of institutional experiences reflected the evolving priorities of forestry education systems across the region.

The Sub Forum reaffirmed the commitment of participating universities and partners to cultivating skilled and industry ready forestry professionals, promoting innovation driven education and research, and enhancing the capacity of the Lancang - Mekong region to respond to ecological, economic, and technological challenges.

7.2 Keynote Speeches

The keynote speech session was chaired by Prof He Xiahong, Vice President of Southwest Forestry University, who welcomed participants and introduced the speakers from across the Greater Mekong Sub Region.

7.2.1 China

Prof. Li Jun, President, Southwest Forestry University

Prof. Li Jun delivered the opening keynote address, warmly welcoming all participants to the Forestry Education Sub Forum and the Second Lancang Mekong Forestry University Presidents’ Forum. He expressed appreciation to APFNet and partner universities for their continued support to regional cooperation, and emphasized the significance of convening the Forum in Pu’er at a time of renewed commitment to forestry education and sustainable development across the GMS region.

He reviewed the substantial progress achieved since the launch of the Presidents’ Forum in 2023. Over the past two years, cooperation among GMS forestry

universities has expanded from initial dialogue to structured collaboration under a formally established Steering Committee, composed of APFNet, the Royal University of Agriculture, Southwest Forestry University, the National University of Laos, the University of Forestry and Environmental Science of Myanmar, Kasetsart University of Thailand, and the Vietnam National University of Forestry. Southwest Forestry University currently serves as the Chair and hosts the liaison office, ensuring continuity and coordination of Forum activities.

Prof. Li highlighted a wide range of practical achievements that demonstrate the vitality and growing maturity of regional collaboration. These include the establishment of the Sino-foreign cooperative education institution known as Taihe Forestry College, which plans to offer three undergraduate programmes with an annual intake of three hundred students. Cooperation with the Vietnam National University of Forestry has expanded through the joint development of a Chinese language education center and the deployment of Southwest Forestry University faculty to support teaching and short term training. The universities have also advanced exchanges through government sponsored study abroad programmes, postgraduate scholarship schemes, undergraduate summer camps, and long and short term mobility for students from GMS economies. In scientific research, joint initiatives include the establishment of a biomass materials research center and the implementation of multiple Yunnan provincial international expert missions in Cambodia, Lao PDR, Thailand, and Vietnam. The collaboration has also facilitated training activities on tree cultivation, degraded forest restoration, identification of controlled species, and tea farmer capacity development. Academic cooperation has grown through five international conferences involving eighty eight experts from GMS economies.

Reflecting on the theme of the Sub Forum, Prof. Li stressed the importance of technology driven solutions, talent development, and integrated industry collaboration as guiding principles for future cooperation. He noted that the shared challenges and opportunities facing GMS forestry institutions require strengthened coordination in education, scientific innovation, and industrial transformation. In this context, he presented four proposals to further advance GMS forestry education cooperation. These include strengthening platform and mechanism development to ensure sustained coordination; deepening educational collaboration and talent cultivation to equip students with strong theoretical, practical, and international competencies, enhancing joint scientific research to tackle common regional priorities such as biodiversity conservation, climate response, and forest carbon enhancement; and promoting stronger integration of academia, research, and industry to accelerate innovation and increase economic and ecological benefits.

Prof. Li concluded by reaffirming Southwest Forestry University's readiness to work closely with all GMS partners in the spirit of consultation, joint contribution, and shared benefit. He called for continued collaboration to advance forestry education, expand scientific research cooperation, and deepen industry partnerships, thereby

contributing to sustainable forestry development in the Lancang Mekong region and to the broader vision of a shared future for regional prosperity.

7.2.2 Welcome Remarks

Dr. Wang Chunfeng, Executive Director, APFNet

Dr. Wang Chunfeng delivered the welcome remarks at the opening of the Second Presidents' Forum of Forestry Universities and Institutes in the Greater Mekong Sub Region. He expressed appreciation to Southwest Forestry University for hosting the event and acknowledged the presence of delegates who travelled from across the region to participate in the Forum. He emphasized the importance of the gathering as a platform for strengthening cooperation and exchanging ideas on the future of forestry education in the GMS.

He reaffirmed the core mission of the Presidents' Forum, noting that the region is endowed with abundant forest resources and a strong ecological foundation, making forestry a central pillar of sustainable development. Dr. Wang highlighted that the Forum was established with a clear objective to deepen regional collaboration, align forestry higher education with emerging trends and new technological developments, and cultivate high caliber forestry professionals equipped for current and future needs. He underscored that this mission continues to guide the Forum's work.

Reviewing the progress of the past two years, Dr. Wang emphasized that the Forum has delivered tangible results with the support of APFNet and Southwest Forestry University. These include two undergraduate summer camps that facilitated exchanges among teachers and students, the successful implementation of the first GMS tea farmer training programme held in Pu'er in 2024, and ongoing preparations for a similar programme for Thai participants. He further noted the achievements of the APFNet Scholarship Programme, which has supported twelve students to pursue master's degrees at Southwest Forestry University and will expand to cover all GMS economies beginning in 2026.

Looking ahead, Dr. Wang stressed that evolving forest functions and regional development priorities call for deeper cooperation in forestry higher education. He expressed hope that the Forum would serve as a new milestone for strengthening communication, improving cooperation mechanisms, expanding practical collaboration through summer camps and training initiatives, and enhancing joint efforts in scientific research and talent cultivation. These efforts, he noted, are vital for addressing shared regional forestry challenges and contributing more effectively to sustainable development across the GMS.

Dr. Wang concluded his remarks by extending sincere wishes for the successful convening of the Forum and encouraged all participants to enjoy their stay in Pu'er.

7.2.3 Cambodia

Prof. Dr. Ngo Bunthan, Rector, Royal University of Agriculture

Prof. Dr. Ngo Bunthan delivered a keynote address on the theme "Dynamic Collaboration for Sustainable Forestry Education and Research Innovation",

expressing his appreciation to Southwest Forestry University and APFNet for hosting the Forum and welcoming delegates from across the Asia Pacific region. He emphasized that the gathering reflects a shared commitment to strengthening partnerships in forestry education, research, and sustainable development.

He underscored the essential role of collaboration in addressing the rapidly evolving challenges facing forests and the societies that depend on them. Forests, he noted, are not only ecological systems but also classrooms, sources of medicine, water towers, and cultural foundations for communities across the region. As climate change, technological advancements, and social pressures reshape these landscapes, education and research institutions must evolve from isolated efforts to interconnected, solution driven cooperation. He stressed that the central question is not about individual leadership but about how institutions can lead together.

Prof. Bunthan highlighted the importance of education and research institutions as bridges between science and policy, knowledge and practice, and innovation and real world impact. Drawing on experiences from the Royal University of Agriculture, he emphasized how academic partnerships, student exchanges, and joint research initiatives generate new perspectives and help develop context appropriate solutions for local communities.

Turning to the future of innovation, he called for the creation of dynamic ecosystems that link universities, governments, industries, and communities. He identified four priority areas for driving progress. These include strengthening international cooperation through joint curricula, mobility programmes, and research networks that prepare students for global leadership. He also stressed the need to harness digital tools, artificial intelligence, and remote sensing for improved forest monitoring and biodiversity assessment. Promoting inclusive and sustainable forestry education was highlighted as another priority, particularly for young people, women, and local communities who require greater access to knowledge and opportunities in the green economy. Finally, he emphasized the importance of mobilizing financial resources and institutional support to sustain research innovation and ensure effective uptake of scientific findings.

Prof. Bunthan concluded with a call for deeper regional and global unity. He encouraged participants to renew their relationship with forests, share data openly, move talent where it is most needed, and translate scientific evidence into informed policy making. He reaffirmed the readiness of the Royal University of Agriculture to work with all partners and emphasized that the Forum represents an important opportunity to strengthen collaboration, advance forestry education and research, and reinforce the shared responsibility to protect and sustain forests for future generations.

7.2.4 Lao PDR

Prof. Thongsouk Keomany, Vice President, National University of Laos

Prof. Thongsouk Keomany delivered a keynote address on the theme “Collaboration, Innovation, and Sustainability: Advancing Forestry Education and Climate Leadership in the Greater Mekong Subregion”. He began by expressing appreciation

to APFNet and Southwest Forestry University for organizing the Forum and emphasized its importance as a platform for strategic dialogue and cooperation among universities in the region.

He highlighted the rapidly changing global and regional context, noting that urban expansion, land use transitions, and the increasing demand for forest products are reshaping development pathways in the Greater Mekong Subregion. At the same time, disruptive technologies are transforming how learning, research, and resource management are conducted. He stressed that forestry education must respond to these shifts by equipping graduates with interdisciplinary competencies that combine technical expertise, stakeholder engagement, problem solving, and ethical decision making. Modern forestry, he noted, is inseparable from climate mitigation, digital innovation, and sustainable community development.

Prof. Keomany outlined several promising technological avenues to advance forestry education and practice. These include using satellite imagery, artificial intelligence, and blockchain tools to improve forest monitoring, carbon tracking, and timber supply chain transparency. He described ongoing applied innovation efforts at the National University of Laos, such as the development of solar assisted wood drying systems, engineered composites made from agricultural byproducts, resource efficient bamboo processing methods, mobile applications for assessing wood strength, and GIS based approaches for community forest boundary mapping. These initiatives, he noted, demonstrate the importance of linking scientific methods with indigenous ecological knowledge and hands on student learning.

He also acknowledged key structural constraints that impede progress. Many forestry graduates lack adequate training in advanced technologies or cross sector collaboration, while faculty members often face heavy workloads and limited access to modern research equipment. He underlined that digital solutions must be adapted carefully to local ecological and cultural contexts and that curriculum reform, faculty capacity building, and infrastructure development require sustained investment and strategic planning.

Addressing the climate crisis, Prof. Keomany emphasized that Laos is already experiencing more frequent hydrological extremes and wildfires. Forest ecosystems remain central to mitigation and resilience, and REDD+ provides a pathway for linking conservation with climate finance. Laos has made progress in establishing monitoring systems and safeguards, but implementation remains complex. He noted that emerging carbon markets can offer opportunities for communities if equity and land rights are protected. He stressed that universities play a critical role in generating empirical evidence, shaping policy, and training future climate leaders, and that climate science must be fully integrated into forestry curricula.

He stressed the need for stronger transnational cooperation to address shared regional challenges, including illegal logging and land tenure conflicts. The National University of Laos has established over one hundred and fifty Memoranda of Understanding with institutions across Asia, and he called for deeper collaboration through joint degree programmes, mobility schemes, and collaborative research. He

also encouraged greater engagement with international frameworks such as the UNFCCC and the FCPF to ensure that global initiatives benefit from regional expertise.

Finally, Prof. Keomany underscored the importance of embedding sustainability within institutional governance and operations. Laos is working to balance economic development with conservation and social equity, and the university is contributing through research on SFM, climate resilient agriculture, and community-based resource governance. He concluded by calling on all institutions to act collectively, uphold scientific integrity, and use the Forum as a catalyst for transformative regional cooperation in forestry education.

7.2.5 Myanmar

Dr. Rosy Ne Win, Vice-President, University of Forestry and Environmental Science, Myanmar

Dr. Rosy Ne Win delivered a keynote address outlining Myanmar's engagement in the Presidents' Forum and the economy's priorities in advancing forestry education. She recalled Myanmar's participation in the first Forum in 2023 and the subsequent Steering Committee Meeting in 2024, noting that these platforms have promoted stronger collaboration among universities in the Greater Mekong Sub-Region. She highlighted that the University of Forestry and Environmental Science has since signed an MOU with Southwest Forestry University, enabling faculty and students to join summer camps in China and benefit from broader academic exchanges.

Dr. Rosy emphasized the essential role of forests in supporting livelihoods and ecosystem services, including biodiversity conservation, soil and water protection, carbon sequestration, and climate stability. She noted that global deforestation trends remain alarming, with primary tropical forest loss increasing due to agricultural expansion and wildfires. She underscored the importance of international initiatives, growing public attention, and events such as COP 30 in driving more effective action on forest conservation.

Turning to forestry education, she stressed its importance in equipping future professionals with the skills needed for SFM, biodiversity protection, climate change mitigation, and rural development. She noted that modern forestry programmes must integrate technical skills with social responsibility, community engagement, and emerging technologies. As Myanmar's only university offering forestry education at the tertiary level, the University of Forestry and Environmental Science places high value on regional partnerships to strengthen its academic and research capacity.

Dr. Rosy reiterated Myanmar's commitment to working closely with universities across the GMS to advance forestry education, research, and inter-university cooperation. She expressed appreciation to Southwest Forestry University and APFNet for their leadership and concluded by reaffirming Myanmar's support for the continued development of the Presidents' Forum.

7.2.6 Thailand

Prof. Dokrak Marod, Vice President for Research and Internationalization, Kasetsart University

Prof. Dokrak Marod presented an overview of Kasetsart University's research and innovation in forestry, highlighting the institution's expanding role in advancing SFM, climate action, and regional collaboration. He began by introducing Kasetsart University as one of Thailand's largest and oldest higher education institutions, established in 1943 and currently comprising 38 faculties, 77,000 students, 4 campuses, and 26 research stations distributed across the economy.

Prof. Marod outlined the university's strategic direction under the "9s Curve for the Future", a four year development framework that places strong emphasis on climate action, carbon neutrality, renewable energy innovation, and international research partnerships. Kasetsart University aims to achieve carbon neutrality by 2035 and is promoting green office practices, expanded use of electric vehicles, and renewable energy initiatives across its campuses. He noted that these efforts are complemented by research and innovation activities that align closely with the SDGs.

Turning to forestry research, Prof. Marod emphasized that the Faculty of Forestry advances three core pillars: technological innovation in forestry, international talent cultivation and collaboration, and transformation of the forestry industry. He presented an overview map of eight key research and training stations covering 1,415 hectares, which serve as platforms for research on tropical forest ecosystems, biodiversity conservation, forest dynamics, and community-based forest management.

On technological innovation and forestry development, he highlighted work in remote sensing and artificial intelligence, including the use of drones, UAVs, LiDAR, and virtual reality tools for forest monitoring, biomass estimation, and precision forestry. Research on climate change adaptation includes assessing forest carbon sequestration and modelling the impacts of climate change on forest ecosystems. Efforts in SFM focus on balancing ecological conservation with the livelihood needs of local communities and promoting responsible use of non-timber forest products.

Prof. Marod then described Kasetsart University's strong engagement in international talent cultivation and research collaboration. Examples include joint capacity building programmes with SEAMEO BIOTROP on urban agriculture, climate adaptation training integrated with food security and natural resource management, and ASEA UNINET collaborations that apply nature-based solutions to restore degraded post mining landscapes. These initiatives aim to strengthen practical skills, promote cross border learning, and link academic research with industry partners.

In discussing transformation and collaboration in the forestry industry, he referenced Thailand's Sustainable Wood Utilization initiative, which promotes improved standards, certification, and innovative applications of wood products. He also highlighted ongoing collaboration with Southwest Forestry University on forestry industry development, demonstrating the importance of regional cooperation in enhancing value chains and strengthening industrial competitiveness.

Prof. Marod presented a summary of forestry research station activities linked to the SDGs from January to September 2025. These include 111 activities under SDG 15, 77 activities under SDG 4, 35 under SDG 17, 33 under SDG 13, 19 under SDG 16, 9 under SDG 11, and 7 under SDG 8, reflecting the wide scope of research and community engagement undertaken by the university.

He concluded by highlighting Kasetsart University's strong commitment to environmental sustainability, noting that the institution has ranked as Thailand's number one green university for four consecutive years, according to the UI Green Metric World University Ranking. He reiterated the university's readiness to welcome international collaborations in research, academic exchange, and student mobility, and expressed hope that partnerships under the Presidents' Forum would continue to deepen in support of sustainable forestry development across the region.

7.2.7 Vietnam

Prof. Pham Van Dien, President, Vietnam National University of Forestry

Prof. Pham Van Dien delivered an address highlighting the progress and future direction of collaboration among forestry universities in the Greater Mekong Sub Region. Speaking on behalf of the Vietnam National University of Forestry, he conveyed his appreciation to Southwest Forestry University for the organization of the Forum and welcomed delegates to the Second Steering Committee Meeting held in conjunction with the Presidents' Forum.

He emphasized that cooperation among GMS forestry universities has expanded meaningfully since the establishment of the Forum. Academic exchanges, student and staff mobility, joint summer camps, and research partnerships have all contributed to improving the quality of forestry education and strengthening regional responses to shared development challenges. Prof. Dien affirmed that these collaborative efforts support broader sustainable development goals and reinforce the collective capacity of universities across the region.

Reflecting on emerging global challenges such as climate change, biodiversity loss, and deforestation, he noted that forestry universities must act as educators, researchers, innovators, and facilitators of change. He highlighted the critical role of universities in bridging science with policy, advancing practical solutions, and developing a skilled workforce capable of guiding sustainable forest landscape management for future generations.

Prof. Dien shared recent progress at the Vietnam National University of Forestry. The university has expanded international joint programmes in natural resources management and forestry, promoted student and staff exchanges with regional partners, and strengthened collaboration on research themes including forest management, carbon dynamics, ecosystem services, and biodiversity conservation. He also underscored efforts to integrate digital transformation and innovation into forestry education, ensuring students are equipped with modern tools and competencies.

