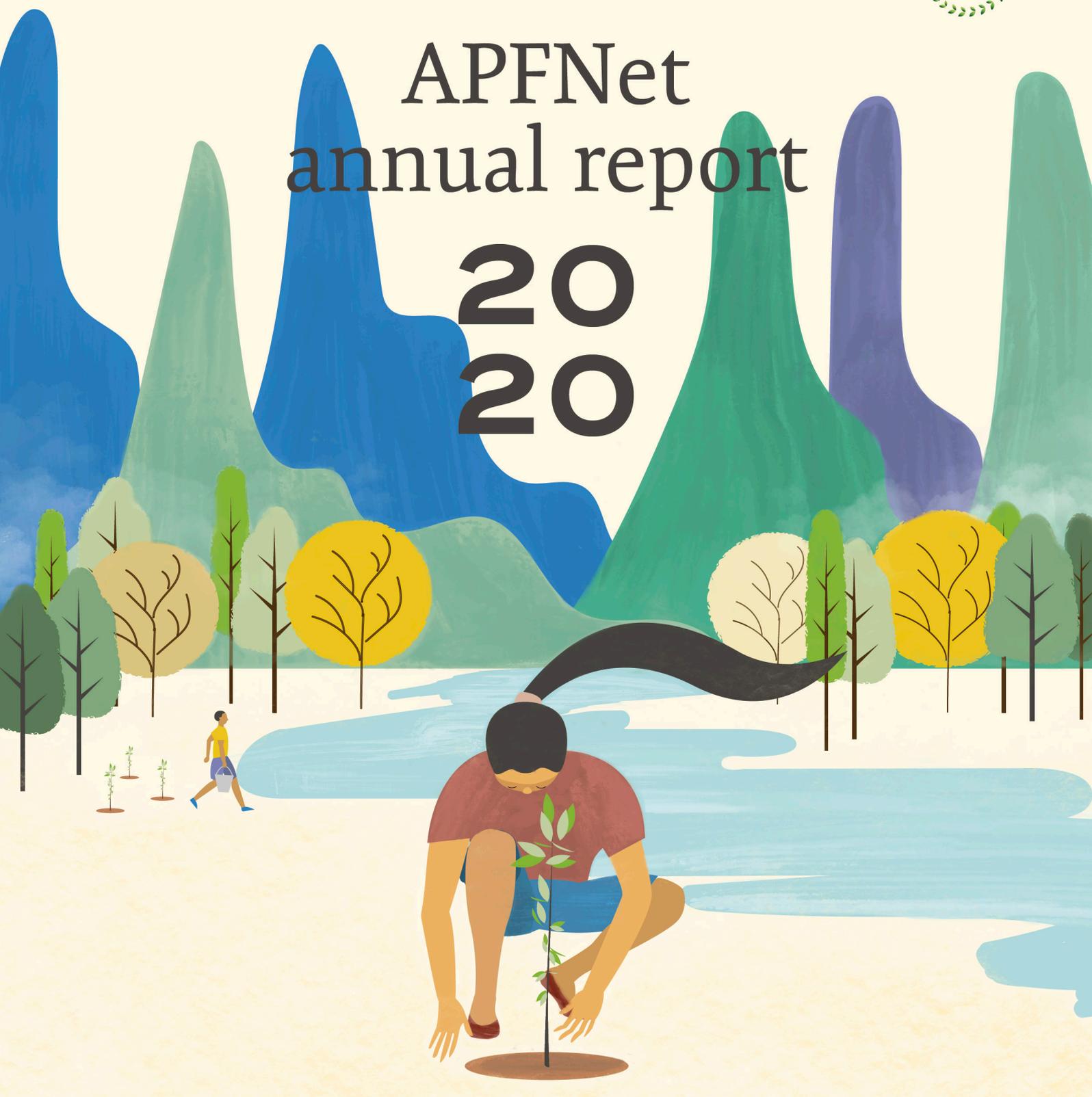




# APFNet annual report 20 20



Asia-Pacific Network for Sustainable Forest Management and Rehabilitation

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# APFNet in 2020

## Projects

+ 5  
launched

✓ 3  
completed

🔄 21  
active

\$ USD 5.9 million  
distributed

## Scholarships

👤 25  
Master's intakes

👤 6  
PhD intakes

🎓 16  
graduated

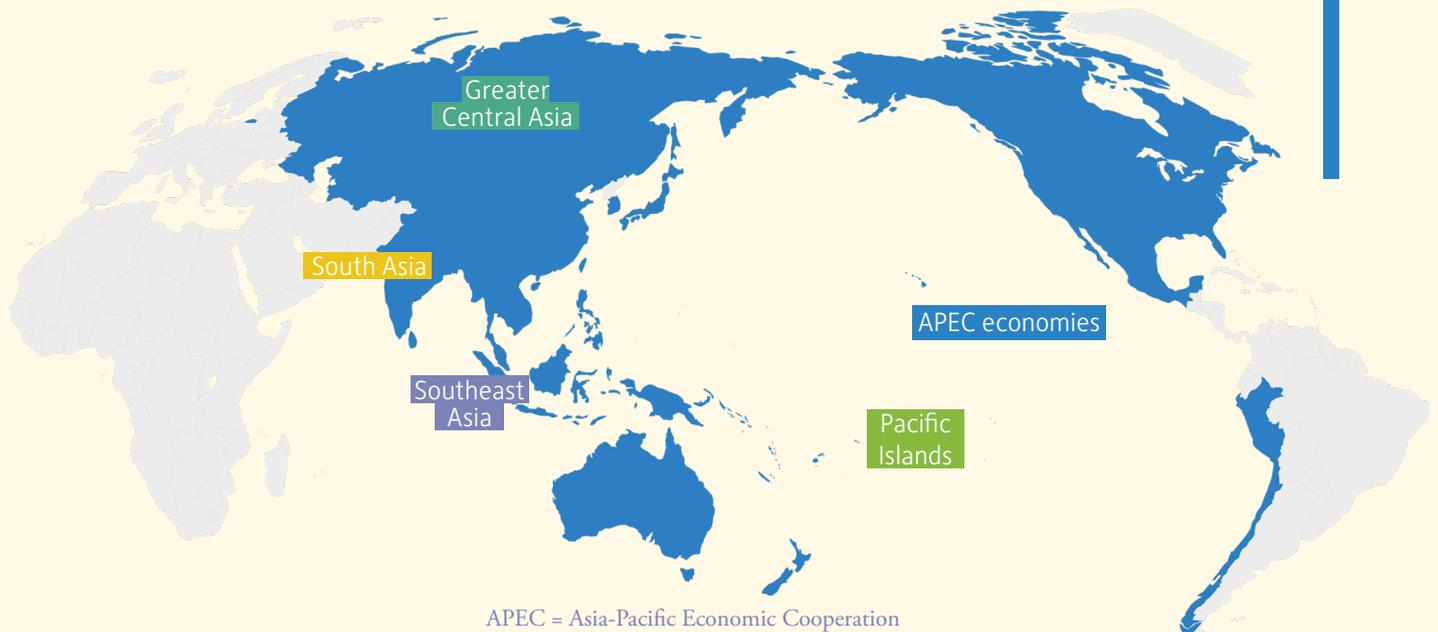
## Young scholars

📖 5  
research projects supported

\$ USD 36,725  
distributed

## Geographic focus

The Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) is committed to helping the economies and people of the Asia-Pacific region by promoting and improving sustainable forest management (SFM) and rehabilitation.



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# Abbreviations and acronyms

@Wild	APFNet Transboundary Wildlife Conservation Initiative
APEC	Asia-Pacific Economic Cooperation
AP-FECM	Asia-Pacific Forestry Education Coordination Mechanism
APFNet	Asia-Pacific Network for Sustainable Forest Management and Rehabilitation
ASEAN	Association of South East Asian Nations
ASP	APFNet Scholarship Program
CNFM	close-to-nature forest management
CNY	Chinese yuan
FPN	Forestry Planning Network
GCA	Greater Central Asia
ha	hectare(s)
Lao PDR	Lao People's Democratic Republic
NTFP	non-timber forest product
PAFO	Provincial Agriculture and Forestry Office (Lao PDR)
SANFRI	Sino-ASEAN Network of Forestry Research Institutes
SFM	sustainable forest management
USD	United States dollar(s)
YAFG	Yunnan Academy of Forestry and Grassland



# Message from the Executive Director

We say goodbye to one of the harshest and most difficult years in living memory, one that will be written in black in the history of humankind. At the same time, we welcome a new year and the opportunity to create a better world. APFNet is ready to contribute to this mission.

Undoubtedly, 2020 was a tough year for colleagues around the world and for APFNet as well, with some activities suspended or postponed and events and conferences re-scheduled. Nevertheless, we made good progress in many areas – such as the APFNet Scholarship Program (ASP), which offered online courses so that students could continue their studies and universities could strengthen their online platforms. Many other areas of work, such as our policy dialogues, were also able to make progress.

APFNet continued to explore the policy–science–practice interface through projects that respond to members’ needs for forest rehabilitation and sustainable forest management (SFM) and which help improve livelihoods. Despite the Covid-19 pandemic, which prevented international travel and caused many economies to go into lockdown, the implementation of APFNet projects continued with only minor delays. Many of the projects initiated in 2020 are building

on and expanding earlier project phases. In this way, APFNet is slowly shifting its focus to longer-term involvement at project sites to truly demonstrate the positive effects of the techniques applied. Our projects are continuing their good work based on multifunctional forest management, in which they combine restoration and SFM with livelihood improvement through agroforestry, the planting of high-value timber species, and other approaches.

Even though we face many challenges, we are finding ever more ways to proceed and develop as an organization. In response to the impacts of the pandemic, APFNet and the Yunnan Academy of Forestry and Grassland (YAFG) launched a programme to upgrade the APFNet Centre for the Sino–ASEAN Network of Forestry Research Institutes (SANFRI) Young Scholar Exchange, and this was completed in November 2020. To strengthen links among SANFRI members and exchange scientific research, YAFG and APFNet jointly organized the 2020 SANFRI Online Info-Exchange Meeting in December. Special meetings of the APFNet Board of Directors and Council were held online in December, in place of the sixth meetings of each, which were postponed due to the pandemic.

Many readers know that, with the support of APFNet and the Food and Agriculture Organization of the United Nations (FAO), Asia-Pacific Economic Cooperation (APEC) economies completed a midterm assessment

of APEC’s 2020 Forest Cover Goal a few years ago. Now, working again with FAO, we are undertaking a completion assessment of the Forest Cover Goal with the aim of reviewing the actions taken in the region to achieve the goal and reporting on the outcomes, based on information provided by participating economies.

To further strengthen our actions and activities, a new APFNet strategic plan has been drafted for 2021–2025 and will soon be ready for approval.

