Consolidated Report on Regional Workshop on Strategic Forestry Cooperation in Central Asia

Beijing and Chifeng, China, 23-26 September 2014

Sponsored by:
Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet)
and
Department of International Cooperation of State Forestry Administration (SFA)

Cover photograph: Participants of the APFNet's Regional Workshop on Strategic Forestry Cooperation in Central Asia, Beijing, China, 23–24 September 2014.

PREPARATION OF THIS DOCUMENT

This document contains the proceedings of the APFNet's Regional Workshop on Strategic Forestry Cooperation in Central Asia, Beijing, China, 23–26 September 2014, and the consensus reached on the regional cooperation in Central Asia and Mongolia. The workshop was jointly organized by Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) and Department of International Cooperation of State Forestry Administration of China. The report was prepared by APFNet Secretariat with technical support from Mr. Ekrem Yazici (Deputy Chief of UNECE/FAO Joint Forestry and Timber Section in Geneva) and Mr. Victor Roy Squires (Visiting Senior Professor invited by Gansu Agricultural University, Lanzhou, China), based on the presentation, discussion and comments made during the Conference and the subsequent study tour.

Executive Summary

As a positive response to President Xijinping's proposal on 'Building one belt and one road', Chinese Government is dedicated to deepen cooperation with neighbouring economies at various dimensions.

Greater Central Asia Region in the widest sense includes Kazakhstan, Tajikistan, Uzbekistan, Turkmenistan, Kyrghyzstan, Mongolia, Afghanistan and western China, as a social and economic, cultural and ideological connections among Central and Northern Europe, Central Asia, the Middle East and North Africa, where various plant and animal species mingle here with endemics found nowhere else. This region covers a vast area with abundant natural resources and is confronted with land degradation and desertification due to natural and human factors. Among which, over clearance of land for cropping, overgrazing, over logging and firewood collection, excessive water consumption are the main driving forces.

Under this scenario, Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) and Department of International Cooperation of State Forestry Administration (SFA) of China organized this workshop in order to exchange information and experiences on forest management, vegetation restoration, trans-boundary biodiversity conservation and sand-binding plants utilization and explore the potential regional cooperation opportunities. 43 officials and experts from forestry authorities of Kazakhstan, Tajikistan, Uzbekistan, Turkmenistan, Kyrghyzstan, Mongolia and China, as well as invited speakers from international organization and Non-government Organization (NGOs) in this region attended the workshop.

During the workshop, the participants made overview and discussions on forestry management, land degradation and desertification control, biodiversity conservation, forest fire prevention, challenges and opportunities of forestry development in Greater Central Asia region. It's recognized that a combination of unfavorable topographical, climatic, socio-economic conditions and irrational land use pattern in this region induced a chain of adverse effects, such as land degradation and desertification, decrease in forest cover, forest stock volume and biodiversity, degradation of water

resource and vulnerability to extreme climate. Under this circumstance, regional and international forestry cooperation is in urgent need to restore the function of forest ecosystem and improve the welfare and livelihood of involved economies and local people in this region.

Based on the communication and comments made during the workshop, a strategy for regional cooperation was developed by all participants as a principal output of the workshop. This strategy is composed of two elements, namely, biennial regional Forestry Ministerial Meeting (FMM) in conjunction with regional Workshop on Strategic Forestry Cooperation in Greater Central Asia (WSFC). A Technical Group of Greater Central Asia (TGGCA) will work as a consultancy body under the direction of WSFC. APFNet is responsible for coordination and communication among FMM, WSFC and TGGCA, as well as institutional development of this strategy. This strategy is permanently open to all interested government agencies, research institutions, NGOs , CSOs and other relevant groups. The operational fund for the aforementioned activities is suggested to be provided by APFNet, its partners and member economies.

The priorities identified under this strategy include forestry policy dialogue, assessment of forest resource and the status of desertification, forest land restoration, trans-boundary biodiversity conservation, joint law enforcement and forest fire prevention and control as well as comprehensive development of sand industry. APFNet will initiate cooperation with participatory economies in terms of demonstration projects, scholarship programmes and training workshops in the coming 2015.

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ACKNOWLEDGEMENTS

The Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet Secretariat) and Department of International Cooperation of State Forestry Administration (SFA) would like to thank all the participants for their time and effort. In addition, the organizers gratefully acknowledge the generous hosting and services provided by Forestry Bureau of Chifeng during the study tour.

BACKGROUND TO THE WORKSHOP

Greater Central Asia is a region endowed with rich and diverse natural resources, such as oil, gas, minerals, water, plants, animals as well as land resources. This region is deemed as a connection in terms of society, economy, culture and ideology between East and West, South and North, Europe and Asia.

In this region, forests and grasslands are considered as vital resources, which provide important environmental services such as climate regulation, soil and water protection, and sanitary and hygienic functions. They are also the leading forces in the economic development, supplying its people with forage, food, fuel (combustible), medicinal plants and recreation areas.

Being aware of the value of forests, most economies have enacted forestry code, laws and policies to regulate public ownership, use, and disposal of the forestry fund, to direct the protection, rehabilitation and quality improvement of forests as well as utilization of forest resources. With the support of international organizations, such as World Bank (WB)，UNDP，UNEP and GEF，the Gretaer Central Asia economies have implemented many programmes and made remarkable achievements towards sustainable forest management.

However there are still a host of factors that restrain the forest management in this region, such as free grazing, illegal logging and poaching， forest fire and diseases, confliction of land use tenure, insufficient financial and technical support, as well as outdated forest resource information and forest product manufacturing techniques.

Under this scenario, it’s essential for Greater Central Asia economies to collaborate and cope with common issues of the forest sector and establish a forestry cooperation strategy in this region.

ORGANIZATION OF THE WORKSHOP

The workshop was co-organized by Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) and Department of International Cooperation of State Forestry Administration (SFA) of China.