Looking ahead, he proposed several measures to further advance regional cooperation. These include developing a joint capacity building platform for students and young researchers, establishing thematic research networks on priority areas such as artificial intelligence applications in forest management, climate change, forest governance, and biodiversity conservation, and enhancing collaboration with development partners, governments, and the private sector. Such efforts, he stressed, would ensure the long-term sustainability, relevance, and impact of the Forum’s initiatives.

Prof. Dien concluded by expressing gratitude to all member universities for their commitment and cooperation. He reaffirmed the shared vision of building a strong academic network that not only advances education and research but also contributes significantly to sustainable development across the Greater Mekong Sub Region.

7.2.8 Mekong Institute

Mr. Suriyan Vichitlekarn, Executive Director, Mekong Institute

Mr. Suriyan Vichitlekarn presented a keynote address on “Bridging Knowledge, Policy, and Communities: Advancing Regional Collaboration for Sustainable Forestry and Green Growth in the GMS”. He introduced the Mekong Institute as an intergovernmental organization dedicated to human resource development, capacity building, and support for regional cooperation and integration across the Greater Mekong Sub Region. The Institute was founded in 1996 and now operates with a multinational team from over twelve nationalities, serving Cambodia, China, Lao PDR, Myanmar, Thailand, and Viet Nam.

Mr. Vichitlekarn traced the institutional evolution of the Mekong Institute through a timeline of key milestones, highlighting its transformation from a development assistance project into an intergovernmental organization, and later a fund coordinator and regional secretariat for various Mekong and ASEAN cooperation mechanisms. He noted that the Institute received the ASEAN Prize in 2021 and continues to expand its mandates in support of regional development.

He outlined the core functions of the Institute, including capacity development for regional cooperation, bridging policy and implementation, and strengthening subregional cooperation frameworks. The presentation further detailed the Institute’s activities such as training, research, structured learning visits, policy dialogues, project implementation, and advisory services. These activities are organized across four thematic areas: agricultural development and commercialization, trade and investment facilitation, sustainable energy and environment, and several cross cutting areas including digitalization, gender, inclusive development, and youth.

Mr. Vichitlekarn described several major development trends shaping the region. These include expanding cross border infrastructure, greater public private partnerships, increased investment in human capital, enhanced digitalization, new green growth initiatives, and emerging nontraditional security challenges such as cybersecurity, food and water insecurity, and demographic pressures. These shifts underscore the need for stronger cooperation, integrated responses, and innovation driven development pathways.

Focusing on forestry, he emphasized that forests remain central to resilience, biodiversity, and livelihoods in the GMS, covering approximately forty seven percent of total land area and supporting over thirty million people directly. He highlighted key opportunities linked to sustainable trade, climate action, and the transition to a green economy, while noting persistent challenges such as deforestation, climate impacts, and competing land uses. Estimated annual carbon emissions from deforestation and land use change in the subregion reach more than four hundred million tons, pointing to the urgency of coordinated action.

Mr. Vichitlekarn introduced five reflection areas that are vital for advancing sustainable forestry in the GMS. These include understanding how forests and biodiversity can coexist with regional integration, how natural resources can support sustainable economic growth, what approaches are needed to maintain ecosystem services, what priority research and policy linkages are required, and what roles forestry academic and research networks should play. He illustrated numerous dimensions of transboundary governance, climate smart forestry, ecosystem valuation, policy science interfaces, community-based management, adaptive land use planning, and innovation networks.

He then outlined how major regional cooperation frameworks, such as the Lancang Mekong Cooperation Mechanism and the GMS Cooperation Program, create enabling conditions for forestry collaboration. These frameworks emphasize water, forestry, biodiversity, ecological connectivity, sustainable trade, and community-based ecosystem management, providing important platforms for joint research, policy harmonization, and innovation.

Mr. Vichitlekarn presented a model titled “Forest for LMC: Knowledge, Innovation and Actions”, which proposes a regional system for coordinating joint research, policy dialogues, capacity building, technology transfer, multi stakeholder pilots, and resource mobilization. The framework identifies universities, private sector partners, local governments, and regional mechanisms as essential contributors to translating research into policy and scaling best practices across member countries.

He concluded by illustrating the proposed structure for cooperation among Southwest Forestry University, Mekong Institute, APFNet, and Forum member universities. This includes the establishment of a joint secretariat and a regional knowledge and innovation network to support coordinated research, advisory functions, progress reporting, and the scaling of collaborative activities across the GMS.

Mr. Vichitlekarn closed his presentation by reaffirming the Mekong Institute’s commitment to advancing green growth, strengthening regional cooperation, and deepening partnerships that link knowledge, policy, and community action in support of sustainable forestry development across the Greater Mekong Sub Region.

7.2.9 Two Year Implementation Review

Ms. Zhang Wanjie, Program Officer, APFNet – Kunming Training Center, Southwest Forestry University

Ms. Zhang Wanjie presented an overview of the progress achieved under the Presidents’ Forum since its establishment in 2023. She noted that the GMS remains a key region for forestry education cooperation and that collaboration among the six participating universities has expanded steadily, supported by growing exchanges in talent training, field practices, and academic cooperation

She reviewed the main institutional milestones, beginning with the First Presidents’ Forum in 2023, which formalized the cooperation mechanism. The Steering Committee was created in 2024 to guide long term planning, and the Second Presidents’ Forum in 2025 has strengthened coordination and introduced new cooperation models.

Ms. Zhang summarized projects supported by APFNet, including the Master’s Scholarship Program that has enrolled twelve students from Cambodia, Lao PDR, and Fiji; the 2024 Workshop on Degraded Forest Rehabilitation; two undergraduate summer camps held in Kunming and Pu’er; and field training programmes for community-based tea producers in Laos and Thailand that strengthened technical skills and livelihood practices.

She then highlighted initiatives supported by Southwest Forestry University. These include PhD scholarships for four students from Laos, Thailand, and Viet Nam; enrolment of 565 GMS students across degree and non-degree programmes; cooperation with the Vietnam National University of Forestry on Chinese language teaching; and four academic conferences and training sessions involving 59 experts from GMS economies. She also noted that 8 SWFU experts were deployed to GMS economies under Yunnan Provincial Commissioner Programmes to support work in forest products, agriculture, and wood identification.

Ms. Zhang described several jointly organized activities that demonstrate deepening institutional partnerships. These include the establishment of the Thai Integration Forestry College, offering three undergraduate majors with an annual intake of three hundred students starting in 2026; the Chinese Language Education Center and Joint Research Center for Biomass Materials with the Vietnam National University of Forestry; and two government sponsored study abroad programmes with Kasetsart University and the Vietnam National University of Forestry. Additional exchanges include short term mobility programmes, the Ecological Bridge Workshop, the Sino Siam Technology and Innovation Symposium, and arboriculture training provided to the Cambodian Forestry Administration.

She concluded by outlining future directions, including strengthening joint research on sustainable forestry, expanding talent development initiatives, enhancing cross border ecological cooperation, and reinforcing the shared vision of a GMS forestry education community. She expressed appreciation to APFNet and all GMS partners for their strong commitment and the concrete results achieved within two years.

7.2.10 Steering Committee Meeting

The Steering Committee convened a short meeting alongside the Second Presidents' Forum to review institutional matters essential for ensuring the continuity and long-term stability of the Forum's operations. The Committee reaffirmed the role of the Presidents' Forum as a key cooperation mechanism for advancing forestry education and research collaboration among universities in the Lancang Mekong region

The Committee first reviewed the proposed revision to Clause 5.2 of the "Framework for the Institutionalization of the Presidents' Forum of Forestry Universities in the Lancang Mekong Region". The current clause states that when the first Chair is promoted or transferred to another position, the Co-Chair automatically assumes the role of Chair. The proposed revision clarifies that the Chair's institution may nominate another representative to assume the role, and that the Co-Chair will take over only if no suitable nominee is available.

The Committee then confirmed the appointment of the new Chair, with Southwest Forestry University continuing to serve in this role for the 2025-2027 term, and updated the list of Committee Members for the coming period. This was followed by a brief discussion on the draft Action Plan for 2025 to 2027, which will guide the next phase of joint activities, coordination, and capacity development under the Forum.

Following the keynote presentations and institutional updates, the Sub Forum proceeded to a thematic session on forestry education, research, and industry development across the Greater Mekong Sub Region.

7.3 Forestry Education, Research and Industry Development

Session 3 was conducted in two parts. The first part was chaired by Prof. Hoang Van Sam of the Vietnam National University of Forestry, and the second by Prof. Zhou Xiaojian of Southwest Forestry University. They guided the session, introduced the speakers, and facilitated discussions on innovations in forestry education, research, and industry development in the region.

7.3.1 Innovation and Transformation in Forestry Cambodia

Mrs. Yutha Nida, Deputy Director, Centre for Agricultural and Environmental Studies (CAES), Royal University of Agriculture

Mrs. Yutha Nida delivered a presentation highlighting the Royal University of Agriculture's evolution, institutional reforms, and expanding contributions to forestry education, research, and community-based natural resource management.

She began with an overview of the university's development, noting that RUA was founded in 1964 and progressively expanded its academic mandate through major milestones: the establishment of its BSc programme in 1985 with support from the Soviet Union, the initiation of research activities in 2000, the MSc programme in 2002, and the PhD programme in 2006. Institutional accreditation was obtained in 2012, and significant reforms have continued under the Ten Year Strategy for 2021 to 2030, which focuses on academic growth, research excellence, human resource

strengthening, and internal quality assurance. The recent establishment of the School of Agricultural Vocational and Training further reflects RUA's commitment to developing practical skills and professional capacity.

Mrs. Nida outlined the university's mission to produce high quality graduates and applied research outputs that meet market needs. She presented the structure of faculties and divisions, highlighting the Faculty of Forestry and its departments in natural resources and environment, forestry and climate change, and geographic information systems and remote sensing. The Faculty aspires to be a center of excellence in forestry education and research, promoting SFM and developing competent professionals.

Turning to the national context, she noted that Cambodia's forest cover has declined significantly from 2010 to 2025 due to agricultural expansion, plantation development, and deforestation. Recent data, however, indicate emerging signs of stabilization and restoration as a result of national reforms and international support programmes. She emphasized that policy and institutional innovations, new technologies, and community-based forestry and tenure initiatives are central components of Cambodia's response.

She then presented an extensive portfolio of research and innovation projects undertaken by RUA. 55 initiatives span forestry, climate resilience, agroforestry, natural resource management, and ecosystem restoration. She illustrated several flagship projects, including a mangrove and GIS project funded by the United Nations Environment Programme that focuses on degradation hotspot mapping, stakeholder analysis, pilot site selection, restoration planning, and long term monitoring. She also described the RECOFTC supported agroforestry project that produced a national agroforestry guideline and training manual, and the JICA supported national and sub national capacity development programme that strengthens Cambodia's forest inventory systems.

Other examples included projects on climate resilient agriculture under IFAD, scaling up sustainable land management practices, the development of allometric equations for upland and flooded forests, carbon stock assessment in mangrove ecosystems, and forest restoration and water availability studies for smart agriculture. These initiatives collectively support evidence-based decision making, improved forest management, and enhanced community resilience.

Mrs. Nida concluded by outlining RUA's collaborations over the past two years. These include summer camps hosted by Southwest Forestry University, student exchanges with Beijing Forestry University and the Yunnan Academy of Forestry and Grassland, a student exchange programme in the Czech Republic, and participation in the Beijing Forestry University Summer School. She emphasized that such exchanges enrich student experiences and strengthen regional academic partnerships, helping build a more interconnected forestry education community across the GMS.

7.3.2 Internationalized Talent Cultivation in the Forestry Discipline of Southwest Forestry University

Prof. Shi Rui, College of Forestry, Southwest Forestry University, China

Prof. Shi Rui presented an overview of Southwest Forestry University's efforts to strengthen the internationalization of forestry talent cultivation, highlighting long term cooperation with Greater Mekong Sub Region partners, APFNet supported educational initiatives, and new digital approaches to forestry education.

She began by outlining the background of Southwest Forestry University (SWFU), noting Yunnan Province's critical role as an ecological barrier and biodiversity stronghold of China, which provides a strong foundation for advancing forestry education and scientific research. She reviewed the historical development of the university showing its evolution from Yunnan University's forestry department in 1938 to major institutional transformations in 1958, 1973, 1978, 1983, 2000, and 2010. She added that cooperation with GMS countries has deepened since the signing of the "Memorandum of Understanding on Cooperation among Universities in the Lower Mekong Basin", which promotes joint development of the forestry discipline.

Prof. Shi then described the university's work basis for international engagement. She highlighted the APFNet Kunming Training Centre's organization of 23 specialized training programmes, where faculty of the College of Forestry have shared advanced theories, practical technologies, and research innovations with forestry practitioners from across the region. She noted long term cooperation with partners in Vietnam, Laos, and Cambodia that focuses on forest management, disaster warning systems, and forest resource utilization. Additional examples include guest lectures by Professor Stephen Zind of Cornell University delivered to over one hundred forestry undergraduates, and participation of SWFU faculty in major international forums such as the AP-FECM academic seminar.

She also highlighted the "People to People Bonds and Educational Exchanges" seminar held at SWFU, which brought together representatives from nineteen universities in fifteen economies to discuss hotspot issues in forest product education and research. Furthermore, SWFU actively recruits international teachers and has strengthened international cultural exchange activities.

Prof. Shi described recent participation by SWFU representatives in the first Undergraduates Summer Camp of Forestry Universities in the GMS, held in Pu'er and Kunming, with 24 students from across the sub region joining field activities and learning exchanges sponsored by APFNet.

The presentation then introduced the APFNet Scholarship Program as a key mechanism supporting internationalized talent development. She reviewed the program's objectives, including developing high level forestry professionals, equipping practitioners with modern management concepts and techniques, and enhancing SFM in the Lancang Mekong region, especially in Cambodia and Laos. She explained the academic pathways available, noting that the APFNet funded

master's programme in forestry is a two year degree focused on applied and multidisciplinary competency.

Prof. Shi highlighted innovative teaching methods and digital tools used to modernize forestry education. These include the ForestBERT platform, digital course construction, virtual simulation laboratories, metaverse based teaching platforms, and an online biodiversity museum.

She concluded by emphasizing that SWFU will continue to strengthen international academic exchanges, deepen partnerships with GMS universities, expand digital and practical training, and work closely with APFNet to cultivate forestry professionals capable of contributing to SFM and regional cooperation.

7.3.3 Function of Effector in the Walnut Anthracnose Pathogen

Prof. Han Changzhi, College of Forestry, Southwest Forestry University, China

Prof. Han Changzhi delivered a scientific presentation on the pathogenic mechanisms of walnut anthracnose, focusing on the role of effector proteins, particularly glycoside hydrolase enzymes, in the infection process of *Colletotrichum* species. He began by outlining the economic and ecological significance of *Juglans regia* in Yunnan Province, where walnut cultivation supports millions of mountain farmers. However, the spread of walnut anthracnose poses a major threat to the industry, with disease incidence reaching critical levels in several areas.

He noted that anthracnose in China is primarily caused by *Colletotrichum gloeosporioides* and *Colletotrichum fructicola*, and that important knowledge gaps remain in understanding key pathogenic genes and infection pathways. This provided the basis for his research, which investigates how glycoside hydrolase enzymes contribute to virulence and host tissue penetration in the walnut anthracnose pathogen known as Cg1.

Prof. Han described the methodological framework used to examine effector function, including genomics and transcriptomics analysis, comparative genomics, bioinformatics, gene knockout techniques, and pathogenicity assays. His team identified GH family proteins as dominant enzymes involved in host infection. GH16 enzymes were more active during fungal growth, while GH17 and GH152 families played key roles during infection. Interaction network analysis showed strong functional linkages among GH5, GH6, GH7, and GH11 families, suggesting coordinated roles in host cell wall degradation.

He also highlighted the functional verification of GH7 using gene knockout experiments. Mutant strains lacking GH7 showed reduced pathogenicity during leaf infection tests, demonstrating that GH7 contributes significantly to virulence and host invasion.

In closing, Prof. Han summarised the scientific contributions of the study, including the identification of secreted proteins and CAZyme profiles in multiple plant pathogens, clarification of effector compositions in the walnut anthracnose pathogen, and initial confirmation of GH family involvement in pathogenicity. He

acknowledged national and provincial funding support and the contributions of graduate students engaged in the research.

7.3.4 Technological Innovation and Forestry Development in Lao PDR

Assoc. Prof. Dr. Viengsamone Thammavong, Faculty of Forest Science, National University of Laos

Assoc. Prof. Dr. Viengsamone Thammavong presented an overview of recent technological innovations and developments in the forestry and wood processing sector of Lao PDR, highlighting regulatory reforms, capacity building efforts, research advancements, and industry engagement led by the Faculty of Forest Science of the National University of Laos.

She began by outlining policies and regulations that guide wood processing and forest resource utilization. Key instruments include the Prime Minister's Order No. 15 (2016) on strengthening forest management, provisions of the revised Forestry Law of 2019 related to timber processing, and clarified mandates for the Ministry of Agriculture and Forestry and the Ministry of Industry and Commerce in regulating the wood processing sector. She noted that the government has introduced new factory standards and enhanced systems for monitoring raw material inputs and product outputs, together with an updated list of wood products permitted for export. These reforms aim to promote transparency, quality compliance, and sustainable industry practices.

Prof. Viengsamone provided an overview of the wood processing industry landscape in 2019, when more than one thousand manufacturing plants were recorded, including sawmills, wood processing factories, and furniture manufacturers. She noted that the number of operating plants has declined significantly in recent years, with the Lao Wood Processing Association reporting a drop in active members due to business closures.