APFNet continues to contribute to the sustainable development agenda and to climate-change mitigation in the Asia-Pacific region by promoting the sustainable use of forest resources, the restoration of degraded land and the improvement of livelihoods in forest communities. We look forward to more engagement with all our stakeholders in 2021 – especially so, in these unprecedented times.

I take this opportunity to send greetings to our members, Council representatives, Board directors, partners, and all others who have been part of the APFNet journey so far. Stay healthy and safe!

**Lu De**  
Executive Director



# Building back better with capacity building

Economies in the Asia-Pacific region are strongly committed to conserving, restoring and sustainably managing forests and to improving the livelihoods of rural and forest-dependent people. The need for forest restoration and SFM is even greater now as part of coping with the pandemic and building back better in its wake. Developing professional capacity in the region is essential for the success of these efforts, and APFNet made considerable advances online as its capacity-building work continued in 2020, as illustrated below.



## Weathering Covid-19 with the help of online courses

### *Project title*

Innovative sustainable forest management education in the Asia-Pacific region – phase II [2018P3-UBC]

### *Supervisory agency*

University of British Columbia

### *Executing agency*

Executive Office, Asia-Pacific Forestry Education Coordination Mechanism

### *Implementing agencies*

University of British Columbia, Beijing Forestry University, University of Melbourne, University Putra Malaysia and University of the Philippines Los Baños

### *Budget (USD) (total/APFNet grant)*

794,600/563,000

### *Target region*

Asia-Pacific region

### *Duration*

April 2018 to March 2021

According to the United Nations,<sup>1</sup> the Covid-19 pandemic has caused the largest disruption of the education system in history, affecting nearly 1.6 billion learners in more than 190 economies. Closures of schools and other learning spaces have affected 94 percent of the world's student population, including up to 99 percent in low-income and lower-middle-income economies.

On the other hand, the crisis has stimulated innovation in the education sector. Numerous new approaches and remote-learning solutions have been developed to help ensure continuity in education and training, with contributions from governments, academia and other partners around the world.

Many economies in the Asia-Pacific region lack a structured forestry training system for teaching the principles of SFM, limiting their capacity to practise SFM in the field. Since 2016, APFNet has funded and developed a comprehensive academic online SFM learning programme, in partnership with five universities – the University of British

<sup>1</sup> Education during the Covid-19 and beyond. Source: [www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg\\_policy\\_brief\\_covid-19\\_and\\_education\\_august\\_2020.pdf](http://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid-19_and_education_august_2020.pdf)

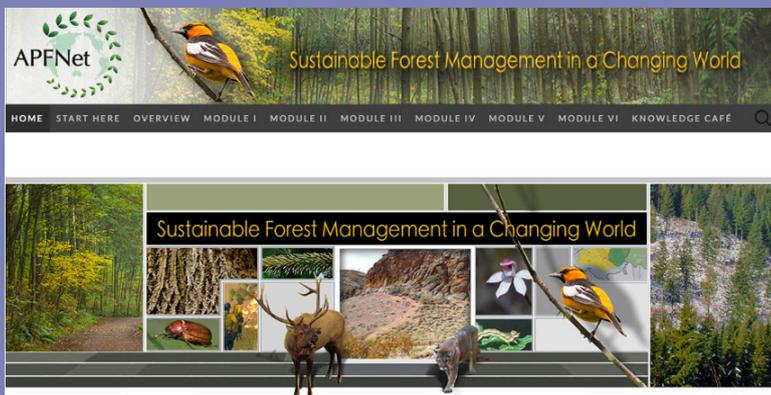
Columbia, Beijing Forestry University, the University of Melbourne, University Putra Malaysia and the University of the Philippines Los Baños – to build capacity in the Asia-Pacific region. In the first phase of this project, implemented from 2013 to 2018, five SFM courses were developed and uploaded;<sup>2</sup> the courses received over 15,000 learners from 91 economies.

The project won the International Union of Forest Research Organizations’ Best Forest Education Award – the highest level of recognition in forestry education worldwide – in 2019. To further develop the courses created in phase I and increase the programme’s reach, APFNet began a second phase in 2018 (due to be completed in 2021) to generate long-term improvements in forestry education and SFM capacity in the Asia-Pacific region and worldwide.

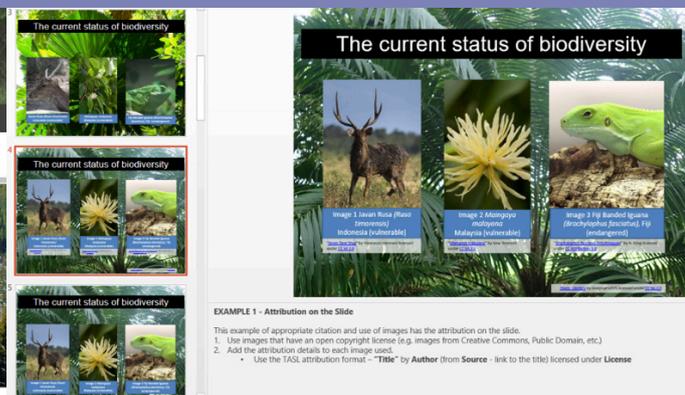
Ten new online courses – emphasizing tropical forests, forest-cover measurement, forest planning,

climate adaptation, carbon management, community forestry and rural development – were developed in 2020, and five existing courses were upgraded. Combined, the 15 courses comprise an SFM curriculum offering a systematic knowledge base and skillset. The curriculum enables learners to understand SFM in a changing global context and to establish a foundation of knowledge in forest management, forest policy, natural resource conservation, forest science, and forest technology.

**Supporting education continuity during the pandemic.** The sudden shift away from classroom teaching in many parts of the world during the Covid-19 pandemic has meant dramatic changes in forestry education, including the rise of e-learning, suspended field research and study, and teaching done remotely and on digital platforms. To support and maintain the quality of forestry education in member economies during the pandemic, the Asia-Pacific Forestry Education Coordination Mechanism (AP-FECM – see box next page) enabled the



Part of the home page of the online learning platform of the Asia-Pacific Forestry Education Coordination Mechanism.



Examples of image visualization in one of the online courses on SFM.

<sup>2</sup> <http://apfecm.forestry.ubc.ca/sfm-online-courses>

provision of free online lectures on SFM between February and December 2020 in a special certified course. The following eight courses (from among the 15 developed by the project) were delivered by a professor and expert team from the Faculty of Forestry at the University of British Columbia and other partner universities:

- 1) Sustainable forest management in a changing world
- 2) Forest governance, public relations and community development
- 3) Introduction to urban forestry in the Asia-Pacific region
- 4) Restoration of degraded forest ecosystems and forest plantation development
- 5) Forest resource management and protection
- 6) Geomatics in forestry: data collection and management
- 7) International dialogue on forestry issues
- 8) Contemporary topics in forestry.

Nearly 1,500 students took the free courses in 2020 at 32 Chinese partnering universities – including Beijing Forestry University, the Fujian Agriculture and Forestry University and the Northeast Forestry University – and 56 universities and forestry institutes in the Asia-Pacific region, such as the University of the Philippines Los Baños, the Forest Research Institute Malaysia, and Abdul Wali Khan University Mardan in Pakistan. The courses led to rich interactions among students and between students and instructors through assignments, class activities and discussions. Online feedback and guidance from the teaching staff enabled students to develop deeper understandings of course content. Exercises in critical thinking, brainstorming and problem-solving also helped build a collaborative learning community through the courses.

## The Asia-Pacific Forestry Education Coordination Mechanism

AP-FECM is a regional platform on forestry education cooperation and exchange that was initiated and is funded by APFNet. The aim of AP-FECM is to promote the development of forestry education in the Asia-Pacific region by strengthening cooperation and carrying out collaborative activities to promote forest restoration and SFM.



The AP-FECM SFM certificate.

**The SFM certificate.** AP-FECM's SFM Certificate Programme is a package of online courses developed by the project, integrated with instructor-facilitated active-learning activities and authentic student assessment strategies. Students who complete the online courses receive a certificate of recognition issued by the AP-FECM Executive Office.

# The Sino–ASEAN Network of Forestry Research Institutes

**More small grants awarded.** In line with SANFRI’s 2020 workplan (see box right), the APFNet Small Research Grant programme was announced in January 2020. Over the three-month application period, APFNet received eight research proposals on forest restoration from five economies – Cambodia and China (joint research), Indonesia, Myanmar and Viet Nam. The appraisal was completed as scheduled in May 2020 and the SANFRI Steering Committee reviewed and adopted the outcomes. Five of the eight proposals were selected to receive grants (Table 1), and all are now under implementation.

## The Sino–ASEAN Network of Forestry Research Institutes

China and the Association of South East Asian Nations (ASEAN) economies share several similarities in their natural resources, especially tropical forests, which makes forest cooperation and communication an important driving force of Sino–ASEAN cooperation. In this context, APFNet proposed establishing SANFRI to advance forest research by facilitating collaboration among forest research institutes and to contribute to SFM among ASEAN economies and China. SANFRI has four subprogrammes:

- 1) Early Career Academics Forum;
- 2) APFNet Conference Attendance Support;
- 3) Visiting Scholar Programme; and
- 4) APFNet Small Research Grant.

Table 1. List of projects funded under the APFNet Small Research Grant programme in 2020

	<b>Economy</b>	<b>Title</b>
1	Cambodia and China	Study on variation pattern of growth characteristics of two families of precious rosewood tree species in seedling stage and their genetic diversity
2	Indonesia	Alternative methods for reforestation using seed briquette and bare-root seedling based on mycorrhizae and dark septate endophyte biofertilizers
3	Indonesia	Rehabilitation of coastal land with food and energy species: jalawure ( <i>Tacca leontopetaloides</i> ) and malapari ( <i>Pongamia pinnata</i> ) on agroforestry system
4	Viet Nam	Research on propagation of <i>Lithocarpus ducampii</i> (Hickel & A. Camus) seedlings by using super-light and self-decomposing bags to improve effective forest rehabilitation
5	Viet Nam	Estimating carbon sequestration capacity of acacia hybrid plantation in Yen Bai Province as a basis for implementing carbon payments for forest environmental services

**New centre for young scholars boosts cooperation in forest science.** In response to the pandemic, APFNet and YAAG launched a programme in early 2020 to upgrade the APFNet Centre for SANFRI Young Scholar Exchange, successfully completing it in November 2020. The centre includes guest rooms, offices and libraries and is equipped with the facilities needed to provide visiting scholars with excellent learning, research and living conditions. The centre is now well-placed to support, coordinate and carry out SANFRI's Visiting Scholar Programme and to boost cooperation among outstanding young scientists in the region in addressing emerging research needs at the forefront of forest science and technology.

**SANFRI members meet virtually.** To strengthen links among SANFRI members and exchange scientific research progress, YAAG and APFNet jointly convened the SANFRI Online Info-Exchange Meeting in December 2020. The meeting updated participants on the progress of SANFRI activities in 2020, including projects funded under the APFNet Small Research Grant programme. Young scholars from China, Indonesia and Viet Nam presented on their work (projects 1, 2 and 4 in Table 1).