Objectives

The workshop aims to achieve the following objectives:

i. exchange information and experiences on forest management, vegetation restoration, trans-boundary biodiversity conservation and sand-binding plants utilization ;

ii. identify the main challenges and development trend of forest management, and comment on potential cooperation in terms of critical forest issues; and

III. establish a regional dialogue mechanism in the forest sector amongst Central Asia economies and Mongolia.

Outputs

The major output was a strategy for forestry cooperation in this region, which will be supported by regional Forestry Ministerial Meeting (FMM), regional Workshop on Strategic Forestry Cooperation in Greater Central Asia (WSFC), Technical Group of Greater Central Asia (TGGCA) with the assistance of APFNet Secretariat. Specific capacity building needs were identified as common regional priorities. The meeting formulated a short list of six activities that need to be initiated as soon as possible, as follows:

(1) convention of the first regional Forestry Ministerial Meeting (FMM) and 2nd WSFC;

(2) establishing Technical Group of Greater Central Asia (TGGCA);

(3) development of regional projects, organization of training/workshops and scholarship programme for officers, technicians and young foresters on desertification control, rangeland and degraded forest restoration, forest tenure reform and multifunctional utilization of sand- inhabited bio-resource;

(4) organizing a study tour of 10 people from Greater Central Asia region to China on desertification control, rangeland and degraded forest restoration, and forest tenure reform;
(5) involvement of interested economies and NGOs in APFNet's partners and nomination of APFNet's focal point in each economy; and
(6) development of a website and electronic newsletter.

For synergetic implementation of these activities, APFNet Secretariat will give special attention to potential cooperation with existing international actors in this region, such as FAO, GIZ, IFAD, GEF and CIFOR, to avoid overlaps and ensure technical and financial sustainability of development supports.

Participants and venue

The workshop participants consisted of officials and experts from forestry authorities of Kazakhstan, Tajikistan, Uzbekistan, Turkmenistan, Kyrghyzstan, Mongolia and China, as well as invited speakers from international organizations and Non-government Organizations (NGOs) in this region. The workshop was attended by 43 participants. The workshop was held at the International Bamboo and Ratan Tower.

From left to right, Mr. Su Chunyu, Director General of Department of International Cooperation of State Forestry Administration (SFA) of China, Mr. Wu Xiaosong, Deputy Director General of Rural Economy Department of National Development and Reform Commission (NDRC) of China, Mr. Zhang Jianlong, Vice Administrator of State Forestry Administration of China (SFA), Mr. Batbold Jamsran, State Secretary of the Ministry of Environment and Green Development of Mongolia, Mr. Qu Guilin, Executive Director of Asia Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) at the opening ceremony (Copyright reserved by APFNet.)

Workshop procedures and materials

The preparatory stage of the workshop consisted of a desk research on the Forestry Development and International Cooperation of Central Asia economies and Mongolia and a small scale consultation meeting on forestry cooperation among China and Central Asia economies and Mongolia, to identify the themes of the workshop and the standard format of the presentations. Some presentations were in Russian, some in English, the others in Chinese. Simultaneous translation in Chinese, English and Russian was provided by a panel of interpreters.

The workshop agenda and timetable is presented in Appendix 1 and the list of participants is in Appendix 2.

SUMMARY OF THE PRESENTATIONS & DISCUSSIONS

The workshop consisted of four sessions, which are forestry development strategy and policy system, forest management and vegetation recovery mode, cross-border biodiversity protection and forest fire management, and regional forestry cooperation. The outputs of the four sessions are summarized as follows, which lay the foundation for developing cooperation strategy in this region.

Part One: Overview of forestry development in Greater Central Asia region

Greater Central Asian economies share similar geographic, climatic and socio economic conditions, have large mountainous area and large proportion of population who lives in rural areas depending on utilization of natural resources. Over-consumption of natural resources aggravated deforestation and land degradation to some extent. Therefore combating the problem through land management, including biodiversity conservation, preventing land degradation and desertification is a priority for sustainable development of Greater Central Asian economies.

Forest types and utilization

Kazakhstan, Tajikistan, Uzbekistan, Turkmenistan and Kyrghyzstan in Central Asia region cover a total area of about 4 million km^2 (3,882,000 km^2) with a population of over 67 million people. The forest deficit is averaging at 5% of forest concentration per hectare in this region. Forestry and population information of economies in this region are given in Table 1 below.

Table 1: Forestry and population of economies in this region

Economy	Population	Poverty Rate (%)	Population below 19 (%)	State Forestry Fund (000ha)	Forest area of total country area (%)	Forest area per person (ha)
Kyrgyzstan	5600000	38.0	41.9	3533	5.6	0.20
Tajikistan	7987400	42.0	45.9	1800	3.0	0.06
Uzbekistan	30492800	16.0	36.8	9600	11.0	0.11
Kazakhstan	16400000	3.8	33.3	26100	4.5	0.70
Turkmenistan	6700000	30.0	n.a.	9995	8.8	0.62

Note: Data on forestry and population of Mongolia is not available from the presentation.

Three major forests types in the region are mountainous forest, desert or semi-desert forest, riverbank or tugai forests. About 10 percent of landscape in this region is mountainous. But for Kyrgyzstan and Tajikistan specifically, more than 50% of their territories located in mountains at 3000 meters a.s.l. Desert plains and semi deserts make up nearly 4/5 of Uzbekistan's and Turkmenistan's forest area and 3/5 of Kazakhstan's forest area.

In desert and semi desert areas, forests are consisted of woody shrub and grassy plant communities- so called tugai along the rivers- and saxaul woodlands. Mountainous areas are covered by juniper and spur forests. More than 50% of Kazakhstan forest is made of saxaul woodlands, which by the FAO technically is not recognized as forest, but they play crucial role in soil and sand retention, watersheds protection, and reduction of siltation of waterways and reservoirs.

In terms of forest utilization in the region, forests are designated by law to play mostly or ONLY a protective, rather than productive role. Small amounts of timber come from limited maintenance cutting (not more than 30,000-50,000 cubic meters a year per economy). Kazakhstan is the only economy in this region where productive felling is allowed by the legislation, where forests are also used for grazing, making hays, collection of the NTFP, recreation and tourism.

Forest Policy and Forest Tenure Arrangements

For most of the regional economies, forestry legislation has been updated, for instance, Kazakhstan made latest changes on the New Forest Codes/Laws in 2012, Uzbekistan in 2013, Turkmenistan in 2011 and Tajikistan in 2011. However there is still little substantial change from Soviet era practices, which adopt centralized system, focus on preservation rather than production with inadequate consideration of balancing interests of different stakeholders and engagement of non-state actors into forest management (use, afforestation, etc.). Forest management and forest tenure arrangements in these economies are given in Table 2 below.