She highlighted the wide network of national and international agencies supporting research, innovation, and industry upgrading in Laos. Partners include ITC, SIDA, RECOFTC, GIZ, FAO, KfW, WWF, ACIAR, LPTP, and EFI, among others. She also referenced efforts to expand plantation development, strengthen certification systems such as FSC, and develop a national PEFC scheme to support sustainable wood product value chains.

The presentation then turned to innovation in teaching, research, and applied wood technology at the National University of Laos. Photographs illustrated hands on training in wood science laboratories, wood anatomy, and industrial processing techniques. Research projects showcased by the faculty include production of rice husk and sugarcane-based panels, plywood from Eucalyptus hybrids, flattened bamboo products, and veneer bending for furniture design. Additional applied research covers timber drying using solar kilns, development of thermal teak veneer, and testing of teak veneer resistance to termite attack. Several projects also focus on non-destructive testing and mechanical property estimation using tools such as the Smart Thumper mobile application and the Universal Testing Machine.

Prof. Viengsamone emphasized the university's strong collaboration with wood industries through product quality testing, training of new laborers, and development of prototype wood products. Industry study tours and field visits to processing plants help strengthen partnerships and allow students to gain practical exposure to real world manufacturing contexts. Photographs in the presentation illustrated group visits to processing plants, plantation sites, and training sessions organized by the Wood Science and Wood Products Research Center.

She concluded by noting that continued innovation, human resource development, and enhanced collaboration between academia, government, and the private sector are critical for modernizing the forestry and wood processing industry in Lao PDR. The National University of Laos remains committed to advancing wood science research, supporting industry upgrading, and contributing to sustainable forestry development.

7.3.5 Industry - Academia Collaboration Enhances Talent Cultivation: An Example from Wood Science and Engineering

Prof. Zhou Xiaojian, Vice Dean, College of Materials Engineering, SWFU, China

Prof. Zhou Xiaojian delivered a presentation on strengthening talent cultivation in wood science and engineering through closer integration of academia, industry, and international partnerships. He began by outlining the broader context of China's wood industry, highlighting limited domestic wood resources and the increasing importance of wood-based panels as a more efficient alternative to solid wood. He noted that technological advancements and the rapid expansion of panel production have positioned China as a global leader in engineered wood products.

He described the evolution of particleboard and plywood manufacturing in China, illustrating how continuous flat pressing technologies, automation, digital design, and intelligent manufacturing have transformed production efficiency and product quality. These sector wide technological shifts have increased demand for professionals with multidisciplinary skills in materials engineering, wood science, digital fabrication, and industrial innovation.

Prof. Zhou then discussed talent cultivation within China's forestry engineering discipline. He introduced the national network of universities engaged in forestry engineering education and research, and noted the breadth of undergraduate, master's, doctoral, and postdoctoral programmes available. He also outlined the historical development of his faculty and the challenges facing wood science education, particularly the need to modernize curricula and better serve the rapidly evolving wood products industry.

Central to the presentation was the university's model of industry - academia integration. Through a strategy described as "bringing in and going out", the university invites industry mentors, technical managers, and experts from enterprise alliances into teaching teams to build a dual qualified faculty capable of bridging academic knowledge and industrial practice. This mixed teaching team supports course innovation, strengthens competency based learning, and enhances students' preparation for the job market.

He described efforts to create a modern teaching environment that connects classrooms, laboratories, training centers, and enterprise workshops. The introduction of virtual teaching platforms, such as the digital teaching and research room for adhesives and coatings, has enabled students to better understand smart manufacturing processes and digital production systems. The university also operates school enterprise cooperation training classes and top talent experimental classes to accelerate professional development.

Prof. Zhou highlighted the establishment of the Modern Industry College of Biomass Materials, which brings together teaching, research, and production within a shared interest community. Joint projects with enterprises have resulted in multiple research outcomes, including national invention patents, provincial and ministerial awards, and new teaching cases that feed back into curriculum development. Collaboration with industry has also enhanced the university's applied research portfolio and created opportunities for students to participate directly in innovation.

He concluded by outlining the university's international cooperation efforts. SWFU has established strong partnerships with 22 institutions worldwide, supported by platforms such as the International Joint Research Center for Biomass Materials and the Wood Science and Technology Innovation Base. Faculty and students regularly participate in exchange programmes, training courses, and joint research initiatives. International experts contribute to teaching and research, and recent awards such as the Yunnan Provincial Friendship Award reflect the value of these contributions.

Prof. Zhou emphasized that deepened cooperation among industry, academia, and international partners is essential for developing high value wood products and advancing wood science education. He reaffirmed the university's commitment to supporting regional development and cultivating the next generation of skilled forestry and materials engineering professionals.

7.3.6 Study on High Value-Added Engineering Applications of Rubberwood

Prof. Huang Suyong, College of Materials and Chemical Engineering, SWFU, China

Prof. Huang Suyong delivered a comprehensive presentation on the advancement of high value engineered applications of rubberwood, demonstrating how technological innovations can enhance material utilization, reduce waste, and support the development of sustainable wood based industries. She began by highlighting the deep cultural and historical connection between Chinese society and wood, referencing examples from traditional architecture and craftsmanship to illustrate the longstanding importance of timber in shaping cultural heritage and material innovation.

Prof. Huang noted that China's demand for wood continues to grow, while domestic timber resources remain limited due to natural forest logging restrictions. Although fast growing plantations supply a significant quantity of raw material, much of this wood is currently used for non-structural applications. Expanding the structural and high performance uses of rubberwood, therefore, represents an important pathway to

ease the shortage of quality timber and improve resource efficiency. She also highlighted that rubberwood plantations now exceed ten million hectares globally, with ninety percent in Southeast Asia, positioning the material as a major regional resource with substantial development potential.

She described current applications of rubberwood, which remain concentrated in primary processing for furniture, doors, windows, and decorative materials. However, the sector faces persistent challenges such as susceptibility to mold and decay, low utilization efficiency, and limited diversity of high end products. Prof. Huang argued that these constraints can be addressed through advances in engineered wood products and the development of innovative composite materials.

She provided an overview of cross laminated timber (CLT) and bamboo timber composites, noting the rapid global growth of CLT in mid and high rise construction and its environmental advantages. She explained how combining bamboo and timber can enhance mechanical performance, reduce material dependence on traditional softwood species, and accelerate the localization of green prefabricated building systems in China. Her team has developed new one component polyurethane adhesives, high strength composite manufacturing techniques, thin CLT and structural decorative integrated panels, and reinforced cross laminated bamboo timber systems that improve durability, stability, and structural properties.

Prof. Huang then presented research on rubberwood based CLT and CLBT applications, including interior wall panels, separation walls, and door components. She illustrated a four-day construction model for a prefabricated CLT cabin, demonstrating the efficiency, simplicity, and environmental advantages of wood based modular construction.

She also introduced Stitched Strand Lumber and Stitched Strand Board (SSL and SSB), a new type of reconstituted engineered wood product developed using rubberwood veneers. Compared with conventional oriented strand lumber, SSL reduces density while maintaining comparable bending strength and stiffness with lower variability. It also offers processing advantages, including shorter hot pressing time and increased pressing efficiency relative to laminated veneer lumber. These characteristics make SSL a promising lightweight yet strong material well suited for commercial use and large scale production.

The presentation further addressed ways to enhance the utilization of mildewed rubberwood veneers. Prof. Huang explained that upstream impregnation treatments can significantly improve mechanical properties, anti-mildew performance, and bonding quality. Experiments demonstrated that rubberwood LVL produced under optimized temperature, adhesive application, and pressing conditions achieved high strength metrics across bending, compression, and shear tests. She also examined the feasibility of assembling LVL using mixed lay ups of normal and mildewed veneers, showing that bonding strength met national standards and that carefully designed structures can maintain performance even when using up to fifty percent mould affected veneers.

Prof. Huang concluded by outlining future research directions, including studying long term effects of impregnation treatments, understanding the influence of different mould infestation levels on LVL performance, and developing ageing models to evaluate engineered wood materials throughout their life cycle. She emphasized that rubberwood based engineered materials have strong commercial potential, contribute to improved resource recovery, and offer sustainable solutions for modern bio based construction industries.

7.3.7 Role of Women Foresters in Myanmar Education

Prof. Dr. Idd Idd Shwe Zin, Section Head, Department of Sustainable Forestry and Forest Ecology, Forest Faculty, University of Forestry and Environmental Science, Yezin, Myanmar

Prof. Dr. Idd Idd Shwe Zin delivered a comprehensive presentation examining the role of women foresters in Myanmar's education system, their participation in the forestry profession, and the barriers and opportunities shaping their contributions to sustainable forestry.

She opened with an overview of Myanmar's demographic and educational profile, highlighting a population of over 51 million people with women constituting a slight majority. The national literacy rate remains relatively high, and women's participation across most levels of education exceeds that of men. In basic education, school attendance between boys and girls is almost identical until age fourteen, after which girls are slightly more likely to continue their studies. This trend continues into higher education, where women represent a larger share of university graduates and postgraduate degree holders.

Despite strong educational attainment, Prof. Zin noted that women remain underrepresented in professional fields, leadership positions, and economically influential sectors. Many highly educated women face persistent structural barriers, including limited access to senior roles, gender-based expectations in the workplace, and restricted economic opportunities. Women are more likely to undertake unpaid care responsibilities and less likely to hold decision making positions despite having comparable or higher qualifications.

She highlighted the history of women's participation in forestry education, noting that the University of Forestry and Environmental Science, formerly the University of Forestry, first admitted women as forestry students in 1995, even though the institution began forestry training in 1923. The current admission ratio remains heavily male dominated, with women representing about twenty percent of incoming students. She also pointed to the physical demands of forestry training, including the twenty mile endurance walk required for admission, which may influence gender balance.

Women forestry graduates pursue careers across several agencies, including the Forest Department, Myanmar Timber Enterprise, the Dry Zone Greening Department, the Environmental Conservation Department, universities, research institutions, and training centers. However, even with strong performance, women's professional

recognition and career progression remain limited, and opportunities to achieve higher rank are not guaranteed.

Prof. Zin described the multiple roles women now play in forestry education and practice. Women contribute as students, lecturers, researchers, curriculum developers, and community facilitators. They increasingly participate in community forestry initiatives, lead restoration and conservation activities, serve as forest rangers and field supervisors, and support biodiversity conservation and livelihood improvement in forest dependent communities.

She outlined key challenges facing women in forestry, including male dominated institutional cultures, limited recognition of women's leadership potential, cultural norms that discourage women from working in remote field settings, and the persistent need to balance professional responsibilities with family obligations. Women also continue to face barriers to accessing leadership roles within forestry agencies and academic institutions.

The presentation concluded with several recommendations for strengthening women's empowerment through education. These include promoting gender inclusive policymaking and leadership, reforming education systems to support equal participation, expanding vocational and alternative learning opportunities, and improving financial and technological access for women students. She also emphasized the need for community awareness campaigns to foster more positive gender attitudes and highlighted that empowering women in forestry contributes not only to gender equality but also to sustainable development, peacebuilding, and balanced social progress.

7.3.8 Scenic Roads: International Practices and Emerging Tools for Evidence Based Planning

Associate Prof. Jun Qi, College of Landscape Architecture and Horticulture, SWFU, China

Associate Prof. Jun Qi delivered an extensive presentation on global scenic road systems and innovative analytical tools that can support evidence-based planning and design. He began by tracing the historical development of automobiles, emphasizing how innovations in steam powered and internal combustion engines enabled the emergence of road travel as a recreational and cultural experience. This history set the stage for the creation of scenic road systems in several regions.

He first examined the United States, widely regarded as the birthplace of formal scenic roads. The National Scenic Byway Program, established in the 1990s, recognizes roads that possess outstanding natural, cultural, recreational, and historic qualities. He highlighted well known examples such as Historic Route 66 and California State Route 1, which have become iconic tourism corridors. These routes exemplify how scenic roads can integrate landscape appreciation, heritage conservation, and regional economic development.

Prof. Qi then discussed Europe, focusing on Germany's renowned holiday roads and cultural routes. Examples such as the Romantic Road, the German Clock Route, and

the Half Timbered Houses Route reflect distinctive themes that connect villages, heritage sites, and natural landscapes. These routes have been strengthened by national standards established by the German Tourism Association to ensure quality, thematic coherence, and sustainable management.

Norway was presented as an example of advanced scenic route development that integrates nature and art. The Norwegian Scenic Routes initiative includes eighteen designated routes that use high quality architecture, landscape design, and visitor facilities to create memorable experiences while contributing to rural economic development. The presentation showcased how collaboration with designers and architects has enhanced the identity and attractiveness of these routes.

Turning to China, Prof. Qi noted several emerging scenic road projects, including the Nujiang Beautiful Road in Yunnan, the Taihang No. 1 Tourist Road in Shanxi, the National No. 1 Scenic Boulevard in Hebei, the Wuyishan National Park No. 1 Scenic Road in Fujian, and the Hainan Island tourist loop systems. These projects demonstrate growing interest in scenic corridors as tools for tourism development, landscape conservation, and integrated rural revitalization.

Prof. Qi then introduced analytical tools used in evidence-based planning, emphasizing the potential of artificial intelligence for evaluating scenic quality. He explained how semantic segmentation, which employs computer vision to analyze landscape elements in panoramic road images, can quantify attributes such as naturalness, diversity, openness, and coherence. These indicators help planners understand how different landscape compositions influence scenic character and visitor experience.

He presented a case study from a tropical rainforest expressway where this method was used to classify landscape attributes and identify dominant qualities. By plotting the results in a multidimensional coordinate system, his team could characterize the landscape as highly natural, relatively open, and visually coherent, providing objective evidence to guide route positioning and design concepts.

Prof. Qi also discussed the use of deep transfer learning to predict aesthetic attention in road landscapes. By training a model on responses from more than one thousand participants, his team identified positive and negative aesthetic stimuli in road environments. Features such as mountain skylines, tree archways, and structured vegetation were associated with positive attention, while bare slopes, unattractive buildings, and incomplete construction triggered negative responses. He illustrated how Class Activation Mapping can produce heatmaps showing which parts of the landscape attract visual attention, offering planners insights into what should be preserved or improved.

Additional analyses included assessing which landscape elements and colors attract positive aesthetic responses, and understanding depth and complexity in visual attention. These findings indicate that landscapes with open views, vibrant colours dominated by greens and blues, and visually complex distant features tend to receive more positive aesthetic judgments.

Prof. Qi concluded that combining scenic road planning with artificial intelligence-based evaluation methods can enhance the stewardship of scenic resources and support high quality, sustainable development of scenic roads in China and other regions. He emphasized that these emerging tools provide planners and managers with objective data that can complement traditional design, helping ensure that scenic routes deliver meaningful experiences for visitors while protecting landscape values.

7.3.9 Technological Innovation and Forestry Development

Assoc. Prof. Chatchai Ngernsaengsaruy, Department of Botany, Faculty of Science, Kasetsart University, Thailand

Assoc. Prof. Chatchai Ngernsaengsaruy delivered a wide ranging presentation exploring the role of technological innovation in advancing forestry development in Thailand. He defined technological innovation as the integration of modern technologies and scientific advancements into forest management, conservation, and sustainable resource use. These technologies are positioned to enhance efficiency, accuracy, transparency, and long term sustainability across forestry operations.

He highlighted several transformative technologies that have become central to modern forestry. Remote sensing and real time monitoring allow continuous assessment of forest conditions, while drones improve the speed and precision of field data collection. Geographic Information Systems support advanced mapping, land use planning, and spatial analysis. Artificial intelligence enables predictive modelling, early warning systems, and automated interpretation of large environmental datasets. Biotechnology supports improved tree breeding, enhanced disease resistance, and conservation of genetic diversity. Digital platforms strengthen information exchange, monitoring, and multi stakeholder decision making.

These technologies create important applications across multiple forestry domains. Examples include improved forest monitoring and mapping, enhanced early detection and response to forest fires, optimized harvesting systems, more effective biodiversity conservation, strengthened community-based forest management, and improved climate change mitigation efforts. He emphasized that technological innovation contributes directly to ecosystem restoration, long term sustainability, and better resource planning.

Prof. Ngernsaengsaruy then introduced the mission and organizational structure of the Faculty of Forestry at Kasetsart University, which consists of six departments covering forest biology, forest management, forest engineering, silviculture, forest products, and conservation. He explained how the Faculty of Science, with its thirteen departments spanning disciplines such as botany, genetics, microbiology, chemistry, materials science, statistics, and computer science, provides a strong scientific foundation for innovation in forestry. This integration strengthens research in molecular biology, bioinformatics, ecology, and environmental modelling.

He showcased several national and international collaborations that exemplify the university's interdisciplinary approach. This includes the development of allometric

equations for estimating aboveground carbon stocks in northern Thailand, which have been formally approved by the Thailand Greenhouse Gas Management Organization for use in the T-VER and T-VER Premium carbon credit programmes. These equations provide non-destructive, accurate, and standardized methodologies essential for credible carbon accounting and forest-based climate mitigation projects.

Another major initiative highlighted was the EuAsiaN Root project, funded by the Marie Skłodowska Curie Actions Programme. This collaborative research network aims to improve understanding of tree root systems, mycorrhizal associations, nutrient acquisition, carbon sequestration, and soil pathogen interactions across different Eurasian biomes. The project supports field activities, staff exchanges, and joint research, contributing to the advancement of cutting edge forest ecology and soil science.