The newly renovated APFNet Centre for SANFRI Young Scholar Exchange (top) and an upgraded guest room at the Centre (bottom). Photos: Liu Chengye/APFNet



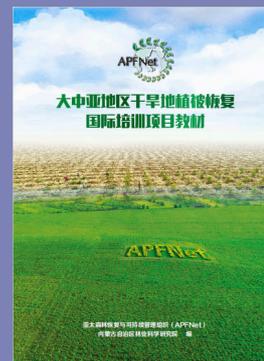
Participants in the 2020 SANFRI Online Info-Exchange Meeting. Photo: Liu Chengye/APFNet

# New textbook launched on **dryland restoration** in Greater Central Asia

APFNet launched thematic training courses in 2015 targeting Greater Central Asia (GCA), a subregion that faces great challenges related to desertification and environmental degradation. APFNet's training provides opportunities to assess the status of efforts to combat desertification and sustainably manage dryland ecosystems and to demonstrate best practices and techniques in these.

Taking the opportunity presented by the pandemic-enforced break in training, APFNet and the Inner Mongolia Academy of Forestry Sciences worked systematically to improve materials for training courses on vegetation restoration in arid areas. The resultant textbook has three main themes: 1) the comprehensive management of arid

areas; 2) the theory and technology of vegetation restoration in drylands; and 3) the development of related industries in drylands. The textbook also introduces the successful experience of China's desertification control efforts as a reference for other economies in GCA and to promote regional forestry cooperation.



The cover of the recently published textbook on dryland restoration in Greater Central Asia.

# APFNet Scholarship Program

## students adapt to distance learning

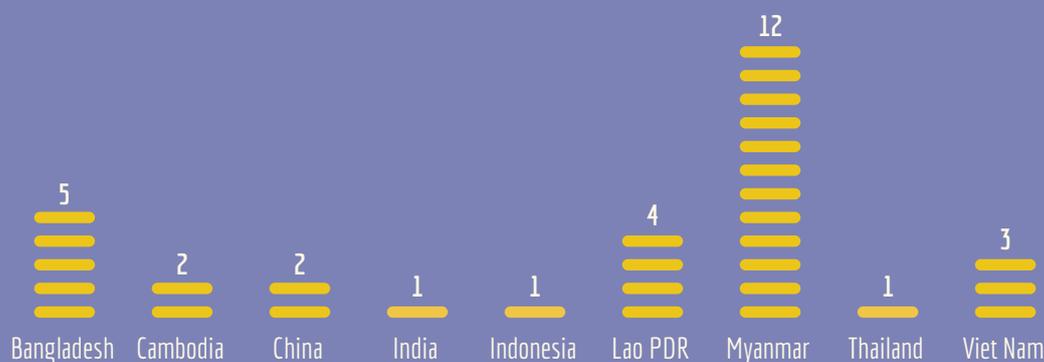
Amid the global pandemic, the ASP continued to support students and young forestry professionals in pursuing their postgraduate studies. In 2020, it awarded 31 new scholarships from nine economies in the Asia-Pacific region. Six students are now pursuing doctorates and 25 are undertaking master's degrees at four host universities. Of the awardees, 12 are from Myanmar, five are from Bangladesh, four are from the Lao People's Democratic Republic (Lao PDR) and the others are distributed among several economies (Figure 1).

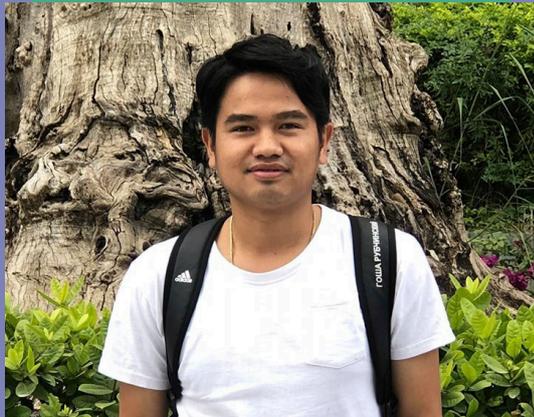
The pandemic meant the temporary closure of universities around the world, shifting learning from the traditional face-to-face format to online. In 2020, ASP students pursued their studies virtually using video conferencing and online learning tools. Although this format offers a safe environment for students, they face new challenges such as varying time zones, poor internet connections and a lack

of familiarity with online education software. APFNet and the host universities provided students with financial and academic support to help them complete their studies.

The pandemic did not stop the ASP's 2018-intake students from completing their study programmes. In 2020, 16 students finished their master's degrees at three host universities in China. They were from 13 economies – Bangladesh, Cambodia, Indonesia, Lao PDR, Mongolia, Myanmar, Nepal, Peru, the Philippines, Tajikistan, Thailand, Uzbekistan and Viet Nam. They variously graduated in forestry, environmental engineering, forest economics and management, forest protection, soil and water conservation and desertification control. Thesis defences, graduation ceremonies and farewell events were all conducted virtually due to Covid-19 restrictions.

Figure 1. Number of APFNet Scholarship Program awardees in 2020, by economy





“Forestry courses require on-site and practical experience. However, the new learning platform has urged us to be resourceful and go for an extra effort to learn things at the comfort of our homes.”

**Vannak Chroek**

Cambodia  
 APFNet Master's student (2019 intake)  
 Beijing Forestry University

“The pandemic ruined my plans and activities. But I was able to obtain my master’s degree in forestry from NFU [Nanjing Forestry University]. I would like to heartily thank APFNet for believing in me and providing a lifetime opportunity to study in China.”



**Manjit Bista**

Nepal  
 APFNet Master's student (2018 intake)  
 Nanjing Forestry University

**Bridging ties through the APFNet Alumni Network.** The APFNet Alumni Network was launched in 2019 with the aim of enhancing knowledge and experience-sharing and strengthening contacts and coordination among APFNet alumni across the Asia-Pacific region to promote forestry development and collaboration. The network currently has 190 alumni from 21 economies.

In 2020, the APFNet Alumni Network increased its online presence through various social-media platforms and shared relevant forest-related content, research and opportunities on these platforms and through four editions of a newsletter published throughout the year.

APFNet signed an agreement with a virtual networking company in November 2020 to create an online portal for alumni. The portal establishes a virtual meeting place where alumni and current students can interact, communicate and share experiences and research; the host universities and APFNet can also use the portal to post upcoming events and opportunities that may be of interest to users. As of late February 2021, the portal, which is administered by APFNet alumni relations assistants at three host universities, had 190 registered members. The portal can be accessed at [www.alumniapfnet.com](http://www.alumniapfnet.com).



**Le Thi Hanh**

Viet Nam

PhD candidate in silviculture

Nanjing Forestry University

“My name is Le Thi Hanh from Viet Nam. I was awarded through the APFNet Scholarship Program in 2020 as a PhD student in silviculture at Nanjing Forestry University. Before my PhD studies, I worked as a researcher in the Silviculture Research Institute of the Vietnamese Academy of Forest Sciences in Viet Nam. The projects I was involved in focused on two main themes: 1) improving the productivity and promoting the sustainable management of plantations through certification systems; and 2) the restoration of degraded natural forests.

“I was delighted and appreciative to learn that I was selected as an APFNet Scholarship Program recipient to study at Nanjing Forestry University. The scholarship lightens my financial burden, allowing me to focus on the essential aspects of learning and researching.

“I expect that the scholarship will allow me to learn various research skills from my time in China. These include academic skills and the capacity to do research independently. Moreover, APFNet has a wide network, including 26 economies and five international

organizations. Each member will have different methods in rehabilitating and sustainably managing forests. This could give me a chance to approach and learn about forest restoration methods, not only in China but also in other economies, so I could learn these techniques to apply in my home economy's forests. By attending the courses at Nanjing Forestry University and APFNet workshops, I hope to build my research network with scientists in China and other economies, in addition to my academic skills.

“As an incoming international student, I started my first semester by e-learning in my home economy. Even though I am staying in a safe environment against Covid-19, it is undeniable that online learning still causes certain difficulties, such as unfamiliarity with software, low interaction, not as high concentration level as listening to lectures in class, and financial difficulties. After one month of studying online, with enthusiastic support from professors and classmates, and in combination with preparing and reading documents in advance to grasp the content in upcoming lessons, I became more familiar with online studying. However, in addition to learning theoretical expertise in the online class, I need to increase my practical knowledge through workshops and internships to develop my soft skills in research as forest course requirements. Therefore, I hope that APFNet will soon have great solutions for international students like me. This can help me in learning and I hope to soon have the opportunity to learn directly at Nanjing Forestry University to reach my study goal.”

### **Devashish Kumar Ghosh**

Bangladesh

Master's student in forestry economics and management

Beijing Forestry University



“I am working in the southern part of Bangladesh. My personal, academic and professional life has revolved around the world's largest single block of mangrove forest, the Sundarbans. After completing my undergraduate programme, I have been working with local stakeholders under forest resource management projects for the last six years. Through my decade-long commitment and involvement in the area, I have gathered experience about various management and conservation challenges, ranging from human security and illegal felling to poaching and poison fishing. Having the chance to be accepted and to study at Beijing Forestry University under the ASP is very prestigious for me. The friendly relationship between Bangladesh and China has motivated me to pursue my master's degree in China.”

# Demonstrating forest restoration in the Asia-Pacific region

As we enter the United Nations Decade on Ecosystem Restoration (2021–2030), it is pleasing to know that APFNet and its many partners have made a head-start, working with communities, governments and many others to experiment with restoration techniques and demonstrate models that restore degraded forest landscapes and offer livelihood opportunities for local people. Three such APFNet projects are described below: one has established demonstration sites in hilly, subhumid conditions; a second has worked to stabilize and increase the productivity and visual amenity of sandy lands – thereby deterring the “yellow dragon” of desertification; and the third is demonstrating close-to-nature and multifunctional forest restoration in Inner Mongolia.





## Restoring forests in hilly terrain in southern China

### *Project title*

Demonstration on sustainable forest management and restoration in hilly and low mountain area of southern China [2016P2-CAF]

### *Executing agency*

Research Institute of Forestry at the Chinese Academy of Forestry

### *Implementing agencies*

The Forestry Department of Anhui Province, China, through the Qingyang Forestry Bureau, and the Forestry Department of Zhejiang Province, China, through the Lin'an Forestry Bureau

### *Budget (USD) (total/APFNet grant)*

1,410,207/695,207

### *Target region*

Qingyang county, Anhui Province, and Lin'an district, Zhejiang Province

### *Duration*

January 2017 to December 2020

China has committed to reaching peak carbon emissions by 2030 and becoming carbon-neutral before 2060.<sup>3</sup> One of the strategies for achieving this goal is to capture carbon using China's abundant forest resources. The hilly and low-mountain region of southern China, where the climate is warm and humid, has high forest productivity and considerable carbon sequestration potential. A dense population and the pursuit of economic growth has led to forest degradation in the region, however. In Lin'an district in northwestern Zhejiang Province, forest stands are dominated by single species, mostly Chinese fir (*Cunninghamia lanceolata*) and hickory (*Carya cathayensis*). In Qingyang county in Anhui Province, forest restoration is difficult due to the hilly terrain and barren soils.