Table 2: Forest management and forest tenure arrangements in the regional economies

Economy	Ownership	Allowed Private uses	Tenure arrangements	Forestry Management Agency	Share of Forest Budget in the State Budget (%)
Kyrgyzstan	State	Sanitary felling,	**Leases:** up to 49 years for	Forests	0.19

		Secondary uses(NTFP, tourism, hunting, recreation)	pasture use, seasonal for NTFPs, **Short term special permit:** for felling and other uses, **Community based/Collaborative Forest Management:** up to 5 ha 5 years, second time up to 49 years	managed by a three-tiered vertically integrated system of the **State Agency for Protection of Environment and Forests at the national level, territorial branches, and forestry enterprises on the local level**	
Tajikistan	State	Sanitary felling, Secondary uses(NTFP,tourism,hunting,recreation)	**Leases:** up to 49 years for pasture use, seasonal for NTFPs, **Special felling and forest use permit :** short term, **Joint Forest Management with Community:** few cases	**Forestry Agency under the Government of Tajikistan**	**0.1**
Uzbekistan	State	Sanitary felling, Secondary uses(NTFP,tourism,hunting,recreation)	**Long Term Leases:** up to 10 years, **Short term leases:** up to 3 years	**General Administration of Forestry/Main Forestry Department under**	**n.a.**

				Ministry of Agriculture and Water Resources: 91.7% of forest land, **Tashkent Regional Government (hokimat), State Committee for Environment, and agricultural enterprises together**: 5% of forest land	
Kazakhstan	State, 371ha private	Timber felling, Secondary uses(NTFP,tourism,hunting,recreation)	**Long Term Leases :** 10-49 years for timber, **Short term leases:** 1 year for sanitary felling and secondary use	**Forestry and Hunting Committee under the Ministry of Environment and Water Resources:** 20.1% of State Forestry Fund, **Regional Governments :** 79.2% of State Forestry	**0.4**

				Fund	
Turkmenistan	State	Sanitary felling, Secondary uses(NTFP,tourism,hunting,recreation)	**Long Term Leases**：5-40 years, **Short term leases:** up to 5 years for secondary uses, **Special feeling and forest permit**	**JSC Geok Gushak with forestry enterprises, Ministry of Nature Protection**	**n.a.**

China resolved a series of issues that restrict the development of collective forest through initiating Collective Forest Tenure System Reform (CFTSR), which could be replicated to Greater Central Asia economies to some extent. The principle of CFTSR is to decentralize the use right of forest land to the rural household in order to inspire the household to manage and utilize the forest resource in a sustainable way. The local people increased their income through multifunctional use of forest resources, gained subsidiary and soft loan from the government.

Part Two: Overview of land degradation and desertification in Greater Central Asia

Land degradation

The main symptoms of land degradation in Greater Central Asia are soil erosion, salinization, compaction of soil and soil fertility loss. It is pointed out that rehabilitation of degraded land and restoring ecological function in this region become one of the key tasks for combating desertification. In this regard, the principal constraints include immense area of degraded land of low economic value, climatic conditions (temperature extremes, prolonged drought), lack of suitable personnel, technology, equipment and seeds. Therefore the political will, appropriate technology, infrastructure support and trained people play critical roles in rehabilitation of degraded lands in this region. Taking the mine site rehabilitation for example, mining usually causes adverse impact to the environment, such as destruction of vegetation and disturbance of land (prospecting, seismic survey), causing sand drift and dust, accelerating water erosion, and noxious liquid wastes acid leaching. Physical stabilization of mine dump surfaces is necessary to counter dust and is a means of preventing the dispersal of toxic materials in the landscape. Revegetation is usually conducted after the physical stabilization. Vegetation will eventually colonize the treated surfaces of 'dead' dumps but untreated dump surface resist natural revegetation. Mine spoils (often called tailings dams) are often built with sloping sides that are unstable, they have limited infiltration and are extremely difficult to treat. For economies in Central Asia, mining is often small scale and unregulated. There is no requirement to "clean up" afterwards, illegal coal and gold mining in the rangelands is becoming more and more severe. Mine sites and the access tracks often lead to accelerated land degradation.

Irrational land use patterns together with topographical, climatic and socio-economic conditions are the main factors contributing to land degradation in Greater Central Asia economies. Land uses in the economies of the region are given in Table 3 below.

Table 3: Land uses in the regional economies (FAO, Forestry Outlook 2010)

Economy	Land area (000 ha)	Arable land		Forest and other wooded land		Permanent pasture	
		Area (000 ha)	% of total land area	Area (000 ha)	% of total land area	Area (000 ha)	% of total land area

Mongolia	156,700	1,570	1.0	10,898	6.0	115,00	75.0
Kyrgyzstan	19 180	1 345	7.0	1 182	6.2	9 365	48.8
Tajikistan	14 060	930	6.6	552	3.9	3 198	22.8
Uzbekistan	41 424	4 484	10.8	4 199	10.1	22 219	53.6
Kazakhstan	269,970	21,535	8.0	18,959	7.0	185,098	68.6
Turkmenistan	46,993	1,850	3.9	4,127	8.8	30,700	65.3

As shown in the table, main land use pattern in these economies is grassland and permanent pastures with limited forest areas. Sustainable management of the forest resources depends primarily on the management of these lands and the integration of these land uses with forestry activities. The prevailing environmental conditions, in particular extreme aridity and water scarcity are unfavorable to tree growth. Accordingly, wood production is very low and demand for wood products is mainly met by imports. Although there has been a rapid substitution of fuelwood for fossil fuels, high proportion of rural population still lives on scarce forest resources for fuelwood and construction. Uncontrolled grazing and illicit cutting in forest areas are resulting in severe degradation of the forest. Unsustainable exploitation of forest resources by rural population leads to deforestation, decline of wildlife resources, soil degradation and erosion. During recent years, some economies, like Kyrgyzstan, are supporting establishment of local level resource user organizations (water users, pasture users and forest users etc).

Uzbekistan and Turkmenistan are two economies in this region which have made remarkable progress in restoration of degraded land. For instance, Uzbekistan has achieved a gradual increase in the forest area and forest coverage during the period of 2005-2012. On one hand, the economy paid great emphasis on the establishment of nursery of psammophyte, softwood, hardwood and fruit tree, as well as restoration of desert and river bed. Forestry authorities planted more than 300,000 ha of protection forest on dry lake bed of Aral Sea by seeding, planting and promoting forest natural regeneration with psammophytes.