Prof. Ngernsaengsaruy also presented taxonomic research conducted on several plant groups in Thailand, including the genera *Dolichandrone*, *Santisukia*, and *Fernandoa* in the Bignoniaceae family, as well as extensive contributions to the taxonomy of *Garcinia*, *Diospyros*, *Rhizophora*, and other key families. These studies contribute to biodiversity conservation, species identification, and the scientific foundation for SFM.

He highlighted ongoing research in wood identification, molecular taxonomy, and DNA based wood verification. Projects include wood DNA barcoding, genome skimming for improved traceability, and the development of bioinformatic approaches for matching wood samples to specific individuals or populations. He also described training initiatives focused on CITES regulated timber species identification, integrating wood anatomy, molecular techniques, and digital databases such as EyeWood.

The presentation concluded with an overview of interdisciplinary research teams working on forest genetics, plant physiology, soil microbiology, community forestry, lignocellulosic materials, wildlife biology, ethnobotany, phytochemistry, and pharmaceutical applications. He emphasized that technological innovation must be complemented by strong basic research to support national development. Integrating advanced technologies with foundational scientific knowledge will enable Thailand to better address biodiversity loss, climate change, SFM, and long term ecosystem resilience.

7.3.10 Strengthening Rocky Desertification Control and Safeguarding Our Green Homeland

Prof. Wei Li, College of Soil and Water Conservation, SWFU, China

Prof. Wei Li delivered an in-depth presentation on the urgent challenge of rocky desertification in Southwest China and the role of the College of Soil and Water Conservation in advancing scientific research, professional training, and international cooperation to address this environmental crisis.

He began by outlining the severity of land degradation in China, noting that soil erosion and desertification remain among the most widespread forms of degradation

affecting food security, ecosystem health, biodiversity conservation, and rural livelihoods. Images from karst regions included in the presentation illustrate severe bedrock exposure and degraded landscapes, highlighting the ecological and socio economic consequences of long term vegetation loss. Addressing these challenges requires strong scientific support and well-trained professionals, especially since Soil and Water Conservation and Desertification Control was elevated to a first level discipline in 2024.

Prof. Li introduced the College of Soil and Water Conservation, the first independently established college dedicated to this field in Southwest China. The college hosts two first level disciplines, namely Soil and Water Conservation and Desertification Control and Geography, and conducts research across related fields such as ecology, environmental science, and natural resource management. The faculty team comprises eighty members, all holding doctoral degrees, including more than thirty recognized provincial level talents and academic leaders. The slides displayed a wide range of published books, research articles, and award certificates, demonstrating strong academic output and leadership in the discipline.

The college currently trains 1,900 students, including more than 1,500 undergraduates and nearly 400 master's and doctoral candidates. Its integrated multi-level training system ensures continuity from undergraduate to postgraduate education and supports high quality professional development. The college offers a teaching model that balances theoretical foundations with practical field training, includes interdisciplinary content, and strengthens policy and management competencies. Teaching approaches incorporate project-based learning, real world case studies, industry expertise, and growing use of artificial intelligence tools such as knowledge graphs, interactive learning platforms, and blended teaching modes.

Prof. Li described the college's extensive scientific research platforms, including nine research facilities and several provincial laboratories and observation stations that focus on karst ecosystems, pollution control, and mountainous rural environments. Key research areas include understanding ecological processes in karst systems, mechanisms of rocky desertification, biogeochemical cycling, integrated soil and water conservation technologies, and enhancement of ecosystem functions and services in karst regions.

In discussing vegetation restoration in rocky desertification areas, Prof. Li highlighted species with strong adaptive traits, noting that plants with thicker leaves and smaller leaf areas tend to be more resilient in severe karst environments. He also emphasized the importance of biological soil crusts as pioneer organisms that can stabilize soils, improve moisture retention, and support early ecosystem recovery.

The presentation included examples of sustainable utilization of karst resources. These included economic tree crops such as walnut, chestnut, mulberry, and macadamia; spice crops like tsaoko, Sichuan pepper, and Amomum species; medicinal plants such as honeysuckle and Panax notoginseng; and specialty fruits and flowers including dragon fruit, citrus, and Damascus rose.

Looking ahead, Prof. Li outlined future research priorities. These include strengthening long term ecosystem monitoring at the ZhanYi Karst Ecosystem Observation and Research Station and advancing studies on carbon sequestration in karst regions, particularly differences between soils derived from carbonate and shale parent materials.

He concluded by highlighting the importance of international collaboration. Rocky desertification affects not only China but also Laos, Vietnam, Thailand, Myanmar, and Cambodia. Prof. Li invited universities in the region to deepen exchanges on talent development, collaborative teaching, and scientific research. Such cooperation will enhance student capabilities, expand global perspectives, and contribute to shared efforts to safeguard fragile karst ecosystems across the region.

7.3.11 Big Data and AI Technology for Smart Forestry in Vietnam

Prof. Pham Van Dien, Prof. Dr. Hoang Van Sam, and Dr. Pham Van Tinh, Vietnam National University of Forestry

The presentation highlighted Vietnam's advances in applying big data and artificial intelligence technologies to support smart forestry, strengthening forest monitoring, carbon assessment, biodiversity management, and urban tree planning.

The speakers began with an overview of Vietnam's forest resources. Forest cover now reaches more than forty two percent, equivalent to 14.86 million hectares. Natural forests account for just over ten million hectares, while plantations cover nearly five million hectares. Vietnam is recognized as a global biodiversity center with an estimated fifteen thousand plant species, of which about eight percent are endemic. These ecological foundations underscore the importance of adopting advanced technologies to enhance forest protection and sustainable management.

The presentation introduced several digital platforms that form the backbone of smart forestry in Vietnam. The Forestry 4.0 information system integrates news, data, maps, and technical documents to support forest management nationwide. This platform enables users to access forest resource inventories, biodiversity data, forest fire alerts, coastal forest information, and socio economic datasets. It also links with web-based tools for carbon estimation, canopy analysis, and forest policy monitoring.

A major focus was early forest loss detection using artificial intelligence (AI). The system combines satellite imagery, unmanned aerial vehicles (UAV), and mobile applications to detect changes in forest cover. An AI processing pipeline automatically identifies potential deforestation events, generates alerts via email or mobile notifications, and supports user verification and feedback. Community reporting and UAV based validation enhance accuracy and create a continuous learning loop that allows machine learning models to improve over time.

The speakers also described Vietnam's early wildfire detection system, which integrates satellite data, AI enabled thermal and optical cameras, mobile reporting, and cloud-based analytics. Automated workflows identify smoke and fire signatures, classify risk levels, assess fire intensity, and predict spread direction. Real time video

monitoring provides evidence for emergency response teams, while user feedback enhances model performance.

Another key component is the national forest carbon estimation system, which uses multispectral UAV imagery, LiDAR scanning, photogrammetry, vegetation indices, and machine learning for biomass and carbon stock analysis. Automated calculations use species specific allometric equations to estimate above and below ground carbon storage. The system produces spatial carbon maps, supports trend analysis, and maintains a national carbon inventory database. These tools strengthen climate mitigation strategies and promote more accurate reporting for REDD+ and carbon credit programmes.

The presentation also showcased the application of AI for plant species identification. The VietPlant mobile application, developed through collaboration between national research institutes, uses deep learning and large photographic datasets to identify tree species, support botanical research, and assist forest managers in the field. This tool draws on a comprehensive image database of Vietnamese plant species that supports rapid identification and training.

Further examples demonstrated the integration of UAV technology and Web GIS for managing urban trees. These tools enable the creation of three dimensional models, high resolution Ortho mosaics, and digital elevation models for mapping urban vegetation. They support applications such as i-Tree, which provides insights on the ecological and economic benefits of urban trees, including carbon sequestration, air quality improvement, stormwater regulation, and ecosystem valuation.

The presentation concluded with experimental results from advanced image processing methods used for tree detection and canopy mapping. Techniques such as three dimensional Gaussian splatting and Scaffold GS were used to improve the quality of Ortho mosaics, minimize ghost pixel errors, and strengthen data accuracy for urban green space management.

Overall, the speakers emphasized that the integration of big data and AI technologies is transforming forest protection, carbon assessment, biodiversity monitoring, and urban forestry planning in Vietnam. Continued development of digital tools, real time monitoring systems, and machine learning applications will further strengthen national forestry governance and support sustainable landscape management.

7.3.12 Innovative Approaches and Pathways for Higher Education Connectivity in the Lancang–Mekong Region: A Perspective of Forestry–Law Talent Cultivation Cooperation

Assoc. Prof. Qiu Yinying, College of Humanities and Law, SWFU, China

Assoc. Prof. Qiu Yinying presented a forward looking perspective on strengthening higher education connectivity in the Lancang–Mekong region through integrated forestry and law talent cultivation. The presentation emphasized that deeper educational cooperation is essential for meeting the region’s development challenges, strengthening environmental governance, and promoting sustainable forestry.

She began by outlining the natural endowments and development challenges of the Lancang–Mekong region. The region is rich in forest resources and biodiversity, offering high ecological value, yet it faces uneven development, limited infrastructure, and growing pressures related to global market demands. External forces such as the global green transition, carbon market requirements, and regulatory frameworks like the EUDR are reshaping supply chains and creating new compliance obligations for forestry sectors. Regional trade agreements and initiatives such as the Regional Comprehensive Economic Partnership and the Belt and Road Initiative also generate opportunities for cooperation.

Prof. Qiu emphasized that higher education plays a pivotal role in responding to these trends. She argued that interdisciplinary talent is crucial for guiding the region’s transformation and that universities serve as central platforms for producing professionals capable of navigating ecological, legal, and economic complexities. Strengthened educational connectivity can also support the alignment of regulatory systems across the six Lancang–Mekong countries, helping build shared standards for sustainable forestry.

The presentation then introduced three areas of innovation needed to move from one way exchange to joint development. Conceptual innovation calls for elevating education as a foundation for regional green governance, fostering shared environmental values, and integrating forestry, science, and law into a common educational vision. Strategic innovation focuses on cross boundary collaboration, including the establishment of a Lancang–Mekong Higher Education Alliance on Forestry and Law, deeper transdisciplinary integration among forestry and legal fields, and the development of transnational mechanisms for credit transfer, joint research, and dual degree programmes.

Prof. Qiu outlined concrete pathways for building a new model of forestry and law talent training. Curriculum cooperation includes developing a shared “Lancang–Mekong Forestry Law and Policy” course module, supported by multilingual teaching resources, cross border training bases, and mutually recognized credits. Faculty and research sharing would be advanced through a regional talent pool, transnational teaching teams, and joint initiatives that explore the interface between forestry and legal governance.

She presented clear talent development objectives that target multiple education levels and professional groups. Undergraduate training aims to strengthen foundational knowledge of forestry law systems across the six countries. Postgraduate education focuses on developing expertise in international and transboundary environmental governance. Additional programmes would build the skills of forestry officials through systematic training, improve international compliance capacity among law enforcement personnel, and support cross border cooperation under key environmental regulations. She also stressed the importance of think tank contributions, policy research, and evidence based decision support for green development strategies in the region.

In conclusion, Prof. Qiu highlighted that advancing sustainable forestry in the Lancang–Mekong region requires stronger educational connectivity and innovative cooperation models that integrate forestry, law, and regional governance. She encouraged universities to deepen collaboration on talent development, research, and shared curriculum frameworks, noting that these efforts can help build a more resilient, well governed, and environmentally responsible regional community.

7.4 Field Visit

Following the completion of the indoor sessions, participants undertook a field visit to the Pu'er Songmao Valley Under forest Medicinal Herb Development Co., Ltd. As the visit formed an integral experiential component of the sub-forum.

7.5 Synthesis and Conclusions

The Forestry Education Sub Forum demonstrated that universities and research institutions in the Greater Mekong Sub Region are moving toward a more structured and strategic cooperation mechanism. Discussions underscored the growing maturity of the Presidents' Forum, reflected in scholarships, summer camps, training programmes, joint research initiatives, and new institutional arrangements that link education, research, and practical field work.

Several themes emerged across the sessions. Technological innovation is becoming central to forestry education and practice, with universities adopting tools such as remote sensing, artificial intelligence, big data, and digital platforms. Talent cultivation is increasingly internationalized through mobility schemes, scholarship programmes, joint curricula, and digital learning tools. At the same time, many institutions are deepening industry–academia collaboration through field laboratories, enterprise partnerships, and applied research aligned to labor market and value chain needs. Inclusion and gender equality also featured prominently, particularly regarding the roles and challenges of women foresters.

The two year implementation review and economy presentations highlighted tangible advances. Universities are beginning to specialize and share complementary strengths in areas such as smart forestry applications, engineered wood materials, rocky desertification control, and interdisciplinary education that integrates forestry with governance and law. These strengths provide a solid foundation for thematic networks, shared research platforms, and collaborative teaching teams across the region.

Looking ahead, priority areas for the Forum include consolidating mobility and scholarship programmes into a coherent regional talent development pathway, strengthening joint research and innovation on climate resilient forestry, forest carbon, biodiversity, engineered materials, and smart forestry applications, and expanding partnerships with government agencies, the private sector, and regional organizations. With a clearer governance structure and expanding collaboration, the Presidents' Forum is well positioned to evolve into a key regional mechanism for advancing modern forestry education and supporting SFM across the Lancang–Mekong region.

8. Biodiversity Conservation Sub Forum

This chapter presents the proceedings of the Biodiversity Conservation Sub Forum, summarizing the key presentations and roundtable discussions that explored regional approaches to strengthening biodiversity conservation and SFM.

8.1. Introduction

The Biodiversity Conservation Sub-Forum was convened on 29 October 2025 at the Da Ting Hall of the Jianhua International Hotel as a thematic session of the Second Pu'er Forum on Asia-Pacific Forests. Organized in collaboration with WWF China, the sub-forum brought together representatives from government agencies, protected areas, research institutions, universities, conservation organizations and the private sector to exchange scientific knowledge and practical experiences on advancing biodiversity conservation across the region.

The programme comprised two thematic sessions. The first centered on Asian elephant protection and featured insights from national research institutions, protected area managers, transportation experts and international organizations. Presentations highlighted population trends, habitat connectivity, human–elephant conflict mitigation and the development of future conservation frameworks including the proposed Asian Elephant National Park.

The second session explored synergies between habitat restoration, forest landscape restoration and SFM. Speakers shared technical models and pilot results from across China, covering wildlife-oriented forest management, plantation biodiversity enhancement, FLR indicator systems and the design of resilient ecological corridors. The session also launched a new initiative to enhance biodiversity in non-protected forests through improved technical support and broader community participation. During the sub-forum, WWF announced the “Initiative on Promoting the Enhancement of Forest Biodiversity Outside Protected Areas through Forest Management”, calling for strengthened cross-sector collaboration, methodological innovation, enhanced technical and financial support, and broader public and community engagement.

Across both sessions, discussions underscored the need to shift from single-purpose forestry toward integrated landscape management that aligns ecological and economic objectives. Participants emphasized the importance of cross-sector cooperation, rigorous technical standards, and community engagement as foundations for advancing biodiversity-friendly forest management in the Asia-Pacific region.

8.2 Session 1: Asian Elephant Protection — To strengthen Biodiversity Conservation and Habitat Quality Improvement

Host: Ms. Chang Xueyu, Program Officer, WWF-China

Ms. Chang Xueyu opened the first session of the Biodiversity Conservation Sub-Forum by introducing its core theme on Asian Elephant Protection and the

broader objective of improving biodiversity conservation and habitat quality. She noted that, although Asian elephants are receiving increasing international attention, significant challenges remain, including fostering harmonious coexistence between people and elephants, improving habitat connectivity, and mitigating pressures associated with land use exchanges.

Ms. Chang emphasized that the session brings together experts from government agencies, protected areas, research institutions, and international organizations to exchange scientific knowledge and practical experience. She highlighted the importance of cross-sector cooperation, strengthening habitat connectivity, and applying evidence-based approaches to enhance human-elephant coexistence and support long-term conservation. She expressed confidence that the shared insights would help advance collaborative efforts for Asian elephant protection across the region.

8.2.1 Keynote Speech: Research on the Conservation and Management of Asian Elephants in China

Dr. Chen Fei, Director, National Research Center for Asian Elephant Research Center, National Forestry and Grassland Administration, China

Dr. Chen Fei delivered a comprehensive keynote on the status, conservation achievements, and future priorities for Asian elephant (*Elephas maximus*) protection in China. He began by contextualizing the species' global and regional distribution, noting that China's wild population has now surpassed 300 individuals and is exhibiting a continued positive demographic trajectory. This population increase has been accompanied by a notable expansion in geographic range, with elephants now occurring across a wider range of prefectures and counties in Yunnan Province.

Dr. Chen highlighted the rising complexity of human–elephant interactions, driven by population growth of elephant groups, insufficient forage availability within protected areas, and overlapping activity spaces between elephants and human settlements. He further highlighted the long-standing habitat fragmentation, which has resulted in several isolated subpopulations and raised concerns regarding genetic exchange and sustained population viability.

The keynote provided an overview of China's integrated conservation and management system for Asian elephants. Key components include a multi-layered monitoring and early-warning network using ground patrols, infrared and surveillance cameras, drones, thermal imaging, and smart broadcasting systems. Conflict-prevention measures such as pulsed and steel-frame fencing, elephant-avoidance towers, and community-level safety infrastructure have been implemented to reduce risks for both elephants and local residents.