The aim of this APFNet project was to restore degraded forests in such hilly terrain. In developing the project, APFNet worked closely with the Research Institute of Forestry at the Chinese Academy of Forestry and the forestry bureaus of Lin'an district and Qingyang county. An area of 160 ha in Lin'an district and Qingyang county was used to demonstrate effective forest rehabilitation strategies and SFM models and to develop a method for calculating the carbon sink offered by these

<sup>3</sup> Xi says China to honor 2060 carbon neutrality commitment. Source: [http://www.xinhuanet.com/english/2020-11/22/c\\_139535407.htm](http://www.xinhuanet.com/english/2020-11/22/c_139535407.htm)

strategies at the project level. The overall aim was to increase forest biodiversity and carbon storage, improve the living conditions of local people, and control pests and diseases in the forested areas.

**Applying thinning and planting to diversify fir forests.** The project focused on the restoration of degraded rocky-mountain Chinese fir forests, shifting them away from monocultural plantations towards coniferous and broadleaved mixed-species forests. The growth of the plantations has stagnated, and stands have low productivity. The first step in the project was to thin out the original fir forests. Not only were the remaining trees better able to grow and thereby capture more carbon, more sunlight reached the understorey to assist regeneration. After site preparation, the project introduced the following two tree-planting models to increase forest biodiversity.

- **Model 1: Chinese fir and evergreen broadleaved mixed forests.** In this model, the Chinese fir forest was converted to an evergreen broadleaved mixed forest by planting various evergreen and broadleaved species, including Zhejiang phoebe (*Phoebe chekiangensis*), Zhejiang camphor (*Cinnamomum chekiangense*), purple nanmu (*Phoebesheari gamble*) and *Phoebe zhennan*. These newly planted trees now represent about 33 percent of the total number of trees in the forest area assigned to this model.
- **Model 2: Chinese fir and deciduous broadleaved mixed forests.** In this model, two deciduous broadleaved species were planted – Chinese torreyia (*Torreya grandis*) and light birch (*Betula luminifera*). These two species now represent about 31 percent of the total number of trees in the forest area assigned to this model.

The biodiversity and ecological values of the demonstration sites have increased under both models, and the successional dynamics of mixed Chinese fir and broadleaved forests have improved. According to monitoring, the model areas have higher tree species richness than the original plantations. The different species occupy different ecological niches, leading to higher aboveground stand productivity, including the production of leaf and root litter and soil carbon storage.

**Applying ecological management to improve local livelihoods in hickory forests.** In addition to the Chinese fir forests, the project worked to increase the biodiversity of hickory forests to improve local livelihoods. It introduced a traditional Chinese medicinal herb, *Polygonatum sibiricum*, to the understorey of the hickory forests; this herb is known for various beneficial products, including steroids, cardiac glycosides, lignin, vitamins and various acids. Other species, such as Solomon's seal (*Tetragium hemsleyanum*), David's harp (*Polygonatum cyrtoneura*), waxberry (*Myricaceae spp.*), Chinese torreyia (*Torreya grandis*), sweet-scented osmanthus (*Osmanthus fragrans*), Paris polyphylla (*Rhizoma paridis chinensis*) and bletilla (*Rhizoma bletillae*), were also established to add to local incomes.

“APFNet knows what we want and gives us enough financial incentive and brings expertise to implement restoration practices in the demonstration sites,” said Zhang Zhenglin, the head of Gaoyuan village in Lin'an district.

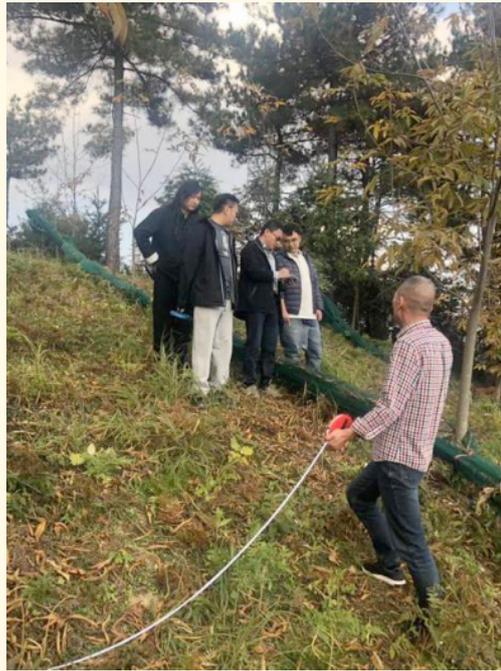


Top: Chinese fir forest in Lin'an district in 2017 – before thinning. Bottom: Chinese fir in Lin'an district in 2019 – after thinning. Photos: Lin'an Forestry Bureau

**Controlling plant diseases and pests in moso bamboo, Masson pine and Chinese torreyia forests.** In the bamboo-growing season in Qingyang county, the project installed 160 sheets of sticky traps in 150 ha of moso bamboo (*Phyllostachys edulis*) stands to reduce the damage caused by the bamboo locust (*Ceracris kiangsu*). To further increase yields of bamboo shoots, the project selectively thinned the bamboo stand for shoot production.

In the 467-ha forest of the Baihua village, Qingyang county, 25–80 percent of dead Masson pines (*Pinus massoniana*) were infected with pine wilt disease caused by the pinewood nematode (*Bursaphelenchus xylophilus*). To restore the forest, the project replaced the dead Masson pines – as well as weed species in the area – with Chinese sassafras (*Sassafras tzumu*) and sweetgum (*Liquidambar formosana*), which are native to Qingyang county and have considerable resistance to most local insect pests. Therefore, the Masson pine forest has gradually transformed into a healthy broadleaved-species-dominated forest with a more diverse forest structure.

To prevent the further deterioration of site conditions in the *Torreya grandis* forest in Youhua, Qingyang county, the project banned the use of herbicides and instead used manual tending to control weeds and improve soil



Project workers monitor restoration progress in mixed coniferous and broadleaved forests, Qingyang county. Photos: Qinyang Forestry Bureau

nutrition. Forest farmers have collaborated willingly in the process of cultivating, harvesting, processing and selling *T. grandis*, and their willingness to apply SFM practices has increased.

In conclusion, the application of silvicultural techniques to restore degraded forests and improve local livelihoods in the two provinces will support China in meeting its goal of carbon neutrality by 2060. Enriching the forest composition and structure in the forests has also increased forest diversity. With the incidence and severity of disasters due to climate change projected to increase, species-diverse ecosystems will have greater resilience and more capacity for regeneration than those that are species-poor. The increased diversity of non-timber forest products (NTFPs) grown in the forests is also enabling local farmers to diversify their livelihoods and boost their incomes.



# Defeating the “yellow dragon” in Horqin Sandy Land

Horqin Sandy Land is one of the four largest sandy lands in China. A fragile and sensitive agropastoral ecotone, it occurs predominantly in Inner Mongolia as well as in the provinces of Jilin and Liaoning.

Aohan Banner,<sup>4</sup> which is part of the Horqin Sandy Land in Inner Mongolia, is a region badly affected by desertification – colloquially called the “yellow dragon” – and a focal area, therefore, for desertification prevention and control efforts in China. Measures applied here could be used in other regions in GCA facing similar problems.

As part of efforts to defeat the yellow dragon, APFNet conducted a demonstration project in cooperation with the Sanyijing Forest Farm in Aohan Banner, Inner Mongolia, between 2017 and 2019. It documented typical models for desertification prevention and control in Chifeng and provided a theoretical basis and practical examples for GCA; created demonstration sites of high-quality sandy-land restoration using Mongolian pine (*Pinus sylvestris* var. *mongolica*) mixed with Xinjiang poplar (*Populus alba* var. *pyramidalis*) and yellowhorn (*Xanthoceras sorbifolium*); identified economic species fit for the local situation to improve forest stand quality and provide multifunctional benefits; and demonstrated the use of economic and medicinal understory species established among trees to diversify incomes.

## *Project title*

Demonstration project of vegetation restoration and management and utilization of forest resources in Greater Central Asia (Chifeng sites) (phase II) [2019P4-INM]

## *Supervisory agency*

Chifeng Forestry and Grassland Administration, Inner Mongolia, China

## *Executing agency*

Sanyijing Forest Farm, Aohan Banner

## *Budget (USD) (total/APFNet grant)*

1,470,000/1,160,000

## *Target region*

Aohan Banner, Chifeng City, Inner Mongolia, China

## *Duration*

January 2020 to December 2022

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<sup>4</sup> A banner is a county-level administrative division in the Inner Mongolia Autonomous Region of China. Chifeng city has three districts, seven banners and two counties, which are all at the same level.

APFNet initiated a second phase of the project in 2020, despite the pandemic. This will enable it to continue fighting the yellow dragon at the Sanyijing Forest Farm for another three years, with new restoration and rehabilitation models building on the previous phase.

The total restoration and rehabilitation area of phase II is 230 ha, which includes the establishment of 72.3 ha of semiarid demonstration forest restoration, mixing Mongolian pine with new species; the building of a 10-ha sand-tree species demonstration garden featuring 80 common sand-adapted species; the rehabilitation of 38.7 ha of existing poplar forest; and the building of an exhibition room to showcase the farm's sand-control and prevention approaches and achievements. In addition, monitoring and regular forest tending will be conducted at the project's phase I (about 110 ha) and phase II sites.

The project is developing eight restoration and rehabilitation models, as described below.

- **Model 1: Restore sandy land by improving ecological functioning.** A combination of Mongolian pine and winged euonymus (*Euonymus alatus*) has been planted on 18.1 ha in a square plot. The arrangement comprises two rows of Mongolian pine planted as a windbreak for every eight rows of winged euonymus used to stabilize the sand.
- **Model 2: Restore sandy land by improving ecological and economic value.** A combination of Mongolian pine and David's peach (*Prunus davidiana*) has been planted on 18.9 ha in a square plot. The planting design and species ratio are the same as for model 1; the aim is to improve both the ecological and economic value of the sandy land.

Also in this model, 0.33 ha of land has been planted in the shape of a large APFNet logo



The development of a mixed coniferous and broadleaved planting on semiarid land using models 1 and 2 – from site preparation (top), to four months after planting (middle), to one year after planting (bottom). The “APFNet” in the bottom photo was “spelled” using *Sabina vulgaris* and other species. Photos: Liu Zhongyou

using a mix of savin juniper (*Sabina vulgaris*), golden root (*Rhodiola rosea*), Mongolian pine and winged euonymus.