Desertification

Mongolia is severely affected by desertification. Mongolia has 147.1 million hectares of land suitable for pastures, of which 5% are high mountains, 6.4% mountain forest, 64.5% steppe, 19.3% desert, 4.9% near water pastureland. For steppe pastures land, 32.3% are arid steppe, 28.6% are desert steppe pastures. For desert steppe pastures, 45.1% are real desert pastures. According to the definition of UNCCD, almost 90% of Mongolia's territory has high risks of land degradation and desertification. The main causes of desertification in Mongolia include the continental climate that prevails in the Mongolian Plateau, anthropogenic disturbances, such as overgrazing, illegal logging, loss of top soil (mining), drying up of

surface waters and harmful insects and rodents. It's pointed out that ecological environment in Mongolia degraded severely with more exploration licenses for mining, although mining brings socio-economic benefit. The government is asking miners for sustainable mining development. A number of legal and regulatory documents were enacted in Mongolia to combat desertification, such as National Action Plan to Combat Desertification (NAP CD1, 2, 3). Different regulations regarding pastureland management exist in the "Land Law", "Nature Conservation Law" and "Law on Natural Plant" and a new "Pasture Law" developed by Ministry of Environment and Green Development . A series of actions were initiated to reduce impact of drought, land degradation and desertification in prone areas, such as establishing and restoring local tree breeding nurseries and creation of protective forest strips surrounding settlements, e.g. the "Green Belt" program.

China also made progress in desertification prevention and rehabilitation. Law on Prevention and Control of Desertification was enacted in year 2001 to define the Land users rights and obligations and roles of governments in this regard. The policy framework of Desertification Prevention and Rehabilitation is composed of four elements, including public payment for ecological improvement, restriction of unwise land use, incentives for sustainable use and strengthening government responsibility. National master plan for different time periods were approved and effectively implemented (1991-2000, 2005-2010, 2011-2020). Three-level national project system is established to implement the National Master Plan, including key national projects (forest shelterbelt, dust and sand storm mitigation, conversion degraded farm land to forest, stopping grazing for grass regeneration and enclosure reserves), regional projects (South Junggar Basin, Shiyang river basin) and pilot and demonstration projects at provincial, city and county level. Various countermeasures were taken in these projects, such as conservation, prevention, rehabilitation, restoration and multifunction utilization, and definite verifiable indicators were established to assess the performance of the project. The basic technical principle is summarized as combination of man-made treatment and natural rehabilitation, combination of biological control measure and mechanical control measure, combination of avoidance and restoration measures. In Ning Xia, Inner Mongolia and other parts of China, integration of techniques were demonstrated and gained positive feedback, like protection of transportation system, oases protection system, integrated watershed management, treated sewage water for afforestation .

Kazakhstan, Tajikistan, Uzbekistan, Turkmenistan, Kyrghyzstan and Mongolia are signatories of United Nations Convention to Combat Desertification in Nations with Serious Drought and/or Desertification, especially Africa(UNCCD).

China has great potential to cooperate with Greater Central Asia economies in field of desertification combating. Up to now, Memorandum of Understanding (MoU) between SFA of China and Ministry of Environment Cooperation of Turkmenistan on Forestry and Desertification Combating was signed on 3rd September 2013, related MoUs with Kyrgyzstan and Uzbekistan are in preparation. MoU between SFA of China and Green Development Ministry of Mongolia was signed on 19th June, 2008. China, Korea and Mongolia signed MoU on saxaul cultivation and management in 2013. Additionally, National Bureau to Combat Desertification (Secretariat of China National Committee for implementation of the UNCCD), SFA of China have organized several training workshops for Mongolia on Dust and Sand Storm Mitigation in 2011 and 2013.

Part Three: Overview of biodiversity conservation and forest fire prevention in Greater Central Asia

Biodiversity conservation

Greater Central Asia is a hotspot of plant and animal species diversity and endemism, which is important for the conservation of biodiversity on a global scale. The Central Asia economies are located at a biological crossroads. Species from Central and Northern Europe, Central Asia, the Middle East and North Africa mingle here with endemism that can be found nowhere else. The richness of Greater Central Asia's biodiversity shows up at the genetic, species and ecosystem levels. There are more than 3000 wild plants (including about 9% unique species of Uzbekistan), more than 100 kinds of small mammals, more than 400 kinds of birds, and about 60 kinds of reptiles in Uzbekistan.

Most of the species are vulnerable to anthropogenic factors. Poaching, overfishing, illegal logging and overgrazing are causing irreversible damage to biodiversity in the Greater Central Asia hotspot. Threats also stem from economic and social problems, the lack of environmental awareness, poor management and enforcement capabilities and lack of trans-boundary cooperation. Additionally, conversion of land use, such as conversion from mixed-crop agriculture to mono-crop agriculture, reduced biodiversity. The

landscape has lost ecological niches. Government authorities set quotas for game species without carrying out appropriate research on population dynamics. Thus, quotas are often too high to ensure that viable populations of game animals (mostly ungulates like argali and Siberian ibex) are maintained. In the recent ten years, poaching alone caused a drop in numbers of argali and Siberian ibex by 50%. It's also pointed out that Greater Central Asia is a globally significant center of cultural diversity, where a number of ethnic groups, languages and religions intermingle over a relatively small area. Close cooperation across borders will be required for conservation of unique and threatened ecosystems, while helping to foster peace and understanding in an ethnically diverse region.

Yunnan Province is located in southwest of China and borders Laos, Myanmar and Vietnam. There are more than 17000 kinds of higher plants, 1360 kinds of terrestrial vertebrate wildlife. Rare species accounts for 67.5% of its species. the varieties for bamboo, herb medicine, flowers and plants, perfume and wild fungus rank the top in China. Cooperating with Laos, a joint protected area has been established in Xishuangbanna of China and North Laos to protect the typical and key wildlife species, and ensure the balance of the ecosystem in Xishuangbanna-Namha trans-boundary region. During the implementation of the project, cameral trap for biodiversity investigation, biodiversity image rapid assessment, biodiversity conservation joint patrolling and elephant trans-migration survey and related trainings were conducted. It's pointed out that lack of fund, equipment, transportation and skilled staff, as well as difference in aspect of national institutional, legislative frame work, policy and regulation were the main strains for trans-boundary biodiversity conservation.