Dr. Chen also described a series of habitat restoration measures, including forest tending to improve habitat structure, establishment of designated elephant forage plots, construction of artificial mineral licks, and development of ecological corridors and movement passages. Additional efforts encompass rescue and rehabilitation, GPS

collaring for movement tracking, and advances in genetic behavioural, and ecological research that inform evidence-based management strategies.

He emphasized the importance of cross-border cooperation, particularly with Lao PDR, as well as China's participation in international scientific exchanges and global biodiversity platforms. The development of standardized technical guidelines for elephant monitoring, habitat restoration, and conflict-warning systems was highlighted as an important step toward strengthening national management frameworks.

Dr. Chen concluded by outlining key priorities for the next phase of conservation. These include establishing the Asian Elephant National Park, expanding funding and compensation mechanisms, enhancing monitoring and early-warning systems, promoting public environmental education, strengthening habitat restoration, and deepening international collaboration. He called for sustained multi-stakeholder engagement to build a landscape where both people and elephants can thrive in harmony.

8.2.2 Global Perspectives on Asian Elephant Conservation: Lessons and Best Practices

Mr. James Bampton, WWF Regional Forest Lead, Asia Pacific Region

Mr. James Bampton provided an international overview of Asian elephant conservation, highlighting key threats, emerging global lessons, and practical approaches relevant to range countries across Asia. He began by noting that Asian elephants remain endangered, with wild populations declining across much of their range due to habitat loss, fragmentation, poaching, and escalating human–elephant conflict. He emphasized that conservation is inherently complex, requiring coordinated ecological, social, and political responses rather than isolated technical interventions.

He compared global population trends of African and Asian elephants to illustrate the scale of decline and the urgency of interventions. He stressed the ecological importance of Asian elephants as keystone species that maintain ecosystem structure, support biodiversity, and provide critical services such as seed dispersal and regulation of water systems.

Mr. Bampton outlined the major global threats faced by Asian elephants, including shrinking habitats due to agriculture and infrastructure expansion, illegal wildlife trade, and the emerging impacts of climate change on food and water availability. He noted that habitat fragmentation is most severe in countries such as China and India, resulting in isolated populations that risk long-term genetic and demographic instability.

He then introduced WWF's regional strategy for elephant conservation, which focuses on securing habitats, strengthening ecological connectivity, and improving transboundary cooperation. He underscored the role of Key Biodiversity Areas (KBAs) as a blueprint for guiding conservation planning, legislation, and biodiversity-inclusive land-use strategies. Case examples from Southeast Asia

demonstrated the importance of managing mixed-use landscapes beyond protected areas to maintain movement pathways and reduce conflict.

Mr. Bampton emphasized the need for infrastructure-related mitigation, presenting best-practice approaches for designing wildlife-friendly roads, railways, and land-use planning to reduce barriers to movement and collision risks. He further highlighted the importance of habitat restoration using nature-based solutions, developed collaboratively with local communities, landowners, and private enterprises.

A significant portion of the presentation focused on advancing human–elephant coexistence. He described WWF’s “Conflict to Coexistence” framework, which integrates ecological monitoring, early-warning systems, community engagement, livelihood protection, and landscape planning. Illustrative examples from India and Southeast Asia highlighted how coordinated monitoring, vegetation corridors, and stakeholder partnerships help reduce conflict and promote coexistence.

In discussing long-term recovery, he outlined strategies for strengthening population monitoring and transboundary connectivity, including genetic research, GPS-collaring, GIS-based habitat modelling, and the integration of multiple data sources to inform management decisions. He also touched on efforts to combat illegal wildlife trade through multi-year, supply-chain-oriented programmes that address underlying drivers of trafficking.

Mr. Bampton concluded by emphasizing the importance of multi-stakeholder partnerships, evidence-based policy, and public advocacy in sustaining conservation gains. He underscored that successful models are scalable across elephant range states and that a combination of technology, community participation, and cross-border collaboration will be essential for ensuring a future in which elephants and people can thrive together.

8.2.3 Sharing Experiences on Transboundary Joint Conservation of Asian Elephants between China and Laos

Ms. Li Jinghua, Head of Division, Xishuangbanna National Nature Reserve, China

Ms. Li Jinghua presented an overview of more than three decades of China–Laos collaboration on the transboundary conservation of Asian elephants. She began by outlining the historical evolution of cooperation since the early 1990s, when the two sides initiated joint efforts focused on forest fire prevention. This cooperation gradually expanded in scope, leading to formal agreements, annual exchange meetings, and the establishment of multiple jointly protected areas along the border. Significant milestones included the creation of the first China–Laos biodiversity joint protected area in 2009, subsequent expansion in 2011 and 2012, and further enlargement in 2024, resulting in a contiguous transboundary protection belt covering more than 340,000 hectares.

She explained how transboundary zoning and demarcation have provided a structured basis for coordinated management. Through systematic boundary marking and joint

planning, both countries established shared management objectives that transcend administrative borders and promote ecological connectivity across the landscape.

A major focus of the presentation was the long-standing programme of joint patrols and capacity building, which has supported real-time understanding of wildlife movements, habitat conditions, and human activities. China and Laos have conducted numerous joint field patrols, community outreach activities, and technical exchanges involving GPS use, field monitoring methods, and standardized data collection. Training initiatives have increasingly integrated modern technologies such as infrared camera monitoring, GIS tools, and drone-based habitat assessment, with several large scale capacity building programmes organized between 2013 and 2025.

Ms. Li also highlighted efforts to strengthen community development as an important pillar of conservation. Border communities have engaged in regular exchange meetings to discuss livelihood needs, resource protection practices, and shared challenges. Complementary projects, supported by organizations such as WWF, the Yunnan Green Environment Development Foundation, and the Global Environmental Institute, have provided infrastructure, sustainable energy solutions, village patrol teams, livelihood support funds, and awareness-raising activities. These interventions have improved local wellbeing while enhancing support for biodiversity conservation.

The presentation further described several cooperation platforms, including foreign aid projects, community livelihood initiatives, and the 2023–2025 Asian Elephant National Park preparatory project. This latter initiative established a comprehensive transboundary monitoring system, assessed habitat quality, identified ecological corridors, and clarified cross-border movement patterns. More than 140 Asian elephants have been documented in the shared border landscape, belonging to seven identifiable sub-populations distributed across Xishuangbanna and northern Laos.

Ms. Li concluded that China–Laos transboundary conservation has yielded substantial outcomes, including strengthened protection of Asian elephants and other threatened species, improved community awareness and sustainable livelihood capacity, and the gradual formation of a long-term cooperation mechanism. Looking ahead, she emphasized that both countries will continue expanding protected area coverage, enhancing monitoring systems, and deepening collaboration to jointly safeguard biodiversity and build a strong ecological security barrier along the China–Laos border.

8.2.4 Considering Elephant Movements and Habitat Relationships in the Design of Yunnan’s Asian Elephant National Park

Prof. Ahimsa Campos-Arceiz, Researcher of Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences

Prof. Ahimsa Campos-Arceiz delivered an evidence-based presentation on how elephant movement ecology and habitat preferences should inform the planning and design of Yunnan’s upcoming Asian Elephant National Park. He emphasized that, unlike habitat specialists such as giant pandas, Asian elephants are generalist

herbivores with complex ecological needs, relying on a mix of dense forests for shelter and disturbed or open habitats rich in palatable vegetation for feeding.

Drawing on extensive movement-tracking and ecological research, he demonstrated that elephants frequently move across diverse land-use types and often cross infrastructure corridors, such as roads, despite reduced permeability and associated risks. These crossings are closely linked to food availability, as demonstrated in feeding preference studies showing elephants' attraction to monocots, palms, and fast-growing early-successional plants.

Prof. Campos-Arceiz highlighted the inherent challenges of managing elephants exclusively within protected areas. Studies from Southeast Asia show that many elephants spend more than half of their home range outside protected areas, often preferring the periphery where food resources are more abundant. This underscores the inevitability of human–elephant conflict, particularly in mixed-use landscapes where agricultural crops provide attractive foraging opportunities.

He presented insights from the well-documented case of China's wandering elephants, explaining that recent long-distance movements are linked to population growth, ecological succession inside protected areas, and climatic factors such as drought. These movements align with patterns of “irruptive nomadism,” in which elephants shift their ranges in response to ecological change while maintaining good body condition.

The presentation also explored the preparedness framework needed for national park planning. Prof. Campos-Arceiz stressed that management strategies must reflect whether elephants currently inhabit an area, whether they are welcome, and what conservation objectives apply. Measures range from promoting carrying capacity and habitat quality inside protected areas to mitigating conflict, anticipating movements, and creating barriers or corridors as appropriate.

A key point was the need to integrate transboundary considerations. Northern Laos hosts several “quasi-populations” of elephants whose connectivity with China's populations remains uncertain. Effective national park design must therefore incorporate regional landscape linkages to maintain genetic flow and ecological resilience.

Prof. Campos-Arceiz concluded that the Asian Elephant National Park must be grounded in ecological research, reflect elephants' real habitat and food preferences, and prepare for conflict mitigation in surrounding areas. It should also play a central role in strengthening connectivity both within China and between China and northern Laos, ensuring long-term viability of the species across the broader landscape.

8.2.5 Research Progress on Asian Elephant Conservation in the Context of Transportation Infrastructure Construction

Dr. Wang Yun, Researcher of China Academy of Transportation Sciences

Dr. Wang Yun presented research on how linear transport infrastructure affects Asian elephants in China and discussed emerging strategies to mitigate risks and support ecological connectivity. He highlighted that although China's elephant population is

relatively small, it is of high conservation importance, and elephants frequently range outside protected areas, making interactions with transport corridors unavoidable.

Using examples from major highways such as the Simao–Lancang (Silan) Expressway and Simao–Xiaomengyang (Sixiao) Expressway, Dr. Wang illustrated how elephants regularly approach or cross roads, particularly in areas where migration routes intersect with built infrastructure. Long-term monitoring shows increasing use of animal passages, with utilization rising significantly as structures mature and surrounding habitat improves. Monitoring has relied on a combination of infrared cameras, trace surveys, village interviews, and field verification.

Dr. Wang emphasized that road networks pose risks not only to elephants but also to human safety. Drawing on international research, he explained that wildlife entering roads can cause traffic accidents and disrupt movement patterns, while road avoidance and habitat fragmentation can reduce accessible habitat for elephants. To address these impacts, he outlined a strategic mitigation hierarchy: avoiding ecologically sensitive areas where possible, minimizing disturbance during project design, reducing operational impacts, restoring affected habitats, and compensating for losses where necessary.

A central part of the presentation focused on planning and designing wildlife passages. Dr. Wang described a systematic approach that integrates habitat suitability analysis, landscape pattern assessment, disturbance indices, ecological corridor modelling, and evaluation of ridgelines and valleys where elephants are most likely to travel. Using these tools, researchers have identified multiple migration bottlenecks and mapped elephant pathways, distinguishing between effective pathways, potential pathways, and high-risk road-crossing points.

He presented findings from large-scale monitoring of passage performance, noting that elephants prefer passages aligned with natural corridors and surrounded by low-disturbance habitat. Bridges, culverts, underpasses, and tunnel-top passages have all been used successfully, though their effectiveness depends on dimensions, vegetation conditions, surrounding landscape, and disturbance levels.

Dr. Wang also underscored the importance of fine-scale evaluation of elephant behavior, including avoidance distances, preferred times for crossing, and seasonal movement peaks, to inform infrastructure management and warning systems. Additional measures, such as elephant-proof fencing, warning signage, animal-detection systems, community engagement, and targeted habitat creation (e.g., food plots and salt licks), further support safe movement and decrease the likelihood of elephants entering roads.

In conclusion, Dr. Wang emphasized that protecting elephants in transport corridors requires cross-sector collaboration, long-term monitoring, and integration of ecology and engineering. He highlighted ongoing China–Laos cooperation on highway biodiversity protection and recommended expanding research, improving technical guidelines, and enhancing real-time monitoring to ensure that road development aligns with national conservation goals and the long-term survival of Asian elephants.

8.2.6 How Linear Infrastructures Are Affecting Wildlife in China's National Parks

Mr. He Xin, Program lead of National Park & Protected Area, WWF-China

Mr. He Xin delivered a presentation on the impacts of linear transport infrastructure on wildlife within China's national parks, highlighting the need for systematic research and practical mitigation measures as the national park system continues to expand. He began by outlining China's policy milestones in establishing a unified national park framework, noting that although rapid progress has been made in park designation and management, the implications of roads, highways, and other linear structures for wildlife conservation remain underexamined.

Drawing on assessments conducted in the Northeast Tiger and Leopard National Park, Shennongjia National Park, and Sanjiangyuan National Park, he emphasized that road networks are already exerting measurable impacts on wildlife. Although large-scale quantitative datasets remain limited, existing spatial analyses and field observations confirm that linear infrastructure contributes to habitat fragmentation, movement disruption, and population isolation for key species.

He illustrated these effects using the case of the Qinghai–Tibet Highway and Railway, which run through core migration areas of the Tibetan antelope. East–west oriented transport corridors create clear barrier effects, constraining migration routes and increasing risks for wildlife attempting to cross. He noted that areas where only a single narrow north–south ecological corridor exists are particularly vulnerable and should be protected from the construction of new roads or facilities.

The presentation also summarized findings from habitat suitability analyses for four plateau ungulates such as, Tibetan antelope, Tibetan wild ass, Tibetan gazelle, and wild yak. Results show that the combined presence of the highway and railway imposes the strongest barrier effect on Tibetan antelope, while the other three species exhibit greater adaptability. Avoidance distance patterns suggest that these species are gradually adjusting to traffic disturbance, although sensitivity varies among species.

Mr. He highlighted the need for ecological passages, including overpasses, underpasses, and tunnels, at key migration corridors to maintain connectivity. He emphasized that future roads should maintain a sufficient buffer distance from existing highways and railways and incorporate design features such as noise reduction and terrain-modified roadbeds to reduce disturbance.

Based on project results, Mr. He presented several policy recommendations:

- Establish effective animal passages at critical crossing points within national parks.
- Ensure that future infrastructure planning aligns with ecological corridor distribution, especially in areas such as Sanjiangyuan.
- Avoid constructing new roads west of G109 in the Qinghai–Tibet Plateau to prevent further disruption of north–south migration routes.

- Apply research-based guidelines during planning and construction of the Qinghai–Tibet Expressway to minimize impacts on key species.

He concluded by underscoring that improving wildlife connectivity in national parks requires integrated ecological assessment, careful infrastructure planning, and close collaboration between conservation and transportation authorities to ensure that the national park system fulfils its biodiversity protection objectives.

8.2.7 Printing Relies on Healthy Forests

Mr. Yang Guang, Sustainability Impact Manager, China HP Co., Ltd.

Mr. Yang Guang presented HP’s sustainability vision by highlighting the strong relationship between the printing industry and healthy forest ecosystems. He explained that HP’s sustainability strategy is built around three closely connected areas which focus on supporting customer sustainability, transforming HP’s value chain, and advancing wider societal impact. Forest protection is integrated across all three areas and is considered essential to the long-term viability of HP’s business model.

Mr. Yang outlined HP’s progress in reducing its environmental footprint. He noted that HP has significantly lowered product-related carbon emissions, increased the use of recycled and renewable materials, expanded renewable electricity within its operations, and strengthened circularity across its devices and packaging. He also highlighted that HP, together with WWF, has helped to conserve more than 142,000 ha of forest.

He described how HP incorporates forest conservation principles into its printing products and services. Energy-efficient and waste-reducing design features allow customers to lower paper use. Examples include default double-sided printing, secure pull-printing systems that reduce unclaimed print jobs, and print technology that filters unnecessary content so that users only print what is needed. He noted that nearly all HP paper and packaging materials come from certified or recycled sources, reflecting HP’s strong reliance on credible forest certification systems such as FSC.

Mr. Yang introduced the core elements of HP’s forest conservation strategy, which focuses on protecting forests, restoring degraded ecosystems, and improving the management of production forests. HP invests in Nature-Based Solutions and supports community and indigenous land rights that help prevent deforestation. The company also works with forest farms and producers to raise biodiversity standards, develop technical guidelines for responsible forest management, and assist smallholders in adopting credible certification systems.

A significant example of HP’s conservation support is the restoration of Asian elephant habitat in Xishuangbanna. Through enrichment planting of food species, thinning of dense understory, installation of nitrate ponds, and community education programmes, HP has supported the rehabilitation of more than thirty hectares of habitat. Monitoring data confirms that all local elephants have used the restored area at different times of the year. Mr. Yang noted that this work has strengthened local

community awareness and demonstrated the benefits of ecological restoration for both people and wildlife.

He concluded by emphasizing that partnerships are essential for achieving meaningful and lasting conservation outcomes. The collaboration between HP and WWF provides a model for how corporate action can contribute to improved forest management, increased restoration, and stronger public awareness. Mr. Yang reaffirmed HP's commitment to sustainable forestry, climate action, circular economy transformation, and environmental leadership within the technology sector.

8.2.8 Roundtable Discussion: From Concept to Action in Asian Elephant Conservation

Moderator: Mr. He Xin, Director, National Park and Protected Area Programme, WWF China

Panelists: Dr. Chen Fei; Mr. James Bampton; Ms. Li Jinhua ; Mr. Yang Guang.

This discussion convened experts from research institutions, government authorities, conservation organizations and the private sector to explore the practical challenges and emerging opportunities in Asian elephant conservation. Panelists reflected on the complexity of managing wide ranging species, the need for integrated policy support and the importance of engaging communities and the private sector in long term solutions.