- **Model 3: Restore sandy land by improving ecological function and developing ecotourism through beautification.** A combination of Chinese pine (*Pinus tabulaeformis*) and purpleblow maple (*Acer truncatum*) has been planted on 18.6 ha in a square plot. The planting design and species ratio are the same as in model 1.
- **Model 4: Restoration using a 6–4 shelterbelt.** A combination of Mongolian pine and Siberian elm (*Ulmus pumila L.*) has been planted on 6.67 ha of sandy land. This model is designed to act as a shelterbelt, in which six rows of Mongolian pine are followed by four rows of Siberian elm. This planting pattern creates a windbreak and stabilizes sand dunes.
- **Model 5: Restoration planting – shelterbelts for landscape design.** A combination of

Mongolian pine and goldleaf elm (*Ulmus pumila L. cv 'Jinye'*) has been planted on 6.67 ha along the main operational road to the forest farm. It comprises four rows of Mongolian pine and two rows of goldleaf elm to form a windbreak and stabilize the sand; it is also designed to create a more beautiful landscape, with the goldleaf elm planted alongside the road.

Poplar is a fast-growing, multiple-use tree species, and it has been planted extensively in China since the 1970s, especially in the north. The Sanyijing Forest Farm has 4,202 ha of pure poplar forests; planted mostly in 1970s and 1980s, these are now degraded, consisting mostly of small, old trees with severe dieback. In addition, poplar can be a water-intensive species that is not well-suited to long-term survival in drought-prone sandy environments.

To rehabilitate and ultimately replace some of the degraded pure poplar stands, various tree species have been planted below the dominant species in

Degraded poplar forests at the Sanyijing Forest Farm. Photo: Xin Shuyu/APFNet



the second phase of the project to enrich the overall species mixture. The species were chosen for their tolerance of drought and cold as well as their capacity to act as a windbreak, conserve soil and stabilize sand in arid and semiarid areas. The three models described below (i.e. models 6–8) showcase how these stands have been rehabilitated.

- **Model 6: Rehabilitation and forest conversion of poplar with pine and yellowhorn.** An area of 14 ha has been assigned to this model, involving the planting of Chinese pine and yellowhorn in gaps. Half the area (i.e. 7 ha) is new restoration and the other half comprises untreated old plantation for comparison.

- **Model 7: Rehabilitation and forest conversion of poplar with pine and peach.** An area of 14 ha of demonstration conversion forest has been devoted to enrichment planting in gaps using Mongolian pine and David's peach; half the area has been treated with this enrichment planting and the other half comprises untreated old plantations for comparison.

- **Model 8: Rehabilitation and forest conversion of poplar with spruce and elm.** An area of 12 ha of demonstration conversion forest was created in a square plot; 7 ha was treated using dragon spruce (*Picea asperata*) and Siberian elm and about 5 ha of old plantation has been retained untreated for comparison.

The pure poplar forest has been treated by interplanting with dragon spruce and Siberian elm in model 8. Photo: Xin Shuyu/APFNet



# Restoring forests with multifunctional and close-to-nature management approaches

China has launched a series of public greening campaigns in recent decades, and it is now time to look beyond the area of trees planted to focus more on quality. Both historical conditions and a lack of knowledge and technologies constrained the silvicultural practices that were applied originally in establishing the new forests. As a result, China's planted forests consist largely of monocultures, which have limited ecosystem functionality and biodiversity. This is the case at the Wangyedian

Forest Farm in Inner Mongolia, where government authorities recognize the need to introduce new management practices to ensure SFM and good forest health.

APFNet launched the first phase of the project, "Construction of multifunctional forest management demonstration", in 2011 at the Wangyedian Forest Farm (Figure 2) with the aim of addressing the shortcomings of previous reforestation efforts

## *Project title*

Construction of multifunction forest management demonstration sites – phase II [2015P8-INM (II)]

## *Supervisory agency*

Chifeng Forestry and Grassland Administration, Inner Mongolia, China

## *Executing agency*

Wangyedian Forest Farm

## *Budget (USD) (total/APFNet grant)*

1,641,471/1,314,600

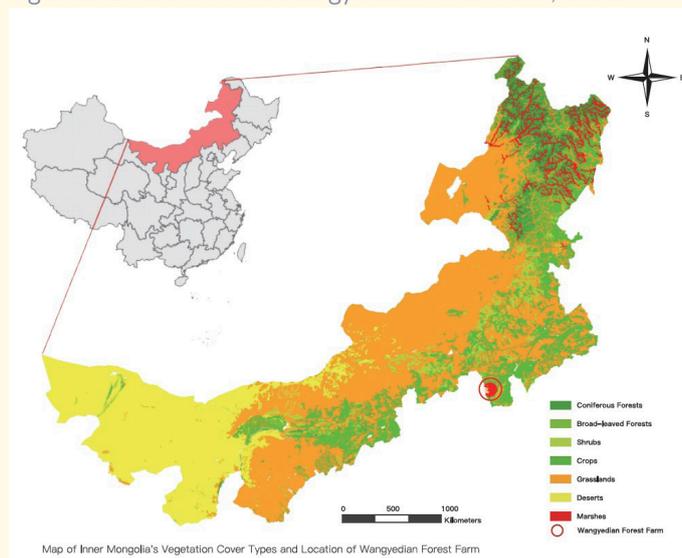
## *Target region*

Wangyedian Forest Farm, Chifeng, Inner Mongolia, China

## *Duration*

January 2016 to April 2020

Figure 2. Location of the Wangyedian Forest Farm, China



and exploring how best to balance and enhance the economic, social and environmental benefits, both at the site and in the wider region. The project was extended in a second phase in 2016, and the objectives were expanded to demonstrate multifunctional forest restoration on a wider range of sites, including clearcut forests and young and middle-aged natural secondary forests. The second phase is also testing close-to-nature forest management (CNFM) in mature forests (previously it was done mostly in young and middle-aged forests), focusing on soil and water conservation and increasing the overall carbon storage capacity of the forests.

**Mixed-species reforestation.** Reforestation has been a key focus since the founding of the Wangyedian Forest Farm. Monocultural forests occupy nearly 50 percent of the area, meaning low biodiversity and declining productivity.

Reforestation can be done in many ways. In the first two years of the project, three approaches to mixed-species reforestation were deployed on 667 ha of clearcut land:

- 1) **Reforestation with a mix of coniferous and local deciduous species, with the main purpose of producing high-quality timber.** The species are Chinese pine (*Pinus tabulaeformis*), Mongolian spruce (*Picea mongolica*), Mongolian oak (*Quercus mongolica*), Mongolian linden (*Tilia mongolica*) and Manchurian walnut (*Juglans mandshurica*).
- 2) **Combining nut trees with timber trees to provide short- and long-term forest products.** The species are Korean pine (*Pinus koraiensis*) for edible pine nuts and timber and Mongolian oak for fodder and timber.

- 3) **“Recycling” by planting seedlings very densely initially to achieve good growth form and, later, transplanting excess seedlings to other reforestation sites.** This reforestation approach focuses on maximizing recreational value by using especially colourful coniferous and broadleaved species. The species are painted maple (*Acer pictum*), Chinese tree lilac (*Syringa reticulata*) and Williams elder (*Sambucus williamsii*).

**Close-to-nature forest management.** CNFM is an approach designed to work with nature to achieve management objectives with the minimum necessary human intervention. The desired outcome is a mixed, structurally diverse forest that is well-placed to deliver multiple ecosystem services and, ultimately, high-quality forest products.

CNFM can be applied in any forest type, but, given the history of Wangyedian, the project is largely applying it in monocultural plantations – mostly larch (*Larix principis-ruprechtii*) and Chinese pine (*Pinus tabulaeformis*) – with the goal of transforming

Before (left) and after (centre) a CNFM treatment in mature Chinese pine forest; the image on the right shows the early phases of natural regeneration that occurred after the CNFM treatment. Photos: Ma Chenggong/Wangyedian Forest Farm





Before (left) and after (right) a CNFM treatment in a forest of mature larch. Photos: Ma Chenggong/Wangyedian Forest Farm

these. The CNFM measures deployed vary with plantation age, and the following example is for the Chinese pine monoculture:

- *Young forests* – mainly tending to promote growth and enrichment planting to change the forest composition.
- *Middle-aged forests* – mainly target-tree identification, the cutting of competitor trees, enrichment planting to change forest composition, and the identification

of young trees for the next generation of target trees.

- *Mature plantations* – the same as for middle-aged forests, except that the target trees are now large enough to be harvested and sold at relatively high prices. The harvest prepares the forest for the next generation through natural regeneration and the “release” of the next generation of target trees.



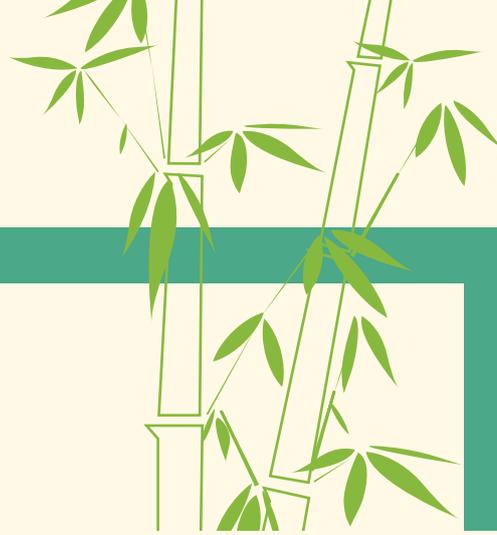


Forest restoration from bare land to green – from 2016 (top and middle) to 2017 (bottom). Photos: Ma Chenggong/Wangyedian Forest Farm

CNFM principles were introduced to the Wangyedian Forest Farm in the project's first phase, which demonstrated various CNFM techniques, such as target-tree selection, the cutting of competitor trees, assisted natural regeneration and enrichment planting.

In the second phase, CNFM methods were further applied to young, middle-aged and mature plantations. CNFM measures have mainly comprised tree marking and target-tree selection, the thinning out of competitor trees, assisted natural regeneration (mainly deploying soil scarring, the weeding out of competing species, especially shrubs and grasses, and prescribed burning and grazing), and enrichment plantings of Mongolian oak, Mongol linden and rowan (*Sorbus pohuashanensis*). The application of CNFM methods has helped accelerate natural successional processes, and a diverse and healthy regeneration developed over the course of the project.