Kazakhstan, Tajikistan, Uzbekistan, Turkmenistan, Kyrghyzstan and Mongolia have signed Convention on Biological Diversity (CBD) and Ramsar Convention On Wetlands. Kazakhstan, Uzbekistan, Kyrghyzstan and Mongolia have signed Convention on International Trade in Endangered Species of Wild Fauna and Flora(CITES) . Tajikistan is signatory of United Nations Framework Convention on Climate Change (UNFCCC). However it should be noted that biodiversity conservation activities conducted by the parties of the CBD and other related conventions (Ramsar etc) can work better if there is cross border cooperation in this regard.

Forest fire prevention

Forest fire can cause irreversible damage to the fragile ecological system in Greater Central Asia, for example, forest fires usually destroy valuable timber resources, cause the spread of harmful insects and parasitic fungi, aggravate soil infertility, kill many species of animals, and lead to fragmented habitat. Harmful chemicals used for putting out forest fires could cause irreversible genetic mutations of animals and destroy the ozone layer. In general, forest fires are grouped into three categories: brush fire, crown fire, peat fire. Some measures were taken in forest areas to prevent and control forest fires, including building and maintenance of fire-fighting roads, laying and maintenance of mineral belt, and constructing fire lane. Back burning is a useful technique which can starve forest fires of fuel and help to control the spread. Massive wild fires are extinguished in four steps: 1) surveillance that include locating the burning area, type and intensity at the perimeter, 2) containing the wildfire with control breaks and ditches in its probable path, 3) extinguishing the fire and suppressing the ignition sources, and 4) fire patrol of affected area along a fire's perimeter.

Forest fires put a constant threat in wild land forests for Greater Central Asia economies. For example, there are 388 forest fires broken out in the year 2009, 97 forest fires in 2011, and 361 forest fires in 2013 in Uzbekistan. There is an increased fire occurrence and affected forest and grassland ecosystem of Mongolia in mid 1990s. 80-90% of fires were caused by human activities. Fire damaged forests resource accounted for 8.1% of territory. Advanced satellite monitoring technology was engaged for fire detection and mapping. Kazakhstan exerted great effort and made achievements in preventing and extinguishing forest fires, which result significantly decreased fire occurrence from 2007-2013.

Since 1987, China put great emphasis on technology and equipment upgrading on prevention and controlling of forest fires. Remote monitoring, satellite communications and GIS were adopted, and large helicopters, fire fighting trucks, special pumps and communications command vehicle were widely used. Border forest fire barrier belts of more than 3900 km were constructed in Inner Mongolia, Jilin, Heilongjiang, Yunnan, Guangxi and Xijiang, which accounts for 57% of the length of forest borders. Mongolia fires, Russian fires and Kazakhstan fires that escape into China in 2012 and 2014 respectively, were successfully extinguished with joint effort. Fire that spreads from another economy need better

cross-border cooperation. Up to date, China has signed bilateral agreement and MoU on collaborative forest fire prevention with Russia in 1995 and Mongolia in 1999.

Development of sand industry

Development of sand industry is a new approach to curb ecological degradation and increase local income. The sand industry development in China has its unique characteristics. Development models of 'enterprise + base + farm household' and 'market + cooperatives + farm household' were applied. The best practices include efficient use of water resource in agricultural irrigation, building tight connection among market, cooperatives and farm household, keeping well balance between ecological management and exploition of forest resource, development of substitute energy. A case study of Wuwei, Gansu Province further demonstrated the best practices of sand industry development, which is replicable to other areas of China and Greater Central Asia economies. It's emphasized that seabuckthorn is an optimal species with good economic, ecological and social functions to control soil erosion and combat desertification of land. Seabuckthorn resources distribute in 20 countries globally and are abundant in China, Russia and India. The global revenue of seabuckthorn is estimated at 2 billion Chinese Yuan (CNY) per year, of which China accounts for 60%. Germany, Russia and Finland are pioneering in the planting and processing techniques of seabuckthorn. Each Greater Central Asia economy has rich seabuckthorn resources, but is in primary and small development stage. Seabuckthorn resources distribution in Greater Central Asia can be found in Table 4. Uzbekistan, Tajikistan, Kyrgyzstan and Kazakhstan have initiated some seabuckthorn projects before 1992.

Table 4: Seabuckthorn resources in 4 Greater Central Asia economies

Economy	Area of Natural forest(ha)	Area of dense forest(ha)	Area of artificial plantation (ha)	Total areas of production(ha)	Possible yield(ton)
Kyrgyzstan	4990	1880	20	1900	300
Tajikistan	2860	1240	600	1840	300
Uzbekistan	1230	470	40	510	200
Kazakhstan	10270	2640	--	2640	500

Total	19350	6230	660	6890	1300

Part Four: Challenges of forestry development in Greater Central Asia

• Weak forest governance

-Few economies in the region have a comprehensive forest policy framework, which shall include a policy statement with a strategic vision of priorities, national forest programme and action plan for policy implementation, supported by a corresponding legal and normative basis;
-Institutional capacities and human resources are not always sufficient for effective policy implementation and achievement of objective of sustainable forest management ;
-A comprehensive set of financial mechanisms for policy implementation /sector development/ sustainable forest management are not in place;
-Processes of democratization/decentralization and empowerment of various stakeholders are underway;
-There is a need to update national policies and strategies to international and global initiatives and agreements.

• Over consumption of fuel wood and overgrazing

-Alternative sources for energy and compromised practices of land/resource use are still to be developed;
-Schemes for alternative sources of income and valorization of non-wood forest products and services still need to be developed and used for the improvement of the local livelihoods;
-Lack of national capacities for the restoration of degraded forest lands, including trained staff, forest nurseries and nursery technics, land preparation for plantation etc.

• Lack of data/information on forest and tree resources and forest monitoring

There is a need to:
-Improve data/information basis and adequate institutional capacities for monitoring and assessment of forest resources including forest inventory
-Foster communication as well as data and information exchange
-Support sound policy development/decision making process

-Improve forestry sector baseline for SFM projects and REDD + readiness at national and regional levels,

• Insufficient security of land-tenure and forest ownership

-All forests and forest lands in the region are owned by the state. Securing land ownership, especially development of long term leasing rights on state forest funds is one of the main challenges of community based forest management in the region.