On the question of major challenges, Dr. Chen Fei highlighted that Asian elephant conservation is inherently complex and requires strong legal and policy frameworks. He stressed that clear regulations and spatial planning measures are essential since elephants often move beyond protected areas. He noted that additional conservation engineering measures are needed to manage these movements and to reduce risks to both elephants and people. Mr. James Bampton underlined habitat fragmentation and the diversity of stakeholder interests as significant constraints. He observed that conservation programmes often lack sufficient time and resources to bring stakeholders together for meaningful dialogue, which creates difficulties in building trust and coordinated action. Ms. Li Jinhua emphasized that human elephant conflict remains the central challenge and that solutions must begin with strengthening laws, restoring habitats and improving community capacity to manage conflict sustainably. Representing the private sector, Mr. Yang Guang noted that public awareness of Asian elephant conservation in mainland China is still limited. He encouraged broader outreach to communicate that protecting elephants is part of maintaining the health of the wider subtropical ecosystem.

The panel also shared successful approaches that have shown potential for replication. Dr. Chen Fei presented Yunnan's model for mitigating human wildlife conflict, which integrates commercial insurance mechanisms with modern monitoring and early warning technologies. He noted that this system has potential for broader application. Mr. James Bampton highlighted collaborative governance as one of WWF's most effective contributions, explaining that joint analysis and co designed mitigation measures have produced replicable results across the region. Ms. Li Jinhua shared

experiences with community-based practices such as cultivating elephant preferred crops around reserves, which help reduce conflict while increasing household income. She noted that insurance compensation and policy incentives can further enhance community willingness to participate. Mr. Yang Guang described HP's collaboration with organizations such as WWF to mobilize private sector resources and introduce technological innovations that reduce pressure on forests. Initiatives include the development of alternative fibers and more efficient material use.

In reflecting on how to build stronger synergy for conservation, Dr. Chen Fei emphasized the need to integrate scientific evidence with broad public advocacy. He noted that scientific guidance ensures the effectiveness of interventions while communication efforts build public support. Mr. James Bampton stressed the value of accessible knowledge sharing platforms that enable different groups to understand how their actions influence one another, thereby strengthening cooperation. Ms. Li Jinhua highlighted the importance of sustained collaboration among government agencies, social organizations, individuals and communities, noting that progress depends on efforts at every level. Mr. Yang Guang concluded by underscoring the role of credible institutions with international experience, such as WWF, in acting as convening hubs. He noted that these institutions are critical for integrating expertise and resources across government, academia, civil society and the private sector.

8.2.9 Session Summary

Ms. Liu Dongxin, Senior Operation Director, WWF-China

Ms. Liu Dongxin concluded the session by noting that Asian elephant conservation is a systematic challenge shaped by policy deficits, habitat fragmentation, and ongoing human–elephant conflicts. She observed that the successful cases presented during the discussion offer practical and actionable approaches. She emphasized that the way forward requires synergistic action, stronger scientific guidance, broader public consensus, and improved cross-border resource management.

8.3 Session 2: Exploring Synergies Between Habitat Restoration and Sustainable Forest Management Practices

Host: Mr. Liu Xiaonan, Regional Program Manager, WWF-China

Mr. Liu Xiaonan opened the session by noting the critical transition from traditional production oriented forest management toward modern approaches that integrate ecological values into sustainable economic development. He introduced the session with a promotional video on biodiversity conservation through SFM in Taihang-Yan Mountains Region in northern China. He explained that the discussions would focus on the core principles of forest landscape restoration, technical frameworks for habitat-quality-oriented forest management, and other key practices that support both ecological integrity and long-term sustainability.

8.3.1 Keynote Speeches

Address by Prof. Wang Hong, Vice Dean of Institute of Forest Resource Information Techniques, Chinese Academy of Forestry

Prof. Wang Hong emphasized that forests serve as vast green reservoirs, carbon sinks, and biological gene banks with immense ecological value. He noted that a key challenge lies in finding effective ways to translate this ecological value into tangible economic benefits so that a virtuous cycle can be created between conservation and development.

Address by Dr. WANG Xiaoping, First Level Inspector of Beijing Municipal Forestry and Parks Bureau

Dr. Wang Xiaoping highlighted three areas where stronger synergy is essential. He first underscored the need for cross-regional synergy by breaking down administrative barriers and promoting unified planning and management across landscapes. Second, he stressed cross-sectoral synergy, noting that forestry, agriculture, water conservation, transportation, and planning departments must work together in policy design and project implementation. Third, he emphasized information synergy, which involves linking scientific research with frontline practice. This includes transforming advanced research outcomes into applicable technologies, standards, and models while also promoting successful practices that are economically viable and replicable.

8.3.2 Initiative Launch

Presented by Ms. Li Yeqing, Regional Program Head of WWF-China

Ms. Li Yeqing introduced an initiative focused on improving the ecological quality of forests in non-protected areas as a key pathway for advancing the national biodiversity conservation strategy. She noted that on April 19, 2024, multiple forestry societies jointly launched an initiative supporting Beijing in becoming a Biodiversity Capital. The initiative promotes six core actions aimed at mainstreaming SFM as the primary approach for enhancing forest quality, strengthening ecosystem resilience, and contributing to harmonious coexistence between humans and nature.

8.3.3 Forest Landscape Restoration Principles: Uniting Conservation and Restoration for Lasting Impact

Ms. Anita Diederichsen, WWF International and Global Partnership on Forest and Landscape Restoration (GPFLR)

Ms. Anita Diederichsen introduced the global vision for Forest Landscape Restoration (FLR) by highlighting the international goal of achieving a nature-positive world by 2030 and full ecosystem recovery by 2050. She emphasized that the Global Partnership on Forest and Landscape Restoration (GPFLR) works to scale up restoration impact through collaborative action by providing tools, support, and learning opportunities for decision makers and practitioners.

She outlined the core FLR principles, which include focusing on entire landscapes, engaging stakeholders through participatory governance, restoring multiple ecosystem functions for diverse benefits, maintaining and enhancing natural ecosystems,

tailoring restoration approaches to local contexts, and applying adaptive management to strengthen long-term resilience. These principles form the foundation for effective restoration that integrates ecological integrity with human well-being.

Ms. Diederichsen explained that large-scale and mosaic restoration opportunities exist across degraded primary forests, secondary forests, agricultural lands, and pasture landscapes. She illustrated how landscape restoration supports biodiversity, water resources, soil health, carbon sequestration, livelihoods, and community resilience.

She also introduced the United Nations Decade on Ecosystem Restoration (2021–2030) and its ten guiding principles, which emphasize broad engagement, local relevance, measurable goals, ecological integrity, knowledge integration, and inclusive and long-term stewardship. These principles reflect the need for restoration efforts that address both direct and indirect drivers of ecosystem degradation.

Connecting FLR to global commitments, Ms. Diederichsen highlighted Target 2 of the Kunming–Montreal Global Biodiversity Framework, which calls for the effective restoration of at least 30 percent of degraded ecosystems by 2030. She illustrated how this target is interlinked with other biodiversity objectives, such as spatial planning, protected areas, climate action, and sustainable use.

To demonstrate practical applications, she presented restoration case studies from the Atlantic Forest in South America and the Terai Arc Landscape in Nepal and India. These examples show how landscape-level efforts can restore ecosystem services, improve biodiversity and ecological connectivity, and contribute to sustainable development. In both cases, restoration has been recognized globally as a high-impact pathway toward ecological integrity and community well-being.

Ms. Diederichsen concluded that successful FLR requires integrated approaches that unite conservation and restoration, address the drivers of ecosystem degradation, and generate ecological, social, and economic benefits across entire landscapes.

8.3.4 Tiger Friendly Forest Management Theory and Habitat Ecological Restoration Practices: A Case Study from the Huangnihe Forest Area

Prof. Zhang Minghai, College of Wildlife and Protected Areas, Northeast Forestry University, China

Prof. Zhang presented an applied framework for tiger friendly forest management that integrates habitat science, ecological restoration principles, and long term monitoring to support the recovery of the Amur tiger population in Northeast China. He explained that tiger habitats depend on three fundamental elements: adequate prey populations, secure cover for movement, hunting and breeding, and reliable access to water. Habitat quality is shaped by the interaction of biotic and abiotic factors, as well as human activities such as logging, road development and non-timber resource extraction.

The presentation outlined two complementary approaches to habitat restoration. The first is Goal Oriented Restoration that aims to rebuild ecological functions by using reference conditions to guide recovery. The second is Process Oriented Restoration that focuses on re-establishing natural ecological processes, improving system

integrity and enabling long term resilience. Prof. Zhang noted that effective restoration ultimately requires rebuilding ecological relationships among tigers, their prey and vegetation communities.

He emphasized that tiger friendly forest management is an extension of conservation landscape thinking where forest use and habitat requirements are balanced. This involves managing vegetation structure, ensuring adequate prey resources, maintaining ecological processes and reducing fragmentation. He highlighted three dimensions of tiger friendly management. These are habitat resource friendliness, ecological function friendliness and the compatibility of forest operations with local socio economic activities.

Drawing on the Huangnihe case study, Prof. Zhang described the experimental comparison of traditional forest harvesting with animal friendly harvesting regimes. The latter applied varied harvesting intensities within compartments to test different configurations of cover and vegetation recovery. The monitoring programme included the use of camera traps, vegetation plots and snow tracking to assess the responses of ungulates and other wildlife before and after harvesting. Early results indicate that diverse wildlife continues to utilize the restored areas and that vegetation recovery is progressing under multiple management treatments.

Prof. Zhang concluded that tiger friendly forest management can promote both forest ecological restoration and improved habitat conditions for Amur tigers and their prey. He underscored the importance of integrating scientific monitoring, adaptive management and landscape scale planning to achieve stable and functional conservation outcomes.

8.3.5 Wildlife Habitat Quality Oriented Forest Management: Technical System and Case Studies

Prof. Lei Xiangdong, Deputy Director, Institute of Forest Resource Information Techniques, Chinese Academy of Forestry

Prof. Lei Xiangdong introduced an integrated approach to forest management that places wildlife habitat quality at the center of planning and operations. He noted that biodiversity conservation has become a national priority in China, supported by the China Biodiversity Conservation Strategy and Action Plan and reinforced through the establishment of nature reserves and national parks. While these protected areas are essential, he emphasized that significant biodiversity also depends on managed forests outside reserves, where mixed species management and habitat oriented practices remain limited.

The presentation highlighted the gap between forestry and conservation science. Foresters often focus on stand structure and timber production, while conservationists priorities old growth conditions and minimal disturbance. Prof. Lei advocated for a management paradigm that reconciles these perspectives by incorporating habitat requirements directly into the forest management cycle from objective setting and inventory to implementation, monitoring and assessment.

His technical system links wildlife surveys, habitat element inventories and food chain analysis with forest management design. Inventory methods include transects, camera traps, bioacoustics monitoring and the identification of habitat trees such as nesting trees, cavity trees, deadwood and water holding trees. Based on these data, managers can diagnose stand conditions, identify target species and design prescriptions that promote essential habitat elements.

Prof. Lei outlined a suite of management measures that enhance habitat quality. These include regulating stand density through selective harvesting, enriching food tree species, supporting natural regeneration, managing shrub layers for forage availability, retaining habitat trees and deadwood, improving natural water sources, creating small wetlands and maintaining wildlife trails. He emphasized that these practices should be combined to support multiple species and ecosystem functions rather than focusing solely on timber.

Several case studies demonstrated the application of this system across a range of plantations and mixed forests in China. At sites managed jointly with WWF, treatments such as gap creation, enrichment planting, shrub management, shelter construction and water source enhancement were tested. Baseline inventories recorded diverse mammal species and post treatment monitoring suggested improvements in habitat use by wildlife.

In closing, Prof. Lei shared insights from project implementation. Success depended on multidisciplinary collaboration, active participation of local communities, and continuous training to build understanding of multifunctional forest management. Key challenges include limited domestic experience, knowledge gaps in wildlife habitat requirements, competing management objectives and the time required for ecological responses. He called for closer cooperation between forestry and conservation to ensure that managed forests contribute meaningfully to national biodiversity goals.

8.3.6 Biodiversity Oriented Forest Enhancement

Prof. Wang Fang, College of Life Sciences, Fudan University, China

Prof. Wang presented a comprehensive approach to improving forest quality through biodiversity enhancement, focusing on the transformation of China's extensive plantation forests. He noted that China has the largest plantation area in the world, accounting for nearly one third of its total forest area. While plantations provide important ecological and economic services, many exhibit low productivity, simplified structure and limited biodiversity due to their location outside protected areas, monoculture composition and extensive management histories.

He introduced a four step framework for promoting biodiversity oriented forest enhancement. The first step involves identifying shared interests among forest managers, conservation agencies and local communities, thereby building a foundation for cooperation. The second step focuses on designing scientifically sound and operationally practical management protocols. The third step emphasizes application through collaborative partnerships supported by external expertise and resources. The final step involves promoting successful practices through

demonstration effects and integration into broader conservation and management programmes.

Prof. Wang highlighted the use of flagship species, such as the North China leopard, to generate public interest, attract external support and create new opportunities for integrating conservation with forest management. Several pilot sites in Hebei and Shanxi Provinces demonstrated how data driven approaches can guide targeted interventions. Methods such as camera trapping, acoustic monitoring and DNA metabarcoding were used to identify species distributions, food sources and ecological interactions. Handheld LiDAR was applied to assess fine scale understory structure and evaluate restoration performance.

He described a range of biodiversity enhancement practices, including thinning to create understory space, site preparation to encourage natural vegetation recovery, enrichment planting of native species and the creation of micro habitats such as rock piles or shelters. These interventions were associated with measurable increases in habitat utilization by both birds and mammals. For example, monitoring showed that biodiversity enhanced plots supported higher activity levels of flagship and representative species. The North China leopard reappeared in restored sites and the relative abundance index of wild boar and red fox increased significantly compared with regular or control plots.

Prof. Wang concluded that biodiversity oriented forest enhancement can significantly improve ecological functionality in plantation landscapes. He emphasized the importance of scientific monitoring, adaptive adjustments and multi stakeholder engagement to ensure that restoration measures produce measurable conservation benefits and can be promoted at a wider scale.

8.3.7 Saihanba Plantation Forest Management and Biodiversity Conservation: Pathways and Practices for Synergistic Development

Mr. Guo Zhifeng, Deputy Director, Saihanba Mechanical Forest Farm, China

Mr. Guo presented an in-depth overview of Saihanba's long term transformation from a degraded, wind-eroded landscape into one of the world's most successful large scale plantation forest ecosystems. He began by outlining the harsh natural conditions of the Saihanba region, located at the intersection of the Mongolian Plateau and northern Hebei mountains, characterized by long winters, short growing seasons, low precipitation and strong winds. In the early 1960s forest cover was barely eleven percent and the area was considered almost uninhabitable, with widespread sand encroachment, loss of wildlife and severe ecological degradation.

Through more than six decades of sustained afforestation and scientific management, Saihanba has grown into a forested landscape of over ninety-three thousand hectares, with forest cover now exceeding eighty percent. Mr. Guo traced this progress through four major phases. The first, from 1962 to 1982, emphasized large scale afforestation and the establishment of pioneer plantations of larch and Scots pine. The second phase, from 1983 to 2002, combined afforestation with systematic forest management guided by the first long term management plan. The third phase, from 2003 to 2016,

strengthened scientific management and technical standard development while promoting closer collaboration with universities and research institutions. The current phase, beginning in 2017, focuses on high quality management, multi-functional forest development and scientific research, including the establishment of a dedicated research station.

He highlighted that Saihanba's plantations have generated substantial ecological benefits. The forests now regulate water flows equivalent to almost three hundred million cubic meters annually, contribute significantly to oxygen release and carbon sequestration, and serve as a crucial ecological barrier protecting Beijing, Tianjin and the wider region from sandstorms originating in the Hunshandake Sandy Land. At the same time, the forests provide timber that reduces pressure on natural forests elsewhere, and ongoing tending operations have helped diversify stand structure and enhance the restoration of native species.

Mr. Guo emphasized that large scale plantations, when scientifically managed, can create valuable habitats and ecological corridors for wildlife. Camera trap images and recent surveys show a continued rise in species richness, with significant increases in vascular plants, vertebrates, insects and macro fungi compared with surveys in 2003. The return of sensitive species, including the Eurasian lynx, demonstrates improvements in habitat quality and ecological stability.

A recent collaborative project with WWF further strengthened biodiversity oriented management. The project established sample plots across different stand densities, installed infrared monitoring devices and created forest gaps to study the influence of varied interventions on wildlife activity. Management measures included enrichment planting of food source species, soil scarification to support natural regeneration, installation of wildlife water sources and construction of shelters for small animals. Field monitoring has documented increased wildlife presence across the treated areas, providing practical evidence that well planned management interventions can significantly improve biodiversity outcomes in plantation forests.

In his concluding remarks, Mr. Guo noted that plantation management and biodiversity conservation are mutually reinforcing objectives. Saihanba's experience demonstrates that plantations, when guided by scientific principles and long term planning, can achieve ecological, social and economic benefits simultaneously. He underscored the importance of improving ecological compensation mechanisms and promoting management approaches that support heterogeneous forest structures, natural regeneration and multi species habitats. These practices will be essential for strengthening the contribution of China's plantation forests to national biodiversity goals and to the broader vision of harmonious coexistence between people and nature.