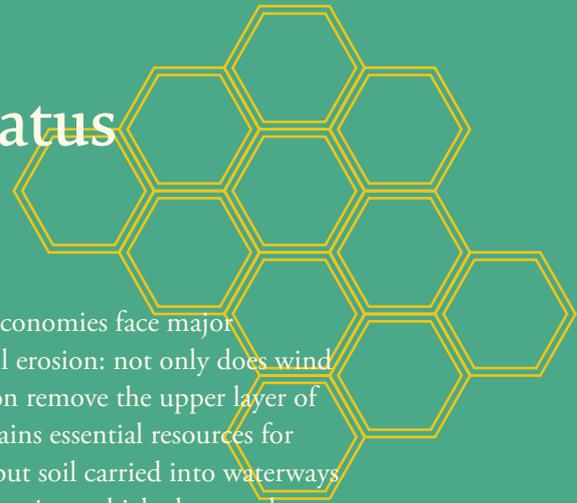
Based on the experiences gained in the demonstration areas, technical regulations were developed for CNFM involving Chinese pine and larch. The Chifeng Administration for Market Regulation approved and released the regulations, thereby setting local standards for CNFM for these two tree species.



# Enhancing the socioeconomic benefits of forests

APFNet recognizes that its efforts to assist economies in restoring their degraded forest lands and sustainably managing their forests will only succeed in the long term if such forests and landscapes generate clear benefits for people. APFNet's project work, therefore, pays close attention to this aspect of the organization's mission, as illustrated by the two projects described below. In a highly degraded microcatchment in the Bengawan watershed in Indonesia, an APFNet project is helping farmers establish and expand agroforestry and learn new skills, such as apiculture, to improve their livelihoods. In Lao PDR, another APFNet project is helping villagers living near the border with China increase their incomes through the development of NTFPs such as bamboo, cardamom, macadamia nuts and rattan in existing forests; it is also training them as patrollers to help reduce wildlife poaching and other illegal activities.

# Improving watershed management in Indonesia: a model for prioritizing socioeconomic status and decision-making



## *Project title*

Development of microcatchment participatory management in the Bengawan Solo Upper Watershed – phase II [Project ID: 2020P1-INA]

## *Supervisory agency*

Extension and Human Resources Development Agency, Ministry of Environment and Forestry, Indonesia

## *Executing agency*

Watershed Management Technology Center

## *Budget (USD) (total/APFNet grant)*

245,324/99,820

## *Target region*

Naruan microcatchment, Keduang watershed, Upper Bengawan Solo River Basin, Central Java, Indonesia

## *Duration*

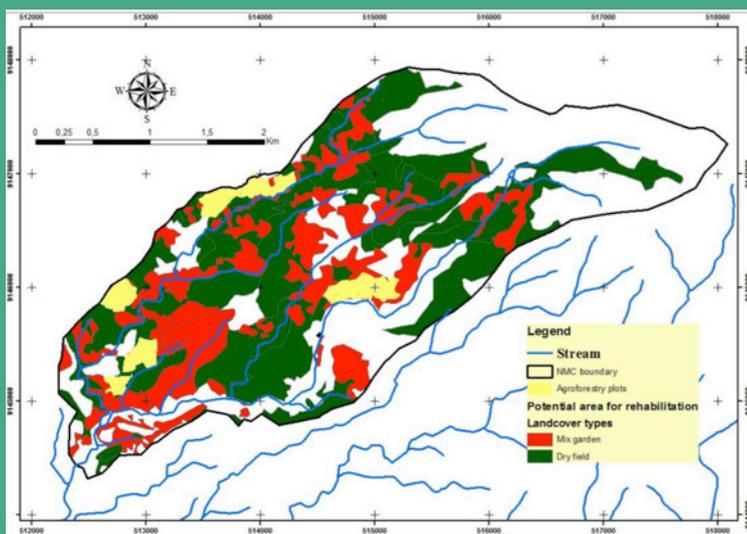
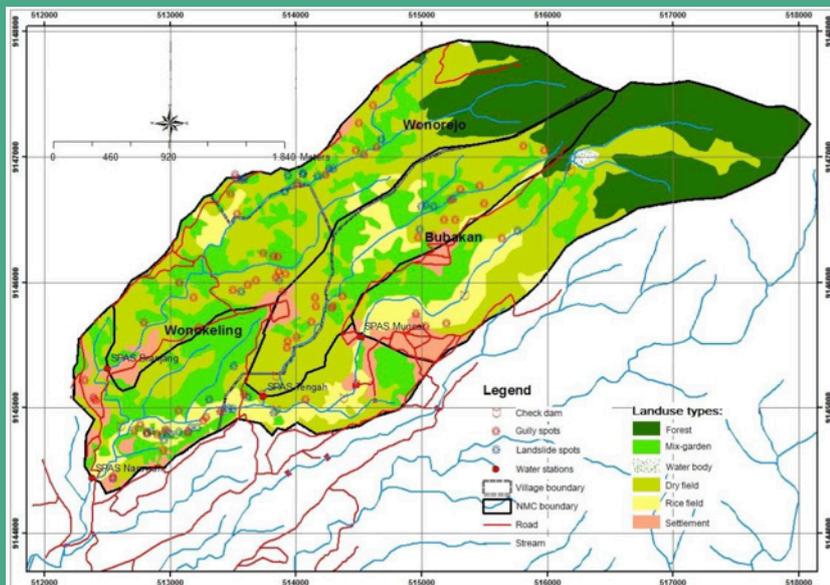
August 2020 to August 2022

Many farming economies face major challenges in soil erosion: not only does wind and water erosion remove the upper layer of soil, which contains essential resources for growing crops, but soil carried into waterways leads to sedimentation, which changes the flow of rivers and streams and can lead to flooding. The farming community in the Upper Bengawan Solo River Basin of the Keduang watershed in Java, Indonesia, is no exception: its food security is at risk due to high rates of erosion, increasing population pressure, and inappropriate land use.

The Naruan microcatchment sits in the upper part of the Keduang watershed. It is very steep, with slopes of 25–45 percent accounting for 60 percent of the land area and slopes steeper than 45 percent representing one-third. The area is extremely vulnerable to degradation, and forest cover is essential to stabilize soil and prevent erosion. However, only 20 percent of the land is forested (Figure 3).

To alleviate the threat of soil erosion in the Keduang watershed and enhance socioeconomic development, APFNet collaborated with the Watershed Management

Figure 3. Land-use map of the Naruan microcatchment (top), and agroforestry plots and potential areas for rehabilitation in the Naruan microcatchment (bottom)



Technology Center in the first phase of this project, which began in 2017 and ended in 2020. The project addressed a range of issues in watershed management in the microcatchment, achieved strong local commitment to improve management, and established important demonstration sites on sustainable watershed management. Participatory management plans based on action research were developed to identify areas for restoration. Fifty hectares of agroforestry demonstration plots, 34 units of small-gully “plugs”, and four units of small check dams were built to help in rehabilitating degraded areas. Under community development plans developed through the project, 86 people were trained in soil conservation techniques. The second phase of the project is now under way.

The work carried out in the first phase provided valuable insights for the implementation of the second. For example, the best-performed plant species and compositions in agroforestry demonstration sites in phase I were selected for phase II. Although the first phase had many positive

impacts, additional demonstration plots and simple civil-engineering conservation structures are needed to help local people improve their agroforestry designs and restore their degraded lands. Phase II is enabling more farmers to benefit from training; it is further developing the watershed management model and strengthening decision-making in the local community.

Phase II is adopting a comprehensive landscape planning approach, ensuring stakeholder participation in decision-making

and expanding agroforestry demonstration sites to improve production through soil and water conservation. New activities include:

- Expansion of agroforestry plots to vulnerable and affected areas.
- Construction of 23 units of gully-erosion control by applying simple soil conservation measures.
- On-farm and off-farm activities and training for local communities to improve livelihoods through skills development, for example in apiculture.



Gully-erosion control structures used in the project – gabion (left) and bamboo and gabion (right).  
Photos: Watershed Management Technology Center

# Boosting livelihoods in northern Lao People's Democratic Republic



Lao PDR is a mountainous economy with a rich history that some say stretches back 10,000 years, yet it is also one of Southeast Asia's poorest economies and its forests are becoming depleted and degraded. In an effort to change this, APFNet launched the project, "Sustainable forest management in northern provinces of Lao PDR", in 2014 in three northern provinces – Bokeo, Luang Namtha and Oudomxay. The first task was to identify the threats to the forest and how to address them.

## **Poaching, deforestation and a lack of alternatives.**

The relationship between forests and the people of Lao PDR is complicated. Although people generally value their forests, economic pressures and a lack of alternatives have driven many to cut the few remaining big trees and hunt wildlife to make a living. These drivers are exacerbated by the proximity of the provinces to the Chinese border. Transboundary areas tend to be especially vulnerable because jurisdiction may be fragile and criminal activity more difficult to track.

The project established two forms of patrolling, one at the village level (for those villages involved in the project) and the other at the transboundary level in cooperation with the Shanyong Nature Reserve on the Chinese side. Local villagers and members of the Provincial Agriculture and Forestry Office (PAFO)

### *Project title*

Sustainable forest management in northern provinces of Lao PDR [2014P1-ASEM]

### *Supervisory agency*

Ministry of Agriculture and Forestry, Lao PDR

### *Executing agency*

Department of Forestry, Ministry of Agriculture and Forestry, Lao PDR

### *Budget (USD) (total/ APFNet grant)*

3,563,433/2,982,573

### *Target area*

Bokeo Province, Luang Namtha Province and Oudomxay Province, Lao PDR

### *Location*

Donngern village, Bokeo, Houy Hom village and Nam Ha National Park, Luang Namtha, and Nampheng village, Oudomxay

### *Duration*

July 2014 to June 2019 (extended to February 2022)

learned through training how to patrol the area and to record and report incidents. Maps showing checkpoints, patrol routes and key locations such as restoration sites and large or old trees were developed using a geographic information system based on the inputs of villagers. Each patrol is conducted by seven to eight people from a given village, who walk different routes in parallel to increase efficiency. Violations happen in the area comparatively rarely; in September 2020, however, the patrol team in Luang Namtha found that certain villagers were poaching and cutting illegally. The timber was confiscated, along with the tools used for the illegal activities, and a fine of around USD 160 per cubic metre was imposed.

The project helped Oudomxay province establish a checkpoint for stopping and checking passing cars that may be transporting illegally cut timber. This checkpoint is now managed directly by PAFO. Camera traps were set up in the Nam Ha National Park, which lies on the border with China and is also subject to transboundary patrolling. The cameras were installed to monitor elephant populations in the



Project staff and community members walk a patrol route, Lao PDR. Photo: Anna Finke/APFNet

area, especially because on-the-ground transboundary patrolling was suspended during the Covid-19 pandemic. Six elephants, including a newborn, were caught on camera in 2020.

**Using NTFPs to provide alternatives.** Simply preventing people from poaching and illegally deforesting is insufficient to ensure forest conservation, and alternative means for generating income are also needed.

Many Lao people rely on subsistence agriculture for their livelihoods. Eleven of the 19 districts in the project's three target provinces have been identified as very poor; communities lack opportunities to develop new products with the potential to reach wider markets. APFNet, in cooperation with the project partners, introduced a number of NTFPs to the communities, ranging from the establishment of macadamia trees close to the houses of villagers in their private fields to the planting of commercially valuable NTFPs – such as cardamom, sugar palm and rattan – in existing forests. In some cases, such as in the bamboo forests growing naturally in Oudomxay, the key step was to introduce villagers to tending and post-harvest processing techniques to add value to final products.