-Focus on lease arrangements only between leskhozes and private entities, with little or no involvement of local communities;

-Lease and permit arrangements are largely around utilization of resources without enforced requirements on maintenance of forest resources;

-No use of non-state actors to develop forests for production;

-No formal contracting arrangements.

• Lack of cross-sector approach and cross-border cooperation for forest/land management, such as agroforestry, watershed management

-Lack of cross-sectoral and cross border cooperation for forest biodiversity conservation;

-There is a need to support the development of landscape based, multi focal area forest management and landscape restoration projects;

-Lack of networking for forest fire prevention and monitoring, there is a need for integrated fire management and cross border cooperation.

• Climate change impacts on forests and land resources

-There is a need to integrate climate change aspects into the national the forest programs at national levels with a wider land use context consideration, which can help to ensure that climate change objectives are balanced with other forestry sector objectives and that trade-offs are weighed and synergies captured.

Summary of study tour to Chifeng, Inner Mongolia of China

After the workshop, all the participants from Central Asia and Mongolia made a study tour to Chifeng of Inner Mongolia of China on forest management, plantation restoration, desertification control and multifunction use of forest and secondary forest resource in the desert and semi-desert area. The highlights of the study tour are summarized as follows,

• Water and soil conservation and ecological construction has made remarkable progress in Chifeng

Chifeng is suffering severe desertification, especially the two largest sandy lands, Korqin Sandy Land and Ofindaq Sandy Land, which covers 1.95 million ha and 0.71 million ha, accounting for 32% of the total land area of Chifeng. Since the 1970s, local people took an active part in the implementation of 3-North Shelterbelts Program, Desertification Control Program for Areas in the Vicinities of Beijing and Tianjin, Grain for Green Project, and Sino-German Afforestation Project. It's encouraged to develop base of fodder shrub, woody oil-yield trees forest, timber forest, and fruit economic forest. As a consequence, local ecosystem and economy are improved. There are 3 banners granted as the national ecological demonstration zones. Among which, Aohan Banner is awarded "the top 500 of the global" by UNEP.

• Desertification is efficiently controlled through construction of shelter forest and comprehensive rehabilitation in Wengniute Banner and Aohan Banner of Chifeng

Xiaohuashan shelter forest program started in 2003 with the assistance of Sino-German Cooperation Project in Ongniud Banner, where most of the area is dominated by moving and semi-moving sandy land previous to the implementation of the program. The program adopted the approaches of belt-squares of 300X300m with mixture of trees (poplar) and shrub (big caragana), and drought-resistant afforestion technology. The local farmers intercrop some forage, herbs within the squares. After the implementation of the program, the survival rate of the forest is over 95%. The income from harvest of forage, shrub cuttings and seeds exceeds 400,000 CNY per year. A comparison before and after the program is shown in figure 1 and figure 2.

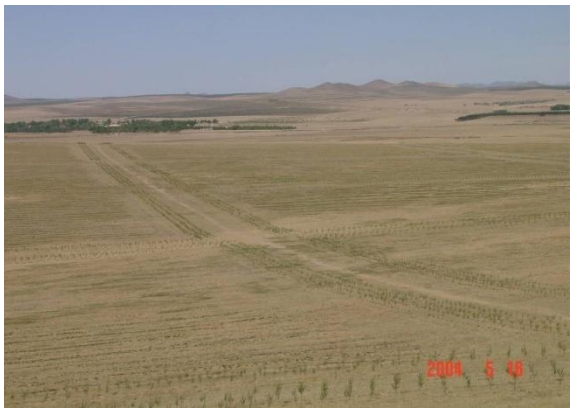

Figure 1 before the program[1]

Figure 2 after the program[2]

Note 1, 2: The copyright of the photographs are reserved by Forestry Bereau of Chifeng of China.

In the past 40 years, Aohan Banner planted trees and grass to improve the ecological environment and living conditions. The afforested area reached 252000 ha at an increase rate of 10666 ha annually. The area of moving sandy land declined sharply to 6000 ha, the area of semi-fixed sandy land declined to 26666 ha, an area of fixed sandy land reached 140000 ha. At present, the forested area in the banner is 380000 ha with a forest coverage of 43.76%, which is 35.6 times of the forested area in the 1950's. With the improvement of ecological environment, forestry industry has gain great impetus, timber processing, fruit processing, grass business, willow branch weaving, shrub fodder processing have flourished, which greatly increased the local income.

- ***Vegetation restoration has made brilliant progress in Yuanbaoshan District of Chifeng***

In the past decades, mining areas in Pingzhuang Town in Yuanbaoshan District is dominated by subsidence area, dried rivers and degraded vegetation due to coal mining and lack of efficient management. Since 2010 vegetation restoration has been carried out, mix-planted trees and shrub, applied advanced forestry technology, such as root control technique and liquid film technique. By 2014, 486 ha vegetation were restored with an investment of over 53.00 million CNY. A comparison before and after the program is shown in figure 3 and figure 4.

Figure 3 before the restoration[3]

Figure 4 after the restoration[4]

Note 3,4: The copyright of the photographs are reserved by Department of Forestry of Chifeng of China.

• Ecological tourism provides strong economic incentives for local communities to develop secondary forest resource in Yuanbaoshang District of Chifeng

Land in Jinxiushan Mountain in Yuanbaoshang District was severely degraded due to flood in the rainy season. Since 1992, the village started to convert the barren mountains into level terrace, planted trees and economic forest, such as grape trees, cherry trees, dragon fruit trees, peach trees, mulberry trees, pear trees in the solar greenhouse, and built the water reservoir tank and water pipe up the mountain. Now the mountain has developed into an ecological zone with an annual income of over 15.00 million CNY.

All the participants from Central Asia economies and Mongolia were impressed by the Chinese practices on desertification control, vegetation restoration and comprehensive utilization of forest resources in Chifeng, which are informative to forest management in a sustainable way in their economies.

STRATEGIC FRAMEWORK FOR REGIONAL COOPERATION

Rationale

The Central Asia economies and Mongolia are at different stages of economic development and forestry advancement, and possess varying levels and types of technical expertise, experience and assets. Their forestry sectors have common as well as unique problems even though some of them have already experienced and devised resolutions for some of those problems. Policy dialogue, pilot demonstration,

capacity building and information sharing would be an efficient and economical means of solving common issues and enhancing the sharing of experiences and transfer of technology. The Strategy was informed essentially by (a) the presentations on forestry development delivered by the participating economies; and (b) the overviews of regional programmes and activities of the regional organizations and institutions in forestry with operations in Central Asia region.