8.3.8 Monitoring and Evaluation Indicators System for Forest Landscape Restoration

Dr. Zhao Jie, Associate Researcher, Research Institute of Forestry Policy and Information, Chinese Academy of Forestry

Dr. Zhao introduced a comprehensive monitoring and evaluation framework designed to assess the effectiveness of forest landscape restoration in both ecological and socio economic dimensions. He began by outlining the global and national drivers that led to the development of the FLR concept. These include widespread forest degradation, fragmentation, biodiversity loss and the need to restore ecological integrity while improving human wellbeing. He noted that approximately one fifth of China's forests show varying levels of degradation, underscoring the need for a structured and scalable restoration assessment tool.

The proposed indicators system was developed through Global Environment Facility (GEF) and WWF supported projects and field tested in six provinces. Dr. Zhao explained that the framework follows core principles of landscape restoration such as maintaining ecological functions, integrating stakeholder participation and applying adaptive management. It is built around a dual structure that covers both stand and landscape scales and incorporates ecological and socio economic criteria. The system includes thirty indicators grouped under vegetation status, forest structure, productivity, protection, ecological services, connectivity, community livelihoods, policy income, non-timber forest product benefits and gender equality.

A key feature of the system is its emphasis on practicality and participation. Dr. Zhao stressed that restoration practitioners can independently apply the indicators without relying entirely on external research institutions. He highlighted that the tool is designed for low cost data collection using a combination of existing forest survey data, government records and targeted plot based assessments. This allows for timely feedback to inform adaptive management and ensures that monitoring results can directly influence restoration strategies.

Dr. Zhao presented a clear workflow for applying the indicators system. This includes establishing baseline values, determining target values aligned with restoration objectives, collecting monitoring data and standardizing indicator scores. The framework calculates a composite index of restoration effectiveness using weighted indicators. Weights are allocated across ecological and socio economic categories, with flexibility for local adaptation. Grade classifications then provide managers with a clear interpretation of restoration progress, from fully achieving objectives to requiring additional interventions.

He also introduced five major restoration pathways relevant to China. These include converting monocultures into mixed forests, establishing mixed forests on bare land, managing natural regeneration, restoring degraded natural forests and constructing ecological corridors. By linking these pathways with the indicators, managers can evaluate how specific interventions contribute to improved vegetation structure, soil conservation, carbon sequestration, biodiversity and community benefits.

In conclusion, Dr. Zhao noted that the ongoing refinement and standardization of this indicators system will support broader national efforts to mainstream forest landscape restoration. Planned work includes expanding applications to more forest farms, strengthening training and capacity building and developing official forestry industry standards for nationwide adoption.

8.3.9 Roundtable Discussion 1: Exploring Win-Win Practices for Species Habitat Restoration and Sustainable Forest Management

Moderator: Mr. Liu Xiaonan, WWF China

Panelists: Prof. Lei Xiangdong; Mr. Sun Jian; Dr. Cui Wushe; Ms. Tai Wen

The roundtable explored the intersection between biodiversity conservation and SFM, focusing on current challenges, policy directions, scientific advances and community participation.

Dr. Cui began by reflecting on the evolution of forest management in China. Traditional systems prioritized economic outputs, whereas SFM requires balancing economic, social and ecological benefits. He observed that the main challenge today is not conceptual understanding but transforming this integrated vision into practical operational plans that can be implemented across diverse landscapes. Prof. Lei added that forest management is a slow process and many past problems resulted from excessive pursuit of rapid outcomes. He highlighted persistent gaps in technical tools for achieving multi objective synergies, noting that frontline operators often struggle with how to manage the relationship between people and nature in practice.

Mr. Sun Jian emphasized that outdated views still persist in some regions, where forests are regarded primarily as timber production units. He noted that current forest design specifications often lack biodiversity related guidance and technical standards. From a corporate perspective, Tai Wen explained that IKEA relies heavily on forest products and that the natural forest logging ban shifted sourcing to numerous small forest farmers. Many of these farmers prioritize short term income, making it difficult to promote responsible management and certification requirements such as FSC.

On the policy front, Dr. Cui affirmed that long standing policies on state owned forest reform and forest classification management continue to provide a solid foundation. He noted that natural forests, after decades of harvesting, require a period of rest and that although some policies may appear conservative, their overall direction remains sound.

Discussing scientific and technological advances, Prof. Lei noted that China has begun to adopt international concepts more systematically. He highlighted recent pilot initiatives that apply new monitoring tools and management models, which are helping shift forest management towards more scientific and Evidence-Based Approaches.

The discussion also focused on community engagement as an essential element of SFM. Mr. Sun Jian shared experiences from the North China Forest Management Project, where improvements in biodiversity helped motivate community involvement. Early results generated optimism among local residents who expressed interest in

continuing the project with long term support. Tai Wen stressed that community participation requires both passion and replicable experiences that can serve as models for wider application. Prof. Lei added that this collaborative work is generating new research opportunities and deepening understanding of ecosystem complexity. Dr. Cui concluded by emphasizing that communities should be integrated throughout the entire forest management process rather than being engaged only at the final stages.

Overall, the roundtable highlighted the need for practical technical tools, participatory approaches and coherent policy frameworks to foster synergies between habitat restoration and SFM.

8.3.10. Roundtable Discussion 2: Global Practices in Habitat Quality Assessment and Restoration for Large Landscapes

Moderator: Mr. Zhang Wenbo, Regional Program Officer, WWF China

Panelists: Mr. James Bampton; Ms. Anita Diederichsen; Dr. Lu De ; Dr. Wang Fang

This roundtable examined global experiences in assessing and restoring habitat quality at larger landscape scales and reflected on how development, conservation and public participation can be better aligned across diverse contexts.

Opening the discussion on the relationship between development and conservation, Mr. James Bampton noted that development is a complex and contested concept. Different groups understand development through their own needs and priorities, which raises important questions about who defines development and who benefits from it. He emphasized the need for fair and inclusive dialogue platforms that allow regions to explore development pathways suited to their own conditions. Dr. Wang Fang added that changes in human perceptions and shifting boundaries between human and wildlife spaces require a longer term perspective. Stronger biodiversity can provide a buffer against conflicts, yet it is important to recognize that no solution is perfect. Some interests will inevitably be affected and technological tools may help mitigate trade-offs. Ms. Anita Diederichsen stressed that coexistence between people, nature and wildlife requires thoughtful coordination, guided by human intelligence and a willingness to harmonize competing needs. Dr. Lu De highlighted that many Asia Pacific economies struggle with low implementation rates of otherwise well planned conservation policies. He attributed this to weak local capacities, disconnections between national planning and local realities and gaps in communication between government and the public.

The discussion then turned to the key elements of successful forest management. Mr. James Bampton emphasized the importance of broad participation and consistent consultation. Dr. Wang Fang pointed to the value of public involvement in decision making, citing examples such as citizen science initiatives in Sanjiangyuan National Park and collaborative stewardship approaches in the Giant Panda National Park. Ms. Anita Diederichsen noted that effective forest management also depends on strong cross sectoral partnerships, with examples of cooperation between government

agencies and private companies in addressing water related challenges. Dr. Lu De observed that forestry is progressively integrating with agriculture, fisheries and ecological management, which reduces the administrative and financial burdens associated with inter departmental coordination.

On the question of how to promote biodiversity conservation more effectively, the panelists highlighted the importance of public engagement, compelling communication and grounded action. Dr. Wang Fang shared that public enthusiasm is often underestimated. In Shanghai, crowd sourced surveys helped map raccoon dog distributions with unexpected accuracy and later informed legal reforms that institutionalized public participation. Ms. Anita Diederichsen underscored the need for strong conservation narratives that inspire action and cultivate leadership at multiple levels. Dr. Lu De concluded by noting that effective conservation begins with understanding existing conditions. He encouraged state owned forest farms and other managers to establish baselines, respect the inherent functions of forest ecosystems and follow natural laws when designing interventions.

Overall, the roundtable highlighted that landscape scale habitat restoration relies on inclusive dialogue, strong public participation, cross sector partnerships and practical, locally grounded implementation.

8.3.11 Session Summary

Mr. Zhang Songdan, Senior Forester

Mr. Zhang Songdan concluded the session by emphasizing that successful and replicable conservation practices depend on joint efforts from both government and the private sector. He noted that scientific guidance, cross sectoral collaboration and active community participation are key elements for achieving harmonious and sustainable landscapes.

8.4 Field Visit

A half day field visit was organised on 30 October 2025 to the Wanzhangshan Forest Farm to observe practical applications of SFM and biodiversity enhancement. The visit was facilitated by Prof. Lei Xiangdong of the Institute of Forest Resource Information Techniques at the Chinese Academy of Forestry, who guided participants through key management practices and ongoing restoration initiatives. The visit reinforced the links between the technical discussions of the sub forum and their implementation on the ground.

8.5 Synthesis and Conclusions

The Biodiversity Conservation Sub Forum demonstrated a strong regional commitment to advancing biodiversity protection through science based management, collaborative governance and community centered approaches. Discussions across the two thematic sessions underscored that effective biodiversity conservation requires integrated landscape level solutions rather than isolated technical interventions.

Presentations on Asian elephant conservation highlighted the importance of long term monitoring systems, coherent policy and planning frameworks, and strengthened transboundary cooperation. Speakers emphasized that human elephant conflict remains a central challenge and that practical measures such as improved early warning systems, habitat restoration, conflict prevention infrastructure and community engagement are essential for safeguarding both people and wildlife. The session also illustrated how transport infrastructure influences elephant movement and habitat connectivity and reinforced the need for wildlife friendly design and closer coordination between conservation and engineering sectors.

The second thematic session showed that habitat restoration, SFM and biodiversity enhancement can be mutually reinforcing when supported by rigorous technical systems and adaptive management. Case studies from North China, Jilin, Yunnan and Saihanba demonstrated that interventions such as enrichment planting, gap creation, habitat element inventories and improved stand management can strengthen ecological integrity, support wildlife recovery and create conditions for more resilient forest ecosystems. The launch of a national initiative to enhance biodiversity in non-protected forests further reflected growing recognition that managed forests are essential contributors to national biodiversity targets.

Roundtable discussions added practical perspectives on the opportunities and constraints facing biodiversity conservation in the region. Experts highlighted gaps in technical tools, variation in local implementation capacity and the need for stronger public awareness. At the same time, they pointed to replicable approaches rooted in participatory governance, improved technical standards, innovative financing, community involvement and stronger partnerships between government, academia, civil society and the private sector. These approaches provide a foundation for long term progress.

Looking ahead, the sub forum called for deeper scientific research, data driven decision making and expanded restoration pilots that link ecological objectives with sustainable economic development. Strengthened cooperation among institutions within the region will be critical for addressing shared challenges, promoting knowledge exchange and building a more resilient and nature positive future for the Asia Pacific forests.

9. Global Network for Sustainable Forest Management (GFN)

Strategic Advisory Workshop

This chapter presents the outcomes of the GFN Strategic Advisory Group Workshop, summarizing the key discussions, decisions and priority areas that will guide the next phase of the Global Forest Network.

9.1 Introduction

The GFN Strategic Advisory Workshop was convened on 29 October 2025 at the Xing Yuan Meeting Room of the Jianhua International Hotel in Pu'er City. Held as a high level, by invitation event during the Second Pu'er Forum on Asia Pacific Forests, the workshop brought together senior officials, technical experts and practitioners from twelve economies, as well as representatives from RECOFTC, WWF, the Assisted Natural Regeneration Alliance and APFNet.

The workshop served as an important milestone in shaping the next phase of the GFN. It aimed to build a shared vision for the network, refine its strategic direction and strengthen partnerships around priority areas for collaborative action. A central task of the meeting was the formal establishment of the GFN Advisory Group, including endorsement of its Terms of Reference and initial discussions on thematic focus areas and resource mobilization pathways.

Designed as a focused and interactive half day event, the workshop included an overview of the GFN framework, the inaugural meeting of the Advisory Group, progress updates and case sharing from partner economies, and a group discussion on key priorities for the next phase of GFN programming. The session concluded with summary reflections and a field visit to the APFNet Pu'er Base, which provided participants with an opportunity to observe practical demonstrations of SFM in the region.

9.2 Background of the GFN

Global development efforts continue to face major pressures from climate change, ecosystem degradation, biodiversity loss, natural disasters and rising food insecurity. These challenges threaten progress toward the United Nations 2030 Sustainable Development Goals and highlight the need for stronger cooperation and practical, coordinated action at regional and global levels. International frameworks such as the Paris Agreement, the Kunming–Montreal Global Biodiversity Framework and China's Global Development Initiative (GDI) all call for enhanced partnerships, capacity building and evidence based approaches to promote balanced, sustainable development.

It was within this context that the Global Network for Sustainable Forest Management (GFN) was launched at the High-Level Dialogue on Global Development in June 2022. The GFN is a programme jointly launched by the Chinese Government and the APFNet under the framework of China's Global Development Initiative, with its implementation and operation carried out by APFNet. Implemented as a key programme of APFNet, the GFN aims to support the 2030 Agenda by advancing sustainable forest management, promoting green and low-carbon development, and contributing to more harmonious relationships between people and nature.

The GFN operates through four interconnected functions. These include field demonstration on restoration, climate resilience, biodiversity enhancement and improved livelihoods; policy dialogue to align forest strategies with wider climate and

development goals; capacity development through training seminar, joint research and professional exchanges; and open information sharing that provides access to data, tools and best practices for SFM.

By linking policymakers, practitioners, researchers and technical experts, the GFN provides a platform for countries to address shared forestry challenges and strengthen practical cooperation. It also complements APFNet's wider mission and is expected to be an important task entrusted by China in the implementation of the Fourth Strategic Plan from 2026 to 2030.

The Strategic Advisory Workshop in Pu'er was convened to help refine the future direction of the GFN, strengthen partner engagement and identify priority areas for the next phase of work. It also provided the platform for the formal establishment of the GFN Advisory Group, which will guide the network's strategic evolution and ensure that the GFN continues to deliver value to participating economies and partner organizations.

9.3 Objectives of the Workshop

The primary objective of the Strategic Advisory Workshop was to refine the future direction of the Global Forest Network by engaging key partners in focused discussion on its strategic priorities. Specifically, the workshop aimed to:

- establish the GFN Advisory Group and confirm its Terms of Reference
- review progress made under the initial phase of the GFN program
- facilitate experience sharing among participating economies and partner institutions
- identify priority thematic areas and potential collaborative actions for the next phase of the GFN
- strengthen participation, ownership and partnership opportunities within the network in alignment with APFNet's Fourth Strategic Plan

Together, these objectives were designed to ensure that the GFN continues to evolve as a relevant and effective mechanism for promoting SFM and advancing shared goals across the region.

9.4 Proceedings of the Workshop

9.4.1 Opening Session

The Strategic Advisory Workshop commenced at 09:00 with opening remarks delivered by Dr. Wang Chunfeng, Executive Director of APFNet. Dr. Wang welcomed all participants and emphasized the importance of the GFN as a collaborative mechanism to support the achievement of global development priorities. He highlighted the increasing urgency of strengthening SFM in response to climate change, biodiversity loss, and the need for nature positive and low carbon development.

Following the opening remarks, Mr. Huang Kebiao introduced the GFN Framework Document. He outlined the core functions of the network, including its role in promoting regional cooperation, facilitating technical exchange, supporting capacity development and providing a platform for sharing practical knowledge on SFM. He also explained the purpose of the newly created Advisory Group, which will guide the network's strategic direction and ensure that its activities remain relevant to the needs of participating economies.

The session concluded with the formal awarding of Letters of Appointment to the inaugural members of the GFN Advisory Group. Presented by Dr. Wang on behalf of APFNet, the appointments marked the official establishment of the Advisory Group and demonstrated the shared commitment of member economies and partner organizations to contribute to the long-term development of the GFN.

9.4.2 Structure and Membership of the Advisory Group

In accordance with the Terms of Reference, the GFN Advisory Group is chaired ex officio by the Executive Director of APFNet, who presides over all meetings and provides overall guidance to its work. The inaugural Advisory Group consists of fifteen appointed members, including twelve representatives from participating economies and three representatives from international organisations.

Economy representatives:

- Cambodia: Mr. Khorn Norin
- China: Mr. Hu Yuanhui
- Fiji: Mr. Tevita Bulai
- Indonesia: Mr. Asep Hidayat
- Kyrgyz Republic: Mr. Aibek Baidaliev
- Mongolia: Mr. Nachin Baatarbileg
- Morocco: Mr. Cherki Khalid
- Myanmar: Mr. Pe Chit
- Thailand: Ms. Wisuthra Intongkaew
- Turkmenistan: Mr. Babayev Bakynazar
- Vietnam: Mr. Doan Hoai Nam
- Sri Lanka: Mr. D.M.B.M. Bandara

International organizations:

- Asia Forest: Mr. Patrick Bryan Durst
- RECOFTC: Mr. David Ganz
- WWF China: Ms. Li Yeqing attended the meeting (Mr. Fei Zhou nominated as Advisory Group member)

This structure brings together a diverse and experienced group of senior forestry officials and technical experts, ensuring balanced regional representation and strong

engagement from partner institutions. The establishment of the Advisory Group marks an important milestone in the evolution of the GFN, providing a formal mechanism for strategic guidance, expert advice and coordinated action as the GFN enters its next phase of development.