In 2020, plantings made previously under the project were supplemented by another 42,500 seedlings of cardamom, which were planted in the hills surrounding the villages, benefiting more than 130 families. Before planting, the villagers were trained in planting and maintenance methods specific to cardamom, such as the importance of growing the plants within 100 metres of a water source because they need continuous access to water.

The macadamia seedlings were planted in September 2020 after a slight delay because the seedlings were imported from China, which has strict new requirements due to concerns over the cross-border



A trip-camera picture of an elephant herd in the Nam Ha National Park, Lao PDR.

transmission of Covid-19. Overall, 1,350 seedlings were planted in the three project villages, benefiting 14 families. Although this number may seem low, the macadamia trees will bring considerable long-term benefits to the families because of the high prices that can be obtained for the nuts.

**Training for a better future.** Improving the capacity of forestry staff and villagers is an important component of the project because only training will ensure that the benefits are sustained well after project completion. Project participants were trained in various skills, such as planting and maintaining macadamia plantations, tending bamboo, conducting village-level patrols and managing tree nurseries. To further boost capacity, a domestic study tour was



Villagers in Louangnamtha plant cardamom as part of the project. Photo: Tongngern Phongsavath

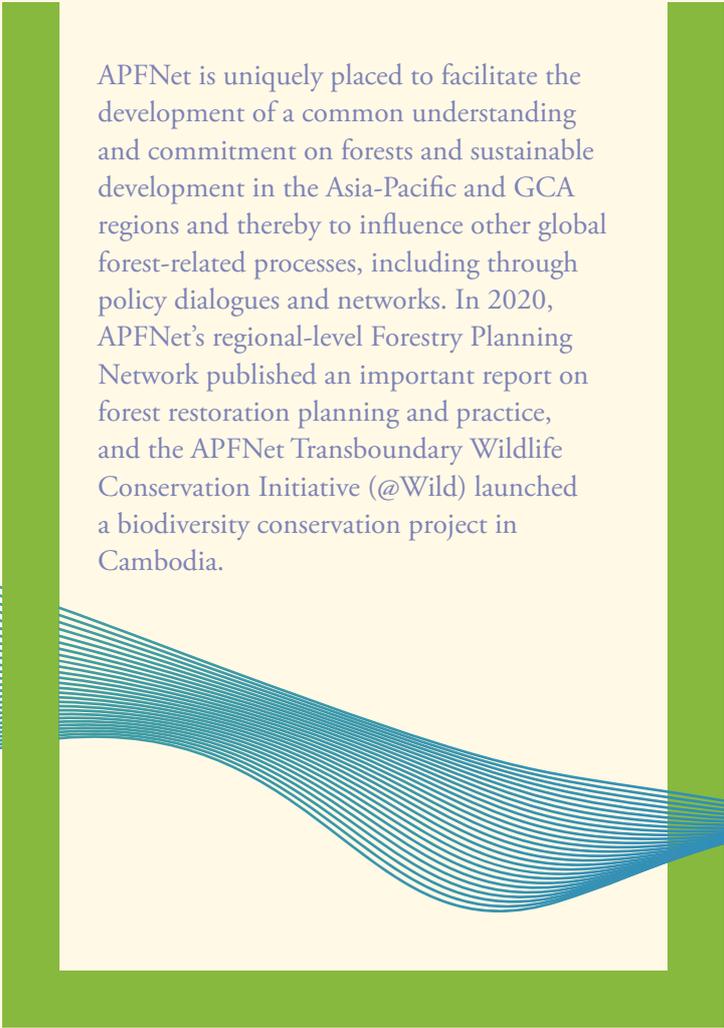
organized in September 2020 in which 31 villagers (11 from Luang Namtha and ten each from Bokeo and Oudomxay) participated. The villagers discussed best practices in macadamia planting, which is still a new crop in Lao PDR, as well as other more general issues on tree-planting, restoration and NTFPs. Overall, the villagers gained valuable insights from each other. An international study tour, originally proposed for 2020, was postponed due to the pandemic.



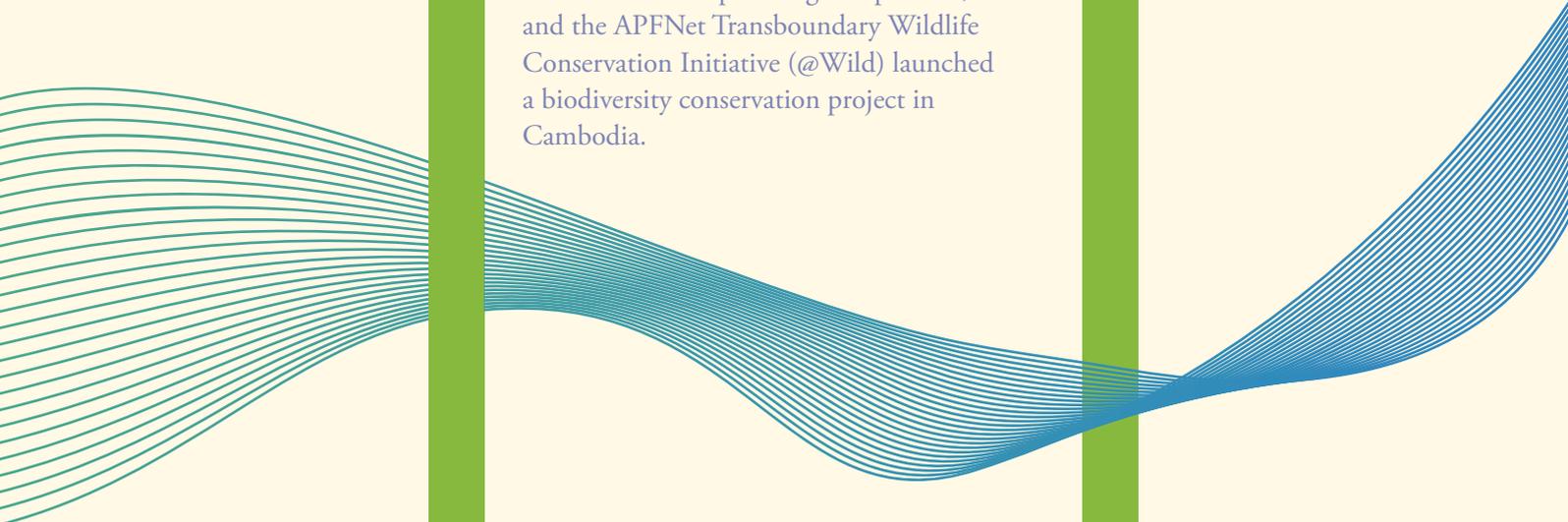
Participants in a domestic study tour inspect forest in Luang Namtha, Lao PDR. Photo: Tongngern Phongsavath



# Building regional synergies



APFNet is uniquely placed to facilitate the development of a common understanding and commitment on forests and sustainable development in the Asia-Pacific and GCA regions and thereby to influence other global forest-related processes, including through policy dialogues and networks. In 2020, APFNet's regional-level Forestry Planning Network published an important report on forest restoration planning and practice, and the APFNet Transboundary Wildlife Conservation Initiative (@Wild) launched a biodiversity conservation project in Cambodia.



# Forest restoration planning and practice

The forest sector in the Asia-Pacific region has made remarkable progress in recent decades in efforts to avert forest loss. Nevertheless, it still faces major challenges in reducing deforestation and forest degradation, the overexploitation of forest resources, and socioeconomic inequalities.

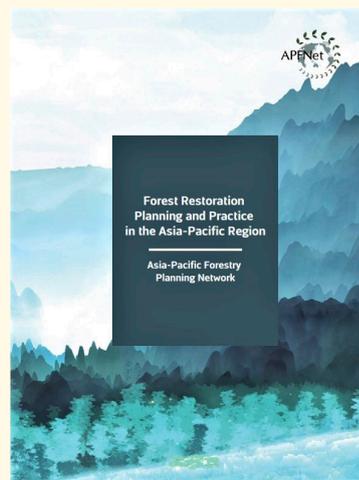
Since 2019, APFNet's Forestry Planning Network (FPN) (see box right) has been searching for best practices in forest restoration planning in the Asia-Pacific region with a view to exploring how forest restoration plans are developed and implemented at the economy level; the aim is to improve understanding of the supportive environment and to explore opportunities for forestry planning in response to global forest restoration goals. In 2020, the FPN published a report of its findings, with special attention to the situations in Bangladesh, Cambodia, China, Fiji, Indonesia, Nepal and Sri Lanka.

The report discusses important changes in development priorities and challenges faced by the forest sector in the last 30 years. It finds that deforestation and forest degradation in the Asia-Pacific region result mainly from ongoing human pressures, such as those arising from agricultural expansion, the development of infrastructure, conflicts, and political change.

Largely to address these and other drivers, forest planning in Asia-Pacific economies has been shifting from a focus on timber production towards a broader perspective beyond the level of forest stands. Forest restoration is a primary component of strategic

## Forestry Planning Network

The FPN is a network of forest-sector planners and policymakers in the Asia-Pacific region. It was launched by APFNet with the aim of strengthening strategic planning, sharing information, discussing new developments that could affect forests and forestry, learning from each other's experiences and increasing institutional capacity for strategic planning.



forest plans in various Asia-Pacific economies, which give full attention to restoring the ecological functions of forests and enhancing their economic contributions. There is no one-size-fits-all approach to restoring forests, and each context requires a tailored solution. Therefore, the report presents six case studies on forest restoration planning and practices in economies across the region; it will serve as a reference for future forest restoration efforts both in and beyond the region.

# Connecting forests, wildlife and people – @Wild begins work in Cambodia

Under APFNet’s @Wild initiative (see box below), camera traps have been set up deep in the semi-evergreen monsoon forest of the Choam Ksant forest landscape, Cambodia, as part of efforts to monitor protected wild fauna species. The 376,941-ha forest landscape, which increasingly is being challenged by degradation and fragmentation, is home to more than 300 species of mammals, birds, amphibians and reptiles. It also supports more than 6,000 rural families, the livelihoods of whom rely in large part on the natural resources provided by the forest. Understanding the area’s unique wildlife is a first step in finding a balance between local livelihood improvement, habitat protection and wildlife conservation.

@Wild launched a project in early 2020 to assess the status of key wildlife species and investigate the impacts of human activities on the forest. The expected outputs of this are a baseline review of the Choam Ksant forest landscape and its wildlife; an

## APFNet Transboundary Wildlife Conservation Initiative – @Wild

APFNet initiated @Wild in 2018, inviting wildlife protection departments in economies in the Greater Mekong Subregion to strengthen efforts on wildlife conservation and management by forming a subregional platform for information exchange, policy discussions and cross-border cooperation.

investigation of human activities and their impacts on the local ecology and forest landscape; and a study on the feasibility of a full APFNet project.