Goals of regional cooperation strategy in Greater Central Asia

a. Assurance of security of regional forest asset through increased and sustainable productivity and restoration of its ecological function;
b. Improvement of rural livelihoods through diversification and generation of more employment opportunities in forest sector; and
c. Enhancement of capacity to adapt to extreme climate.

The framework of regional cooperation strategy in Greater Central Asia

The operational framework of regional cooperation strategy in Greater Central Asia is suggested to be composed of elements as follows,

(1) regional forestry ministerial meeting (FMM), which is organized every two years with the assistance of Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet), to exchange views on major issues of forestry development of individual economy, regional forestry cooperation and essential international forestry issues;
(2) regional workshop on Strategic Forestry Cooperation in Central Asia (WSFC), which is organized in conjunction with FMM. The purpose of the workshop is to implement the decisions made by the regional forestry ministerial meeting with the support of Technical Group of Central Asia (TGCA);
(3) Technical Group of Central Asia (TGCA), which is responsible for designing project activities regarding policy dialogue, pilot demonstration, capacity building and information sharing, developing the Overall Work Plan and budget of these projects, and breaking down them at operational level under the direction of WSFC. Another task for TGCA is to keep APFNet Secretariat updated with the latest progress in terms of forestry policy, long-term planning, and the implementation of the legally-bond international agreements and protocols. APFNet Secretariat will circulate the

aforementioned information among the FMM and WSFC; and

(4) APFNet Secretariat which is responsible for daily communication with TGCA, and logistics issues for FMM and WSFC. It's suggested that forestry agencies of Central Asia Economies and Mongolia become APFNet's partners or membership economies and officially nominate Focal Points to keep communication with APFNet on a regular basis. The operational fund for the aforementioned activities is suggested to be provided by APFNet and its partners and member economies.

The priorities within operational framework of regional cooperation strategy in Greater Central Asia are identified as follows,

(1) Forestry policy dialogue, to assist the regional economies in developing forestry long term planning, policy & legislation, and assessment of the implementation of these planning and policy;
(2) Assessment of forest resource and status of desertification, to provide critical information for forestry policy makers of the regional economies;
(3) Forest land restoration and desertification control, to demonstrate the combination of advanced restoration technique and local practices through a holistic land use planning.
(4) Trans-boundary biodiversity conservation to protect precious flora and fauna species in this region.
(5) Joint law enforcement and forest fire prevention and control.
(6) Multifunctional utilization of sand- inhabited bio-resource, to increase local income.

To implement the strategy for regional forestry cooperation, it's recommended following activities be initiated,

(1) convention of the 2nd WSFC in collaboration with Ministry of Environment and Green Development of Mongolia in 2015and the first regional forestry ministerial meeting (FMM) in 2016;
(2) establishing Technical Group of Greater Central Asia (TGGCA);
(3) development of regional projects, organization of training/workshops and scholarship programme for officers, technicians and young foresters on desertification control, rangeland and degraded forest restoration, forest tenure reform and multifunctional utilization of sand- inhabited bio-resource;
(4) organizing twice study tours of 20 people between Greater Central Asia and China on desertification control, rangeland and degraded forest restoration, and forest tenure reform;
(5) involvement of interested economies and NGOs into APFNet's partners and nomination of APFNet's focal point in each economy, and
(6) development of a website and electronic newsletter.

APPENDIX 1 WORKSHOP AGENDA AND TIMETABLE

Regional Workshop on Forestry Strategic Cooperation in Central Asia
Beijing, China, September 23-24, 2014

DAY ONE (September 23)		Host
Opening Ceremony		
09:00-09:30	Zhang Jianlong, Vice Administrator of SFA (State Forestry Administration) of China, delivers speech Batbold Jamsran ,State Secretary of the Ministry of Environment and Green Development of Mongolia delivers speech on behalf of the representatives Wu Xiaosong, Deputy Director General of Rural Economy Department, National Development and Reform Commission (NDRC) delivers speech Qu Guilin, Executive Director of Asia Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) delivers a speech	Deputy Director General of SFA
09:30-10:00	Group photo and exhibition	
10:00-10:10	Agenda and purpose introduction	Coordinator
Session 1 Forestry development strategy and policy system		Deputy director, Li Shuxin
10:10-10:30	Forestry development experience and challenge in central Asian --Ekrem Yazici	
10:30-10:50	China Forestry Development Strategy -- Mr.Chen Jiawen, Division Director of State forestry administration	
10:50-11:30	Representatives of Mongolia and Central Asia Economies introduce the forestry development strategies --Mr. Gantulga Bat-Ochir, General Director, Policy Implementation Department, Ministry of environment and Green Development of Mongolia	

11:30-11:50	Q&A	
11:50-12:00	Summary	
12:00-13:30	Lunch	
Topic 2 Forest management and vegetation recovery mode		Ekrem Yazici
13:30-15:00	Central Asia land policy analysis - Asyl Underland Forest resource management and utilization in arid and semi-arid areas of China - Mr. Xu Jide ,Deputy Director General of Resources Department of SFA China's forest tenure right reform and forest management - Mr. An Fengjie ,Director General of Forest Reform Department of SFA Overview of forest resource management in Kazakhstan - Mr. Svetlana Kabanova, Head of Regeneration of Forests and Afforestation Department, Kazakh Research Institute of Forestry and Agro-forestry Forest resource status and international cooperation in Turkmenistan -Nury Atamuradov, Head of the Science and Innovative Technologies department of the Forestry Administration of Turkmenistan Forest Restoration and Biodiversity Protection in Uzbekistan -Mr. Olimjon Kakhkharov, Chief of the State Forest Inspection, Ministry of Agriculture and Water Resources Republic of Uzbekistan	
15:00-15:30	Q&A	