9.4.3 First Meeting of the GFN Advisory Group

The inaugural meeting of the GFN Advisory Group began with a collective review of the draft Terms of Reference that had been circulated prior to the workshop. The Terms of Reference outline the mandate of the Advisory Group as an independent body responsible for providing technical and policy guidance to strengthen the network. The document sets out the group's purpose, membership criteria, functions, rules of procedure, and provisions for future amendments.

During the discussion, members examined key elements of the proposed mandate and provided constructive observations aimed at ensuring clarity, transparency, and practical effectiveness. Participants affirmed the value of positioning the Advisory Group as a source of forward-looking policy advice, particularly in guiding thematic focus areas, partnership engagement, and resource mobilization efforts under the GFN. They also agreed on the importance of regularly assessing progress of GFN initiatives and offering recommendations for improvement.

Membership provisions received particular attention. Members supported the principles of merit-based selection, balanced regional representation, gender considerations and service in a personal capacity. Suggestions were made to refine the nomination and approval process, clarify term lengths and rotation arrangements, and ensure that the group benefits from both continuity and the gradual introduction of new expertise.

The review of the rules of procedure focused on meeting frequency, mechanisms for convening additional sessions and the timely circulation of documents to support effective preparation. Members also highlighted the need for stronger communication within the Advisory Group and for ensuring that written inputs from those unable to attend meetings are adequately considered.

All substantive comments and recommendations were noted by the APFNet Secretariat. Participants agreed that the Secretariat would revise the Terms of Reference to incorporate these inputs and circulate the updated version to all Advisory Group members for confirmation. This process will ensure that the final Terms of Reference reflect a shared understanding and provide a strong institutional foundation for guiding the future development of the Global Forest Network.

9.5 Program Progress and Case Sharing

The session continued with updates on GFN program implementation and the sharing of case studies from partner economies and institutions. These presentations highlighted practical experiences, emerging lessons and opportunities for strengthening the GFN's operational focus.

9.5.1 Presentation by Fiji: Promoting the Sustainable Production of Sandalwood

Mr. Tevita Bulai, Conservator of Forests, Ministry of Forestry, Fiji

Mr. Tevita Bulai, Conservator of Forests at the Ministry of Forestry of Fiji, presented progress under the APFNet funded project “Promoting the Sustainable Production of Sandalwood in Fiji,” approved in 2022 and scheduled for completion in 2027.

He outlined the project’s background, noting its objective to enhance the sustainable production of sandalwood as a high value forest resource that supports rural livelihoods and long term ecological resilience. Key outputs include the establishment of a nursery for high quality seedlings, development of two demonstration plantations of thirty hectares each, a five hectare trial site for host species selection, training and awareness activities, preparation of best practice guidelines and the establishment of sixty five hectares of new plantations.

Mr. Bulai summarized planned activities across the three year implementation period, including nursery construction, plantation layout planning, seed collection, large scale plantation establishment, field maintenance, training and monitoring. He also reported that staff recruitment, phenology assessments, seed collection and propagation activities have begun. Challenges such as administrative delays and shifting phenology patterns were noted, although these have generated opportunities to strengthen data collection and interagency collaboration, particularly with the Ministry of Agriculture.

9.5.2 Presentation by RECOFTC: Southeast Asia Fire Management Mechanism

Dr. David Ganz, Executive Director, RECOFTC

Dr. David Ganz, Executive Director of RECOFTC, presented the newly established Southeast Asia Fire Management Mechanism. He explained that despite long standing national and regional commitments, significant gaps remain in cross border coordination, technical assistance and community level capacity, contributing to persistent risks from landscape fires and transboundary haze.

The Southeast Asia Fire Management Mechanism has therefore been established as a regional platform that brings together governments, Indigenous Peoples, local communities, civil society, academic institutions, and development partners. Its vision is to advance integrated fire management strategies in the region through cooperation, strengthened capacity, and wide dissemination of practical and science-based knowledge. Its mission is to support countries and communities through policy dialogue, capacity development, information exchange, and demonstration activities that highlight effective approaches in both cross-border and community-based fire management.

Dr. Ganz presented the objectives of the mechanism, which include creating a platform for sharing best practices, strengthening skills of policymakers and practitioners, expanding effective wildfire prevention and response, fostering longer-term collaboration, and ensuring alignment with regional and national climate initiatives, including the ASEAN Haze-Free Framework and NDCs. The mechanism places strong emphasis on integrating traditional knowledge with modern

technologies and on elevating the experience of Indigenous Peoples and local communities.

He also outlined three workstreams for the period from 2025 to 2028. The first focuses on knowledge management and exchange, including annual Southeast Asia Fire Dialogues and contributions to the Global Fire Management Hub. The presentation highlighted insights from the most recent Fire Dialogues, during which communities emphasized the need for tailored training, cross-learning, gender and youth inclusion, and better access to equipment and information systems.

The second workstream covers e-learning and capacity development. Planned activities include the development of a community-based fire management e-learning course, the preparation of a practitioner's manual on integrated fire management, the translation of guidelines into regional languages, national training-of-trainers programs, and a series of landscape-level workshops. These activities will culminate in the integration of community-based fire management into site-level management practices across participating locations.

The third workstream focuses on landscape actions and demonstration projects. Dr. Ganz noted ongoing initiatives across the region, including projects in Cambodia, Lao PDR, Viet Nam, and other economies, which collectively aim to strengthen fire management capacities and to build the evidence base for wider application of successful community-based approaches.

The presentation emphasized the human dimensions of fire management. Communities across different countries have consistently expressed that effective fire management must recognize their traditional practices, strengthen local leadership, and ensure meaningful participation of women and youth. RECOFTC's wider capacity development portfolio was highlighted in this context, with more than twenty thousand people trained in 2023, including a significant proportion of women.

9.5.3 Presentation of APFNet's Strategic Plan 2026 to 2030

Mr. Wasantha Dissanayake, Senior Forestry Consultant, APFNet

Mr. Wasantha Dissanayake, Senior Forestry Consultant to APFNet, introduced the draft APFNet Fourth Strategic Plan (2026–2030), outlining its rationale, strategic shifts and main components.

Mr. Dissanayake began by situating the plan within global and regional priorities. International commitments under the Paris Agreement and the Kunming–Montreal Global Biodiversity Framework call for measurable forestry outcomes, while economies in the Asia Pacific region continue to face pressures from deforestation, degradation and climate impacts. At the same time, the region is experiencing rising demand for restoration, resilience building and the application of digital tools to support evidence based decision making.

The presentation highlighted institutional lessons from the Third Strategic Plan, including the need for stronger monitoring and learning systems, early integration of sustainability and exit planning, and more consistent stakeholder engagement. Cross

pillar coordination and strategic communication were also emphasized as essential for improving coherence.

Based on these lessons, several strategic shifts have been proposed for the Fourth Strategic Plan. These include a more results focused monitoring and evaluation system, mainstreaming of digital forestry and innovation, greater attention to gender equality and social inclusion, and a structured approach to resource mobilization supported by diversified co financing.

Mr. Dissanayake then introduced the six strategic goals guiding APFNet’s direction for 2026 to 2030. These goals focus on: advancing forest and landscape restoration; supporting resilient and inclusive livelihoods; strengthening forest governance; developing human capital; promoting regional collaboration and innovation; and ensuring financial sustainability for long term impact.

To operationalize these goals, the plan proposes four interlinked strategic pillars: capacity development and institutional strengthening; field demonstration and innovation; regional policy dialogue and coordination; and knowledge management with communication and outreach. These are supported by five cross cutting enablers: monitoring, evaluation and learning; gender equality and social inclusion; innovation and digitalization; sustainability and exit planning; and financial resilience.

The presentation highlighted the central role of partnerships and stakeholder engagement in achieving the objectives of the plan. Ongoing collaboration through the Pu’er Forum, the GFN, APFECM and SANFRI, together with expanded engagement with NGOs, the private sector, communities and youth groups, is expected to strengthen collective action. Additional opportunities for South–South cooperation and co-financing were noted as important avenues for broadening the plan’s reach and impact.

The presentation concluded with a brief overview of proposed implementation arrangements. These include clearly defined institutional roles and responsibilities, strengthened internal coordination, a structured approach to risk management, and enhanced communication to improve knowledge flow. A refined monitoring and evaluation framework will guide learning, ensure accountability, and track progress toward strategic outcomes. The next steps involve finalizing the results framework, gathering additional feedback from stakeholders, and preparing the plan for endorsement.

9.6 Group Discussion on Priority Areas for Future GFN Work

The final activity of the workshop was a group exercise designed to identify priority thematic areas for the next phase of the Global Forest Network. The discussion was guided by the eight program areas outlined in the workshop handout, which are aligned with APFNet’s Fourth Strategic Plan (2026–2030) and the Sustainable Development Goals. These areas included forest and landscape restoration, forests and climate actions, inclusive livelihoods, forest governance, forestry education, digital forestry and innovation, strategic partnerships and sustainable financing, and other themes proposed by participants.

Due to limited time, the groups focused primarily on identifying priority areas rather than discussing them in detail.

Group 1

Group 1 used a simple voting system to indicate their preferred themes. The strongest support went to forest and landscape restoration for resilience and biodiversity and resilient and inclusive forest based livelihoods. They also gave equal support to forests, carbon and climate actions and forest governance and regional collaboration. In addition, one vote was recorded for strategic partnerships and sustainable financing. The group noted that all themes are important and encouraged cross cutting and integrated approaches when GFN refines its program structure.

Group 2

Group 2 organized its discussion around economy examples from Indonesia, Myanmar and Sri Lanka. The notes highlighted issues such as carbon offset training and measurement, social forestry and marginalized groups, forest fires and invasive species, ecotourism and sustainability, as well as institutional capacity and regional cooperation. Although the group did not record numerical votes, these issues relate most closely to forest and landscape restoration for resilience and biodiversity, forests, carbon and climate actions, resilient and inclusive forest based livelihoods, and forest governance and regional collaboration.

Group 3

Group 3 explicitly identified three priority areas, namely forest and landscape restoration for resilience and biodiversity, resilient and inclusive forest based livelihoods, and strategic partnerships and sustainable financing. The group also briefly noted possible concepts, partners and regions, but these remained at a general level.

9.7 Summary and Closing

The session concluded with closing reflections delivered by Dr. Wang Chunfeng, Executive Director of APFNet. Dr. Wang thanked participants for their active engagement and constructive contributions throughout the workshop. He highlighted the establishment of the GFN Advisory Group as a significant milestone in strengthening the network's institutional foundation and emphasised the importance of continued collaboration among member economies, partner organisations and technical institutions.

9.8 Synthesis and Conclusions

The GFN Strategic Advisory Workshop served as an important step in strengthening the GFN and refining its strategic direction for the coming years. A key outcome was the formal establishment of the GFN Advisory Group, which provides a structured mechanism for guiding future program priorities, strengthening partnerships and ensuring coordinated support for SFM across the region.

Presentations from Fiji and RECOFTC demonstrated the value of practical cooperation through the GFN, highlighting lessons on restoration, capacity development, fire management and community engagement. These examples illustrated how shared field experiences can inform broader regional initiatives. The introduction of APFNet’s Fourth Strategic Plan further clarified how the GFN will contribute to institutional priorities on restoration, climate action, inclusive livelihoods, governance and digital innovation.

The group exercise revealed clear areas of convergence among participants. Forest and landscape restoration for resilience and biodiversity, and resilient and inclusive forest based livelihoods emerged as widely supported priorities. Themes related to climate action, forest governance and regional collaboration were also emphasized, alongside growing recognition of the need for strategic partnerships and diversified financing.

Overall, the workshop reaffirmed that the GFN has strong potential to enhance regional cooperation, promote knowledge exchange and support evidence based action on SFM. The outcomes provide a solid foundation for refining the GFN program portfolio and guiding the work of the Advisory Group as the network aligns its next phase of development with APFNet’s Fourth Strategic Plan.

10. Key Insights and Way Forward

The Second Pu’er Forum on Asia-Pacific Forests convened a diverse range of policymakers, technical experts, practitioners, researchers, and development partners to explore the evolving role of forests within the region’s ecological and economic systems. Across all thematic sessions, spanning forest policy, forest industry, forest education, nature education, biodiversity conservation, sustainable forest management and carbon sequestration, and the GFN Strategic Advisory Workshop, participants reaffirmed a shared dedication to strengthening regional cooperation and advancing SFM as the cornerstone of long-term ecological security and inclusive development.

10.1 Forests as a Strategic Asset for Regional Development

Discussions reinforced that forests underpin climate resilience, biodiversity protection, water security, and rural livelihoods across the Asia-Pacific. Forests were recognized not only as ecological infrastructure but also as enablers of green growth, low-carbon transformation, and nature-based solutions. High-level speakers agreed that investment in healthy forest ecosystems is central to achieving national and global sustainability targets.

10.2 The Need for Integrated, Cross-Sector Approaches

Across all sub-forums, participants emphasized the importance of aligning forestry policies with agriculture, land use, water management, industry, education, and community development. Effective forest governance increasingly depends on integrated planning frameworks, whole-of-government coordination, and partnerships

that bridge science, policy, and practice. The Forum provided multiple examples where integrated approaches are yielding measurable ecological and socio-economic outcomes.

10.3 Innovation and Knowledge as Drivers of Transformation

The Forum highlighted significant technological and institutional innovations shaping the future of forestry, including digital monitoring systems, high-integrity carbon accounting, green manufacturing technologies, modernized forestry curricula, and experiential nature education. Participants stressed that policy dialogue, demonstration projects, knowledge exchange and capacity development, four key pillars of APFNet's work, are essential to scaling these innovations across diverse economy contexts.

10.4 Community-Centered and Inclusive Forest Management

Many economies demonstrated how community forestry, social forestry, and benefit-sharing mechanisms support sustainable resource management while strengthening local resilience and livelihoods. The need for inclusive participation, equitable access to opportunities, and culturally appropriate approaches emerged as recurring messages across sessions.

10.5 Regional Cooperation and the Role of APFNet

Throughout the Forum, speakers emphasized the importance of cross-border cooperation in addressing transboundary environmental challenges, sharing good practices, and mobilizing resources. The establishment of the GFN Advisory Group marked a major step in institutionalizing collaborative action under APFNet. Participants expressed strong support for using the GFN as a platform to strengthen policy dialogue, demonstration, capacity development, and open information sharing during the implementation of APFNet's Strategic Plan 2026–2030.

10.6 Looking Ahead

The Pu'er Forum concluded with a clear message: economies across the Asia-Pacific region are committed to accelerating progress toward SFM, ecological restoration, biodiversity conservation, and green development. The Forum provided a consolidated platform for collective learning and partnership-building and demonstrated the continued relevance of Pu'er as a venue for regional forestry dialogue.

The insights and collective commitments generated through the Forum have been consolidated into the Action Plan for the Pu'er Forum on Asia-Pacific Forests (2026–2027), which will guide APFNet, its member economies, and partners in jointly advancing a greener, more resilient, and nature-positive future for the region.

11. Action Plan for the Pu'er Forum on Asia-Pacific Forests (2026-2027)

The Second Pu'er Forum on Asia-Pacific Forests was successfully held from October 28 to 30, 2025, in Pu'er City, Yunnan Province, China. The event brought together more than 300 participants, including representatives from forestry authorities, international organizations, research and academic institutions, and enterprises across over 20 economies in the Asia-Pacific region.

The Forum featured a high-level segment themed "Building a Green Future: New Pathways for Sustainable Forestry Development in the Asia-Pacific Region". Parallel sub-forums were organized covering a wide range of topics, including the forestry industry, policy, education, sustainable forest management and carbon sequestration, nature education, and biodiversity conservation. A special "Pu'er Day" event was also held. During the sessions, participants engaged in extensive exchanges on the above topics and explored pathways for practical cooperation.

The Forum witnessed the signing of a series of cooperative agreements. These included MOUs on forestry and grassland collaboration between the Yunnan Forestry and Grassland Administration and three provinces of Lao PDR (Oudomxay, Luang Namtha, Phongsaly), as well as agreements between Pu'er City and businesses on under-forest medicinal herb planting, wood-based panel production, and financing for national forest reserve projects.

To further promote practical cooperation in the region, based on the discussions and suggestions during the Forum, Action Plan for the Pu'er Forum on Asia-Pacific Forests (2026-2027) (hereinafter referred to as the Action Plan) has been formulated as follows:

1. Signatories will actively promote the implementation of the cooperation agreements signed during the Forum, and make substantial progress.
2. Stakeholders will collaborate to design and prepare for the Third Pu'er Forum on Asia-Pacific Forests to be held in October 2027.
3. Supporting young forestry scholar exchanges from China and ASEAN economies through APFNet Center for SANFRI Young Scholar Exchange, which was jointly established by APFNet and Yunnan Academy of Forestry and Grassland.
4. Continuously supporting the "Summer Camp for Greater Mekong Sub-Region Forestry Undergraduates Program" under the Presidents' Forum of Forestry University/Institute in the Greater Mekong Sub-region (GMS).
5. With the academic strengths of Southwest Forestry University, scholarship students from the Greater Mekong Sub-region are enrolled to facilitate the cultivation of the next-generation forestry talents.

6. With the advantages of the tea industry in Pu'er City, conducting international training in the tea business for South Asian and Southeast Asian tea farmers every year.
7. Implementing the Global Development Initiative, uphold the principle of extensive consultation and joint contribution for shared benefit, advance the Global Network for Sustainable Forest Management (GFN) with solid and practical actions, and contribute to building a community of life for humanity and nature.