The project made good progress in 2020. Its main activities were completed, including the development of a manual for surveying wild fauna; technical training; and assessments of the status of forest degradation and socioeconomic conditions among local communities. The remaining activities are on track for completion in early 2021.



Forest Administration officers receive field training on setting camera traps for wildlife as part of the @Wild initiative. Photo: Forestry Administration of Cambodia



Villagers in the Choam Ksant forest landscape receive instructions on how to fill out questionnaires for a socioeconomic survey. Photo: Forestry Administration of Cambodia



# Institutional matters

## New Board members appointed

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Two new Board members were appointed in March 2020. **Margaret M. Calderon** is Professor of Forest Resources Management and Director of the Institute of Renewable Natural Resources at the College of Forestry and Natural Resources, University of the Philippines Los Baños. She has 35 years of professional forestry experience in academia, performing the threefold function of teaching, research and public service. She has been involved in projects in line with APFNet priorities aimed at promoting SFM and enhancing the contributions of forests to human wellbeing.

**Novia Widyaningtyas** is Executive Secretary of the Directorate General of Climate Change in the Ministry of Environment and Forestry, Indonesia. She has been working in this ministry (formerly the Ministry of Forestry) since 1995, and she has worked in various areas of the forest sector. She has been involved in training on forestry and the environment, particularly for government officials and technicians, as well as in capacity building, including the management of scholarships and forestry vocational education.

# Special meetings of the APFNet Board and Council held in 2020

The sixth meetings of the APFNet Board and Council did not take place in 2020 due to the Covid-19 pandemic, and special meetings were convened online in December 2020 to keep the Board and Council informed of APFNet's work.

Eleven Board members attended the Special Meeting of the Board, including the two new members appointed in February 2020. Representatives of 16 APFNet member economies and organizations attended the Special Meeting of the Council.

Among other things:

- One-year extensions of the terms of the current Board of Directors were approved.
- The Board and Council affirmed the value of the work carried out by the Ten-year Review team.
- Board members made suggestions for strengthening the development of the third strategic plan (2021–2025). The Secretariat and expert team will integrate these suggestions into a draft strategic plan for the consideration of the Board in March or April 2021.
- An application from Chile to join APFNet will be considered for approval at the next Council meeting.

# Development of the third APFNet Strategic Plan, 2021–2025

As authorized by the Board, a three-person team of consultants was invited to develop APFNet's third strategic plan spanning 2021–2025. The strategic plan, which is to be formulated based on the findings of the Ten-year Review and the results of the APFNet Strategic Plan 2016–2020, will identify APFNet's key priorities for the next five years.

Initiated in July 2020, the consultation process to develop the third strategic plan is well on track, with the full support of the Board and Council. Among other things, the

process has involved extensive consultation with stakeholders through a questionnaire and virtual meetings and workshops. Data have been analysed and a framework developed for the strategic plan. This framework was reviewed and approved at the Special Meeting of the Board in December 2020.

The final draft of the third strategic plan was expected to be completed in March 2021 based on the approved framework and comments received from the Board.

# Monitoring and evaluation

APFNet's internal and external monitoring and evaluation system was further enhanced in 2020 and is now reflected in the organization's operation.

The first comprehensive impact evaluation of APFNet in the form of the APFNet Ten-year Review was completed in February 2020. This systematic review of APFNet's activities and its performance over the decade from 2010 to 2020 found that the organization's influence is growing in its efforts to promote forest restoration and SFM in the Asia-Pacific region. The report made recommendations to further enhance institutional development and synergies among APFNet's four pillars. It will serve as an essential reference document for discussions on APFNet's future development and also help improve the efficiency and effectiveness of the organization's operations.

An ex-post evaluation of the ASP was launched in July 2020 to examine the effectiveness,

efficiency and sustainability of the programme over the last decade, derive lessons learned, and provide recommendations to improve the programme in its the next stage. The review, led by an independent evaluator, has been conducted in a participatory way. A desk review, a questionnaire survey, online interviews and consultation meetings were conducted to seek feedback from stakeholders. The report will be completed in 2021.

The internally conducted Implementation Review of the APFNet Second Strategic Plan (2016–2020) reviewed and summarized the accomplishments and outputs of various targets for the period 2016–2020; it derived lessons learned from the implementation of the plan to help guide the development of the third strategic plan to be implemented in 2021–2025.

In 2020, APFNet further optimized the process for evaluating its demonstration projects and assessed four such projects. These evaluations provided evidence-based findings that will be used to improve the management and implementation of future projects.

# Assessment of the outcome of the APEC 2020 Forest Cover Goal

The APEC 2020 Forest Cover Goal, proposed at the APEC Economic Leaders' Meeting in 2007, was to increase the area of forests in the APEC region by 20 million ha by 2020. This goal was stated in the 2007 Sydney Declaration on Climate Change, Energy Security and Clean Development and its Action Plan.

Contributing to the achievement of the Forest Cover Goal is one of the objectives of APFNet, and the organization has actively been engaged in assessing and reporting on it. APFNet undertook the mid-term assessment in 2015 in collaboration with FAO; this showed that the forest area increased by 15.4 million ha in the APEC region between 2007 and 2015, which was about 77 percent of the 20-million-ha target.

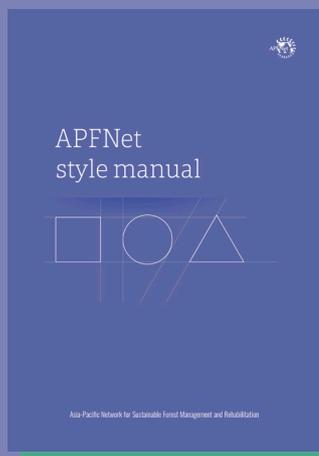
China proposed a self-funded project to undertake a completion assessment at the end of 2019, and this proposal was co-sponsored by Australia, New Zealand and Papua New Guinea. The project was adopted at the APEC Senior Officials' Meeting Steering Committee on Economic and Technical Cooperation in 2019 and is now being implemented by APFNet in collaboration with FAO.

The project is reviewing and documenting the activities undertaken in the region to support the Forest Cover Goal, and it will report the findings of an expert panel based on information provided by participating economies. The project will prepare a synthesized report as an outcome document.

A rough estimate based on FAO's Global Forest Resources Assessment indicates that the area of forest has increased in the region by more than 20 million ha compared with 2007 – so the goal has been met. A report will be published documenting the efforts made by participating APEC economies to increase forest cover.

## Communication

APFNet developed a style manual in 2020 to provide general guidance on, and ensure clarity and consistency in, APFNet's English-language writing. The style manual is now being used by APFNet staff, editors and writers and applied in APFNet print publications, the website and other APFNet materials.



# Partners

APFNet thanks the following partners who support APFNet's work through cash and in-kind contributions:

- Beijing Forestry University (China)
- Chinese Society of Forestry
- Department of Forestry, Ministry of Agriculture and Forestry (Lao PDR)
- Experimental Center of Tropical Forestry (China)
- FAO
- Forestry Administration of Cambodia
- Forestry Bureau of Pu'er (China)
- Forestry Department of Anhui Province, through the Qinyang Forestry Bureau (China)
- Forestry Department of Zhejiang Province, through the Lin'an Forestry Bureau (China)
- Forestry divisions in the governments of Fiji, Niue and Tonga
- Forest Inventory and Planning Institute (Viet Nam)
- Forest Research and Development Center, Forestry and Environment Research, Development and Innovation Agency, Ministry of Environment and Forestry (Indonesia)
- Forest Research Institute (Myanmar)
- Inner Mongolia Academy of Forestry Sciences (China)
- Institute of Forest and Wildlife Research and Development (Cambodia)
- Ministry of Finance of the People's Republic of China
- Nanjing Forestry University (China)
- National Forestry and Grassland Administration (China)
- Northwest Agriculture and Forestry University (China)
- Research Institute of Forestry, Chinese Academy of Forestry
- Sanyijing Forest Farm (China)
- Secretariat of the Pacific Community
- University of British Columbia (Canada)
- University of Melbourne (Australia)
- University of Queensland (Australia)
- Wanzhangshan Forest Farm (China)
- Watershed Management Division, Forest Department (Myanmar)
- Watershed Management Technology Center (Indonesia)
- Yunnan Academy of Forestry and Grassland (China)

# Financial information

ITEMS	CNY		USD <sup>5</sup>	
	2020	2019	2020	2019
<b>1. Income</b>				
Contributions	(19,198,080.00)	(20,683,500.00)	(2,700,000.00)	(3,000,000.00)
Grants	(42,131,900.00)	(27,864,000.00)	(5,925,390.98)	(4,041,482.34)
Fund donation	-	-	-	-
Other income (interest)	(63,046.40)	(83,429.21)	(8,866.79)	(12,100.84)
<b>Total income</b>	<b><u>(61,393,026.40)</u></b>	<b><u>(48,630,929.21)</u></b>	<b><u>(8,634,257.77)</u></b>	<b><u>(7,053,583.18)</u></b>
<b>2. Expenses</b>				
Programmes	58,886,395.03	36,713,476.37	8,281,727.47	5,325,038.27
Operations	15,571,388.62	15,318,303.17	2,189,945.52	2,221,814.95
Financing expenses	34,138.42	(8,260.33)	(55,902.63)	184,593.87
<b>Total expenses</b>	<b><u>74,491,922.07</u></b>	<b><u>52,023,519.21</u></b>	<b><u>10,415,770.36</u></b>	<b><u>7,731,447.09</u></b>
<b>Surplus (deficit) for the year</b>	<b>13,098,895.67</b>	<b>3,392,590.00</b>	<b>1,781,512.59</b>	<b>677,863.91</b>

<sup>5</sup> The average annual exchange rate for USD 1 was CNY 6.9762 for 2019 and CNY 6.5249 for 2020.

Expenses by subregion (USD)	2020	2019
Greater Central Asia	1,516,810.90	1,524,392.01
Greater Mekong Subregion (GMS)	5,247,690.38	1,841,036.94
Southeast Asia (except GMS)	526,395.57	439,449.29
South Asia	261,792.42	255,823.22
Pacific Islands	137,300.24	75,497.92
North America	18,552.65	133,713.52
Latin America	10,484.51	0.00
Others	562,700.80	1,055,125.37
<b>Total</b>	<b>8,281,727.47</b>	<b>5,325,038.27</b>

Expenses by programme (USD)	2020	2019
Capacity building	804,973.60	858,316.36
Demonstration projects	6,573,564.72	3,406,322.54
Regional policy dialogues	360,755.33	242,405.05
Communication and information sharing	542,433.82	817,994.32
<b>Total</b>	<b>8,281,727.47</b>	<b>5,325,038.27</b>

#### Expenses by subregion in 2020



#### Expenses by programme in 2020



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