15:30-16:00	Tea	
16:00-17:00	Vegetation restoration and desertification governance in mining area - Victor Squires Experience in desertification prevention and control in China - Ms. Jia Xiaoxia ,Division Director of Desertification Control Department of SFA Xinjiang ecological management experience - Ms. Hou Cuihua, Deputy Director General of Forestry Department of Xinjiang Province	
17:00-17:20	Q&A	
17:20-17:30	Summary	
18:00	Welcome banquet	
DAY TWO (September 24)		
Topic 3 Cross-border biodiversity protection and forest fire management		Victor Squires
8:30-9:50	Cross-border biodiversity protection and forest fire prevention - Victor Squires China's cross-border forest fire prevention and control - Liu Xuejun, Division Director of Fire Prevention Department of SFA Mongolia desertification and forest fire management - Mendbayar Badarch Forestry development in Tajikisitan - Mr. Madibron Saidov, Director of State institution specially protected areas Forestry Agency of the Government of the Republic of Tajikistan Experience in cross-border biodiversity protection in Yunnan -Mr. Xu Zhijiang, Division Director of Forestry department of Yunnan province	

9:50-10:10	Q&A	
10:10-10:30	Tea	
10:30-11:30	International sea buckthorn processing - Mr. Lv Rongsen, Executive Director, of International seabuckthorn association Sand industry development in China - Mr. Qian Nengzhi, General Secretary of Sand Industry Association of China	
11:30-12:00	Q&A	
12:00-13:00	Lunch	
Topic 4 Central Asia forestry cooperation		Ekrem Yazici
13:00-13:10	Development and project policies of the APFNet - APFNet secretariat	
13:10-14:00	international cooperation in Forestry Sector in Central Asia - Ekrem Yazici China forestry international cooperation - Department of International Cooperation of SFA - Tajikistan international forestry cooperation	
14:00-15:30	1 Regional forestry cooperation strategy framework among central Asia, Mongolia and China 2 The feasibility to establish region forestry policy dialogue mechanism in central Asia	
15:30-15:50	1 Central Asian forestry cooperation strategic framework 2 Central Asia forestry policy dialogue mechanism	
15:50-16:00	Conclusion	Assisted Executive Director LU De
16:15	From hotel to Chifeng	
DAY THREE AND DAY FOUR (September 25, 26)		
Field trip on vegetation restoration, desertification prevention and comprehensive utilization of sand-fixation plant in Chifeng desert area		Chifeng forestry administration

APPENDIX 2 List of participants

No.	Name	Title and Organization
Kazakhstan		
1	Issatay Abdrazakhov	Deputy head of Territorial inspection of forestry, Ministry of agriculture of the Republic of Kazakhstan
2	Svetlana Kabanova	Head of Regeneration of Forests and Afforestation Department, Kazakh Research Institute of Forestry and Agro-forestry
3	Kairat Yegezhanov	Expert, Committee of Forestry and Animal world of Ministry of Agriculture of the Republic of Kazakhstan
Tajikistan		
4	Azizullo Ismatov	Head of Agency, Forestry Agency of the Government of the Republic of Tajikistan
5	Madibron Saidov	Director, State institution specially protected areas Forestry Agency of the Government of the Republic of Tajikistan
6	Azizulo Murodov	Director of tate forestry agency Khovaling district Forestry Agency of the Government of the Republic of Tajikistan
Uzbekistan		
7	Olimjon Kakhkharov	Chief of the State Forest Inspection, Ministry of Agriculture and Water Resources Republic of Uzbekistan, Main Department of Forestry
8	Komoliddin Kholmatov	Chief Expert of the Legal Service, Ministry of Agriculture and Water Resources Republic of Uzbekistan, Main Department of Forestry
Mongolia		
9	Batbold Jamsran	State Secretary of the Ministry of Environment and Green Development of Mongolia
10	Gantulga Bat-Ochir	General Director, Policy Implementation Department, Ministry of environment and Green Development of Mongolia
11	Tsogt Zandraabal	Forestry Specialist
12	Badarch Mendbayar	Director of Mongolian Nature and Environment Consortium (MNEC)
Invited International Consultants		
13	Ekrem Yazici	Deputy Chief of UNECE/FAO Joint Forestry and Timber Section

		in Geneva
14	Victor Roy Squires	Visiting Professor
15	Asyl Undeland	Expert on Land Tenure and Property Rights
16	André Fabian	Expert at Internationale Zusammenarbeit GmbH (GIZ)
Kyrgyzstan		
17	Zakhifa Omorbekova	Director of Rural Development Fund (RDF)
18	Ormonov Adylbek	Director of the Forest Ecosystems and Protected Areas Department, the State Agency of Environment Protection and Forestry of the Kyrgyz Republic
19	Beisheev Bakytbek	Director of Hunting Game Management Department, the State Agency of Environment Protection and Forestry of the Kyrgyz Republic
20	Batyrbekov Zamirbek	Director of the Avletim Forestry, The State Agency of Environment Protection and Forestry of the Kyrgyz Republic
21	Horst Weyerhaeuser	Director of Mountain Societies Research Institute,University of Central Asia
Turkmenistan		
22	Nury Atamuradov	Head of the Science and Innovative Technologies department of the Forestry Administration of Turkmenistan
China		
23	Wu Xiaosong	Deputy Director General of Rural Economy Department, National Development and Reform Commission (NDRC)
24	Liu Dongsheng	Deputy Director of State Forestry Administration of China(SFA)
25	Su Chunyu	Vice Administrtor, Department of International Cooperation of the State Forestry Administration of China (SFA)
26	Zhang Zhongtian	State Forestry Administration of China (SFA)
27	Chen Jiawen	State Forestry Administration of China (SFA)
28	Xu Jide	State Forestry Administration of China (SFA)
29	An Fengjie	State Forestry Administration of China (SFA)
30	Li Linghong	State Forestry Administration of China (SFA)
31	Jia Xiaoxia	State Forestry Administration of China (SFA)
32	Liu Xuejun	State Forestry Administration of China (SFA)
33	Hou Cuihua	Department of Forestry of Xin Jiang Province
34	Xu Zhijiang	Department of Forestry of Yun Nan Province
35	Lv Rongsen	International Seabuckthron Association
36	An baoli	International Seabuckthron Association
37	Zhengyan	International Seabuckthron Association
38	Qian Nengzhi	Sand Industry Association of China

39	Luo Wei	Elion Resource Group
40	Yang Juncheng	Elion Resource Group
APFNet		
41	Lu De	Assisted Executive Director, Asia Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet)
42	Li Shuxin	Assisted Executive Director, Asia Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet)
43	Qu Quilin	Executive Director,Asia Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet)
44	Zhuang Zuofeng	Director of Asia Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet)
45	Kong Zhe	Asia Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet)
46	LONG CHAO	Asia Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet)