

Final Report

2016 Asia-Pacific Agricultural Policy Roundtable

(20 April 2016)

*FAO-KRC Regional cross-sectoral Policy Dialogue on
Forests for Food Security*

with a special focus on “Forests for Water & Sustainable Agriculture”

(21 April 2016)

Rapporteur: Dr. Verina Ingram, Wageningen UR

Final edition: Sooyeon Jin, FAO



Organized by



Food and Agriculture
Organization of the
United Nations



FAO 한국협회
Korea FAO Association

Supported by

Contents

Introduction	1
1. The Asia-Pacific Agricultural Policy Roundtable, 20 April 2016	1
Objectives	2
A) Opening	3
B) Global/regional issues and actions for sustainable water resource management for climate change in agriculture	3
C) Country experiences in water resource management for climate change in agriculture	5
2. The FAO-KRC Regional cross-sectoral policy dialogue on forests for food security, 21 April	9
Objectives	10
A) Opening	10
B) Forests, water, sustainable agriculture and food security and nutrition	11
Question and answer session	14
Question and answer session	16
C) Experience sharing in the region – Case-studies	16
Question and answer session	19
D) Challenges and opportunities for cross-sectoral coordination	20
Question and answer session	22
E) Ways forward	22
3. Recommendations	27
Regional level	27
National level	27
4. Wrap-up/closing and Conclusions	28
References	28
Annex 1 Programme	29
Asia-Pacific Agricultural Policy Roundtable, 20 April 2016	29
FAO-KRC Regional cross-sectoral Policy Dialogue on Forests for Food Security 21 April 2016	31
Annex 2 Participants	33
Asia-Pacific Agricultural Policy Round Table, 20 April 2016	33
FAO-KRC Regional Cross-sectoral Policy Dialogue, 21 April 2016	34
Annex 3 Description of the participants	35
Figure 1 Links between forests and food security	12
Table 1 Challenges and opportunities to enhance the contribution of forests to sustainable agriculture and food security and nutrition	24

Table 2 National and Asia Pacific regional level recommendations to enhance the contribution of forests to sustainable agriculture and food security and nutrition..... 26

Introduction

This report covers two adjacent meetings, the [Asia-Pacific Agricultural Policy \(APAP\) Roundtable](#) 2016 on “Sustainable Water Management for Agriculture and Food Security” organised by the APAP Forum, Korea FAO Association and the Regional Office of AARDO for Far East, Renmin University and the Global Agricultural Policy Institute, and the [Policy Dialogue](#) on “Forests for Food Security: with a special focus on Forests for Water and Sustainable Agriculture”, organised by the FAO and KRO.

1. The Asia-Pacific Agricultural Policy Roundtable, 20 April 2016

Humans depend on water in many ways, well beyond the few litres needed daily for drinking. Among its various uses, water is essential for the production of food and agriculture is by far the largest user of water. Currently agriculture consumes about 70% of the world’s freshwater withdrawals. In addition to being a vast user of water, agriculture also causes extensive pollution, primarily by introducing nonpoint-source contaminants. Runoff from agricultural fields often contains eroded soil, fertilizers, animal manure, or pesticides that together form a major source of water pollution.

In Asia, agricultural and food production and success in achieving food security is based on irrigation. With roughly one third of the continent’s cultivated land under irrigation, and approximately three quarters of the world’s irrigated area, irrigation is fundamental to the food security of the region. The mega-deltas and floodplains of the Red, Mekong, Chao Phraya, and Irrawaddy rivers, produce half of the rice of the region and approximately 8% of the world supply. Traditionally wet season (May to October) rice with some supplementary irrigation was the main production system, but increasingly irrigated crops in the drier and less flood prone seasons have become the dominant systems. For instance, the wet season rice is now only 10% of the annual production. This trend increases the demand for reliable water supply during the periods when availability of water resources is lowest and increases the vulnerability to local climatic variability, with significant risks from both floods and droughts, even under current climate conditions.

While the earlier irrigation developments were primarily large scale public irrigation systems for the production of staple food crops, over the course of the past two decades the continuing expansion of irrigation is based on small “atomized” systems where the control of the water supply is closer to the farmer. This has allowed increased levels of productivity and diversification. Rather than diversions from large rivers and major reservoirs, the primary sources of water for these later developments have been either groundwater or small surface storage. Groundwater, generally developed by the farmers themselves, is already the dominant source for irrigation water in South Asia, and is increasing in importance in areas of South East and East Asia. This development is also raising environmental concerns as well as concerns about its sustainability due to over exploitation and inadequate recharge of aquifers related to climate change.

With the growing demand for water in agriculture and the importance of reliable and non-polluted sources for higher value production, as well as to meet future demand for food, almost 50% more food up to 2030 and double production by 2050 (according to FAO estimates), world agriculture faces an enormous challenge. To meet this challenge, market demand for agricultural production will increasingly drive agricultural investments, and thereby determine the use of water resources. Meeting the region’s food and other agricultural requirements over the coming decades will require significant increases in productivity, diversity and reduction of risk in production. All these will depend on availability and access to water by the farmers and will necessitate wide-spread adoption of improved agricultural water management approaches in both irrigated and rainfed systems.

A Comprehensive Assessment (CA) of Water for Food and Water for Life, undertaken by a consortium of dedicated scientists from different institutions and coordinated by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), revealed that global food security is possible with existing water resources. However, it calls for considerable efforts to improve water management to enhance water use efficiency in all sectors. The CA calls for new and innovative approaches (technical, institutional, policies, attitudes and habits) for food production and water management strategies, as the business as usual scenario will not meet the demand.

Launched in 2002, the Asia Pacific Agricultural Policy Forum is a network and coalition of various organizations, institutions and individuals, seeking to foster understanding of policies and build cooperation in sustainable agricultural and rural development among countries in the Asia- Pacific Region. Its Board Meeting at the 14th APAP Forum, held on 31 August 2015, Seoul, Korea, recognized the water issues as a major challenge facing agriculture and rural development in the Asia-Pacific Region. In view of this the board of directors agreed that it would be timely to address the critical issue of water during 2016 Roundtable of the APAP Forum, to be held in Beijing, China.

Objectives

Although there is considerable knowledge on the issue of water management, an overarching picture on the water–food–livelihoods–environment nexus is missing, leaving uncertainties about management and investment decisions that will meet both food and environmental security objectives of Asia and the Pacific region. There are gaps in water management information base and infrastructure network (with the rapid economic growth, urbanization and population growth, this issue assumes greater importance). The institutional framework for integrated and participatory water resource planning and management, as well as regional cooperation in sharing water resources appears to be inadequate.

Effective management of water to meet food and environmental objectives is, therefore, complex and will require the concerted action of individuals from across several professions and disciplines – farmers, fishers, water managers, economists, hydrologists, irrigation specialists, agronomists and social scientists. It will also require both policy and institutional reforms, as well as a change in the way society as a whole and the policy makers in particular look into the utilization of water in agricultural production. In this context, the objective of the Roundtable is to discuss the critical water issues related to agriculture and food production and identify appropriate modalities to ensure that the regional policy makers:

- 1) Recognize the complexity and diversity of water resource management in agriculture, in the context of varying regional and national water resource supply and demand balances.
- 2) Strengthen institutions and property rights for water management in agriculture.
- 3) Ensure charges for water supplied to agriculture at least reflect full supply costs.
- 4) Improve policy integration and coherence between agriculture, water, energy and forest policies within the framework for comprehensive environmental policies to face climate change in agriculture
- 5) Enhance water resource management and adaptation to face climate change impact on agriculture
- 6) Address knowledge and information deficiencies to better guide participatory integrated management and promotion of public private partnership for sustainable management of water resources for agriculture.

A) Opening

As part of the opening address, **Dr. Saifullah Syed Secretary General, APAP Forum President and Euro Asian Centre for Policy Studies and Management, Bangladesh** stated that the aim of a roundtable is a frank, open and intellectually stimulating exchange of ideas. Water is one of most challenging topics of our time, source of life and therefore agriculture.

Dr. Lee, Sang Mu, Chairman, APAP Forum & President, Korea Rural Community Corporation, Korea welcomed all to the Forum as did **Dr. Liu, Wei, President, Renmin University of China**.

Mr. Chen, Xi Wen, Deputy Director, Central Rural Work Leading Group, China, presented current issues around water in agriculture in China in his *keynote speech*. Less than half of land in China produced around 70% of food produced in China in past decade China has been reducing land used for agricultural purposes, making more available for other uses, such as forestry. Irrigated land thus faces more challenges to meet future needs, and faces two main problems. In some parts of China, such as the northwest, there is limited water and limited irrigation technology. In the southeast where there is water, it's difficult to move this onto land. These problems are ancient. A third, more recent, and increasingly pressing problem is pollution. About 47% of pollution is attributed to agriculture, specifically fertilizers. Safe and clean water resources is thus imperative, as two thirds of water is used for agricultural purposes. This leads to goals to reduce and save water, to use water more efficiently and to ensure safe, clean water. The government has thus set a goal not to increase agricultural inputs by 2020 and to increase land area that can be efficiently irrigated. The importance of agriculture is demonstrated by the Chinese saying that "water is grain is life, and food is heaven". To ensure sufficient food is produced to meet China's growing population. The food gap is due to the type of food China is unable to produce (such as beans) and the lower cost of importing this food, mainly since the economic crisis of 2012. Security of food supply is thus also an issue, as current estimates are of about one year's food security. Prices have been affected by international exchange rates, the financial crisis and costs of transport, related to oil prices. Water resource management thus remains imperative. China has been introducing changes, such as in ownership of small water facilities by organisations, to provide incentives for their better management; also by giving quotas to farmers related to the size of their farm, encouraging more efficient use of resources through pricing mechanisms and thirdly establishing systems to facilitate water transactions, so that credits for saving water can be traded.

B) Global/regional issues and actions for sustainable water resource management for climate change in agriculture

Moderated by **Mr. Tin Htut Oo, chairman of the National Economic and Social Advisory Council, Myanmar**, this session presented global, regional and local issues and actions for sustainable water resource management in agriculture.

Dr. Ryu, Ki Hee, Professor at the Institute of Green Bio Science & Technology, Seoul National University presented an overview of global actions for sustainable water resources management, helping to set the scene for this policy meeting. Notable global commitments include the Sustainable Development Goals (SDGs), with SDG 6 focusing on ensuring the availability and sustainable management of water and sanitation for all by 2030. UN Water is working to develop indicators and implementation through Action Monitoring Systems. The 7th World Water Forum in Korea in 2015 set out a road map for implementing solutions for major water related issues. The Asia Water Council established in 2016 in Bali with 35 countries also established a regional forum. Monitoring the implementation of global actions by actively participating in the SDG related activities is seen as essential.

Dr. Ganesh Thapa, visiting scientist at the International Centre for Integrated Mountain Development, Nepal, presented issues and opportunities for sustainable small scale irrigation in Asia. Asia has some of the highest rates in the world of irrigated agriculture, in 2009 covering 48% of total cultivable area. There has been a decline in investments in both large and small scale surface irrigation, due to declining investments generally in food production since global crisis. The

increase in cropping intensity and efficiency has been low. The figures presented indicate sub-optimal use of water in large-surface schemes. Trends such as increasing demand for high value commodities in Asia, climate change risks and more complex farming systems, indicate that small scale farmer managed systems maybe better than large gravity systems. Small scale irrigation systems can help enhance efficiency has of large gravity irrigation systems to bridge yield gaps. Because internal dynamics of water distribution are better by getting farmers at source and tail end to work together, and more such atomistic irrigation systems are more reliable. Small-scale systems may also be better to meet new demands i.e. high value and multiple uses). Promoting alternative approaches to conventional participatory irrigation management, given its limited success, was questioned. Contracting out irrigation services, farmed managed irrigation companies and public private partnerships piloted in Asia to meet multiple water use needs could be ways forward. We need to see irrigation and rainfed systems as a continuum and see how rainfed agriculture could be upgraded, such as by improved water management and investments in efficiency and quality. Governance needs to be improved and the resilience of small holders in the face of climate change need to be further built.

Dr. Wang Xiqin, Professor in the School of Agricultural Economics and Rural Development, Renmin University of China, talked about improving irrigation water prices and farmer affordability, using the case of Guanzhong region in the Wehe River Basin in China. A wealth of evidence was presented to support the finding that irrigated water prices are higher than the current cost of supply. The amount of agricultural consumption of water has declined and now water is being used by the non-agricultural sector. Price increases to cover costs are generally seen as acceptable by farmers and would result in price increases of 18 to 70%. It is recommended that these should be done gradually. Water subsidies could be given to farmers directly to safeguard food security and production.

In the subsequent panel discussion with **Dr. Tirso B. Paris, Jr, former Professor, University of Philippines Los Banos, Philippines; Dr. Ito, Shoichi, Professor, Faculty of Agriculture, Kyushu University, Japan; and Mr. Lee, Bong Hoon, Chairperson, Korean National Committee on Irrigation and Drainage,** the following issues were raised:

- A concern that all the high level, global talk does not translate into actions on national level and especially mitigating the effects of climate change. Realizing this, the websites of the World Water and the Asian Water Council now host a Forum Action Monitoring system (AMS) which enables progress against actions to be uploaded and checked.
- Reflects if ex-post analysis of large fed gravity and irrigation systems and yield differentials has been conducted, and especially concerning downstream farmer's access, economics and frustrations – that would further support a move towards ore small scale irrigation.
- The potential for irrigation expansion in Asia indicated by Dr. Thapa is seen as good news.
- Despite its drawbacks (distribution of benefits and over expectation of its benefits, rent seeking by large scale contractors setting up such system), large-scale irrigation can however be very efficient. The panel agreed that small-scale systems are certainly a way forward, especially if they can be improved using new technologies such as mobile phones - but that large systems should not abandoned.
- Not only pollutants pose a problem, underground water is noted as not always safe, due to arsenic poisoning. This limits the use of groundwater, and highlights that we need to consider surface and groundwater irrigation together.
- The China case was interesting in that farmers do already pay, the challenge will be balancing increased payments with subsidies and food security. Experiences in Korea with introducing farmer payments showed that changing from a free water supply to paid system, a gradual introduction to a paid-for system is critical to enable its acceptance. Experiences from India with small scale irrigation show that pricing polices need to take into account the historical development and policies on centralised control and to take account of different levels of

development of farmers. Large scale systems give more power to bureaucrats and technocrats, and more opportunities for corruption, resulting in farmers favouring ground water and small irrigation (even when such systems result in water over-exploitation), as they can at least control such systems. In the Philippines, farmers also pay fees that cover the costs of small and large scale irrigation infrastructure, the main hindrance is farmer's lack of knowledge and capacity to judge efficiency has of long term investments in irrigation.

- Australian experiences with water pricing and markets have created a revolution in water management. They allow trade between irrigators, also with environmental (represented by the government buying water for nature), energy and urban water users. The policies make a distinction between land and water users. The system also integrated surface and ground water- considered as part of a whole system for the market system. The market allows big and small players to interact, so that small scale farmer systems simultaneous trade with large corporations. The Australian system makes a trade-off between low with very high-value users, seen that over long term low-value users have pulled-out of the market. Lessons from this discussion indicates that appropriate pricing policies are critical and that long term mechanisms to deal with periods of drought and high water availability. There needs to mechanisms in the water market that take account of land and water markets. Technology (such as telemetry and market information and distribution, water use measurement and monitoring) is essential to aid functioning pricing and market systems.
- Cooperation is essential to meet global challenges. It was noted that the threat of water shortages and drought would make this harder, but that forums such as APAP are good ways to help meet the challenges. It was noted that bringing in the private sector into these forums is also needed, as they have funds that could allow irrigation and water resource development. The private sector needs to be linked with farmers for this to work however. Farmers also need access to credit to enable them to participate in such system.
- The role of politics, policy and bureaucracy is important in setting priorities (e.g. new dams versus small farmers).
- We need ex-ante and ex-poste evaluate of irrigation schemes to see the effectiveness of both large and small projects.
- Participatory approaches still rarely include participation from the beginning, at project formulation stage, rather than just on issues of water distribution.

C) Country experiences in water resource management for climate change in agriculture

Dr. Larry C. Wong, visiting fellow at the Institute of Strategic and International Studies, Malaysia, moderated the session on country experiences.

Mr. Herman Ongkiko, Undersecretary for Foreign Assisted and Special Projects, Department of Agrarian Reform, Philippines, presented the Philippine's Experience on integrated and participatory water resource planning and management. With some irony, despite its ample water resources with surface water representing 86% of countries resources, there is dwindling water supply with 16% of households not having access to water resources and 44% of irrigable lands don't have irrigation. Climate change and economic growth presents challenges, resulting in a collaborative Integrated Water Resources Management plan. As well as participatory irrigation and stakeholder participation, are also using public private partnerships (PPPs) to finance irrigation development. An example is the Jalaur irrigation dam project on the Jalaur River.

Ms. Phyu Yamin Myat / Mr. Tin Htut Oo Managing director, Myanmar Development Partners Co., Ltd and Chairman of the National Economic and Social Advisory Council, Myanmar talked passionately about the Myit Sone reservoir and dam, located upon the nation's largest river. The Irrawaddy (Ayeyarwaddy) is located in Myanmar from its start to end. The Myit case has strong regional, political and environmental implications. The proposed dam has created controversy and conflicts by local people and experts, since the EIA produced in 2011 – in terms of potential (negative) social-cultural,

environmental, safety and compensation impacts. The problem behind the problem is not per se the dam but how the need for a dam was decided. The process is an example of poor governance, and a non-inclusive, political policymaking process which undermines the current political changes. Solving the problem(s) implies a need for good governance of all water resources in the country. The most recent initiative to fill the gap of a lack of policy is a National Water Policy, a Water Framework Directive and a proposal for water basin institutions for the four river basins in Myanmar, starting with the Ayeyarwaddy.

Mr. A.S. Moniruzzaman Khan Director, Centre for Climate Change and Environmental Research, BRAC University, Bangladesh, presented experiences from the southwestern coast of Bangladesh talking about water for life, livelihood and food security. Bangladesh has been in the headlines due to hydro-metrological disasters, but there are also other water related issues, such as salinity intrusion in Sundarbans region, where agriculture is the predominant economic activity. A combination of climatic (cyclones, drought, flood, heatwave), environmental and socioeconomic problems threaten livelihoods and nature (i.e. tigers) in the region. This has led to migration out of the area. Ways forward to resolve the situation include PPPs, job creation, ensuring fresh water availability, introducing climate resilient livelihood options, and a coastal zone management plan.

Dr. Nipon Poapongsakorn, a Distinguished Fellow of the Thailand Development Research Institute, presented the case of the Chao Phrya River Basin and Water Management Policy in Thailand. The case combines water management, with landuse planning, adaptation to extreme weather events and optimism design of institutions for water management. Water mismanagement worsened the water crisis (extreme weather flood and drought events) in Thailand. There is a stark contrast between the centralized government and water system and the decentralized flood protection system, and lack of comprehensive flood prevention, assessment and relief plans. Exacerbated by institutional weaknesses, such as using only ad-hoc committees to manage and respond to the crises not to plan for it, centralized and fragmented water resource management and non-functional river basin committees and 45,000 very small water user groups, and missing links between WUG and river basin and top level.

Recommendations were made to close three gaps: institutional gaps so fully integrate WUG with river basins; create links between WUG with regional administrative boundaries and with river basin groups up and downstream; and between RBC and WUG. It was recommended that we need area based institutions- not administratively based. Used experimental control games to design new rules/institutions. An experimental game was used to aid cooperation and illustrate how a river basin board could work. This resulted in a water law and facilitating cooperation among representative WUG. This case is an example of promoting taking into account human dimension in development problems.

Dr. Jinxia Wang, Deputy Director, Center for Chinese Agricultural Policy, Chinese Academy of Sciences, Institute of Geographic Sciences and Natural Resources Research, discussed Climate Change, Water Resource and Agricultural Adaptation in China. This case is an example of two wicked problems, namely climate change and water. The study involved a combination of modelling impact of two climate scenarios on different crop prices, availability and trade, and household interviews about adaption and response to deal with climatic changes impacts on crop protection. It was found that although the overall impact on farmers would be moderate, climate change would challenge even further water scarcity in northern China. The impact could be significantly reduced after considering market responses and impacts of the rest of the world. This highlights the need for adaption, learning more from farmers, and encouraging farmers to improve how they farm and mainstream their reactions into a national development plan, but also government responses, such as early warning signals. Also a need was signalled to build farmer's capacity to adapt, taking into account differentials, and adjust policy support and investment accordingly.

Dr. Sahat M. Pasaribu, Senior Researcher, Indonesian Center for Agro-Socioeconomic and Policy Studies talked about strengthening farmer-managed irrigation systems for food security in Indonesia. The government has accelerated water based infrastructure by building prioritized rice production (via new irrigation and rehabilitation of existing irrigated areas), and dealing with conflicts about water diversion, timing and allocation, and encouraging water user associations (WUA). Indonesia has 9.4 million hectare under irrigation, 51% managed at district level, 33% centralized, and 16% provincial – although just under quarter of system though have serious damage. There is a strong tradition of WUA, with farmers willing to pay for the institution (not per se for the water). A range of interlinking polices have been developed to deal with water issues – resulting in a vast improvement in irrigation and setting out the rights and rules. However, we still need better farm management skills for water management to improve the performance of irrigation systems. Finally there needs to be more with prioritization of policy implications concerning government support and facilitation to ensure interrogated irrigation.

Dr. J.S. Samra, Former CEO, National Rainfed Area Authority, Government of India presented the issues and actions for sustainable water resources management for adapting to climate change in agriculture in India. There is a higher frequency and intensity of droughts in India, combined with highly skewed distribution of ground and surface water resources. More efficient management of precipitation (rainfed) and irrigation is proposed as the best way to manage the combined effects of the weather food and income insecurity. One response was national action plans on climate change, with 8 missions ranging from energy efficiency, to habitats, sustainable agriculture, adaption and mitigation, and water. Also incorporating fact that private investment by farmers in canal irrigation has over taken government investments.

Comprehensive participatory and integrated management of perception, surface water aquifers and treated effluents (i.e. really integrated) is needed. The enabling polices are in place, so that now the main thrust needs to be on: efficient small-holder irrigation based on groundwater (such as solar powered irrigation combined with plastic covered mulching) and small surface water storage structures and watershed management to ensure dependability when rainfed systems fail. Also on prompting also multiple use water systems e.g. fish ponds, piggery, poultry shared among small-scale ridge to valley and local level participatory water shed management groups and promoting geo-hydrological units, irrespective of administrative boundaries. Other needs include modelling costs and benefits and transparency, involving users and local government and encouraging continued participatory management. We have to counter powerful political lobbies against water and energy pricing and centralized price fixation of wheat and rice, that distort diversification into more water savvy crops , even when economically not efficient.

Dr. Ryu, Ki Hee, Professor, Institute of Green Bio Science & Technology, Seoul National University, Korea presented a paper on irrigation water supply against desertification in Mongolia. Desertification is a major issue affecting Mongolia but also further afield, with dust and haze impacting Korea. Efforts to combat desertification, include a Sdacasaul greenbelt planting project, a long term sand dune stabilization project, and irrigation supply project to ensure efficiency has of sprinkler and drip irrigation methods that support the planting in the Elsentarsarhai area.

During the panel discussion with **Mr. Choi, Yong Kyu, President, Global Agriculture Policy Institute, Korea; Ms. Hoang Thi Dzung, Secretary General, Vietnam Federation of Agricultural and Rural Development Associations, Vietnam; and Dr. Joo Pilju Kim, Dean, School of Agriculture & Life Sciences, Pyongyang University of Science & Technology, Korea**, the following topics were discussed:

- The new focus on PPPs is believed to be able to bring benefits but needs to be combined with a participatory approach. The increasing use of PPPs calls for the need for best practice.

- The impact of climate change on water resources and agriculture became very apparent from many of the presentations and cannot be underestimated. The effect of climate changes highlights the need to prepare for all types of extremes from flood to drought and salinity intrusion.
- The experiences of Thailand are relevant to its neighbours in the Mekong delta within similar situations such as Vietnam, and highlights that a regional response level is important - particularly when river basins straddle borders.
- For the projects presented, such as the Mongolia case, a question is how to upscale such positive examples?
- The Thailand and Indian cases illustrated that integrating small scale farmers and their irrigation systems into national management strategies is possible and offers hope inspiring strategy. This emphasizes strongly the human dimension to controlling nature. Also the need to incorporate biodiversity and ecosystems further in to water management – such as maintaining (agro)forestation – this didn't come strongly out of the presentations but was hinted at by several presentations, such as India and Myanmar!.
- Some cross cutting issues were apparent across the region, namely governance; the human dimension; public, private and user roles; trans-border river basin issues; and climate change, as well as country specific such as desertification.
- Revisiting what we mean by ecological and environmental impact and how we then restore or repair them is important, and how much we spend on this (if it's feasible) or focus more on the more 'forgotten area' of protection (for example through RAMSAR site protection). Question of whether we have sufficient policies in place to protect our valuable ecosystems?

D) Wrap-up and Closing

The wrap up session was moderated by **Dr. Saifullah Syed, Secretary General, APAP Forum and President of the Euro Asian Centre for Policy Studies and Management, Bangladesh**. Addressing water issues at all levels from global to local, and most importantly linking these governance and management issues became very apparent from the presentations. The way the issues are framed is not necessarily an issue of water shortage, but (mis)management. We also need to consider temporal dynamics, as situations can change dramatically. Examples were given by Dr. Ito about how water shortages in the USA have changed to inundation and increases in crop yields. There also is a case for exploring undeveloped potentials, such as rainfed systems, alongside the current dominant focus on large and small irrigation. As energy becomes increasingly important in water management, we need to ensure that energy is also efficient and sustainable.

[1] closed the meeting by thanking participants and reiterating that the water is life theme has held up as being particularly pertinent.

2. The FAO-KRC Regional cross-sectoral policy dialogue on forests for food security, 21 April

With the world population projected to exceed nine billion people by 2050, global agricultural output must expand by an estimated 60 % to meet global food needs. In total, most of the increase in production is expected derive from improved yields [1]. In this context, natural resources such as land and water remain critical to achieve the growth and sustainability in production. This will require an integrated rural development approach considering sustainable management and use of natural resources including forest landscapes.

Forests cover one third of the earth's land surface, and they play a vital role in achieving sustainable agriculture and national food security in multiple ways. Fuelwood, income, and ecosystem services are essential contributions of forests to food security of approximately 2.4 billion people [2]).

In particular, forest ecosystem services support sustainable agricultural and fishery production (through protecting watersheds and watercourses; maintaining or restoring soil fertility; and providing habitat for wild pollinators and the predators of agricultural pests) and biodiversity conservation for many local species that are important for local diets and traditions. Furthermore, about one third of the world population use fuelwood for cooking their food¹, and 750 million people use wood to boil their water to make it safe for drinking [3]. More than one third of the world's major cities rely on drinking water from forested areas [3].

However, continued deforestation, forest degradation and desertification, exacerbated by the negative effects of climate change, put forests and their contributions to sustainable agriculture and food security at risk. Between 2010 and 2015 there was an annual loss of forest area of 7.6 million ha and an annual gain of 4.3 million ha per year, resulting in a net annual decrease in forest area of 3.3 million ha per year, mainly due to agricultural conversion².

In Asia³, between 1990 and 2015, eight countries⁴ across the region have achieved at the same time: 1) an increase in, or maintenance of, forest area in a country; and 2) a decrease in prevalence of undernourishment and number of people undernourished – thereby improved food security. Findings of two FAO case-studies conducted in Georgia and Vietnam (two of the eight above-mentioned countries) in 2015, which will be included in the State of the World's Forests 2016 and presented at the 23rd Committee on World's Forestry (18-22 July), concluded that adopting an integrated and cross-sectoral approach to policy making; securing effective stake-holder engagement; and promoting integrated land use on the ground (e.g. landscape approach) are critical to achieve sustainable food security and nutrition.

The main outcomes of the *International Conference on Forests for Food Security and Nutrition* held in Rome in May 2013, the recommendations of the *22nd Session of the Committee on Forestry (COFO)* in June 2014, the outcomes of the *41st Session of the Committee on World Food Security (CFS)*, as well as the key messages of the *XIV World Forestry Congress* held in Durban in September 2015, reiterated the importance of developing capacity and mainstreaming cross-sectoral forestry and food security policies in order to strengthen the role of forests for sustainable agriculture and food security.

This one day policy dialogue on “Forests for Water, Sustainable Agriculture & Food Security” was organized to facilitate such cross-sectoral discussions by inviting multi-stakeholders from various relevant sectors (e.g. agriculture, water,

¹ Includes Western Asia, 38.6% of the regional population depend on woodfuel for cooking.

² Global Forest Resources Assessment (FRA) 2015, FAO

³ Including 30 countries from Caucasus and Central Asia, Eastern Asia, Southern Asia, South-Eastern Asia; and excluding Western Asia (Iraq, Jordan, Kuwait, Lebanon, Oman, Saudi Arabia, Turkey, United Arab Emirates, Yemen)

⁴ India, Lao PDR, Maldives, Mongolia, the Philippines, Vietnam, Turkmenistan and Georgia.

forestry, environment, rural development etc.). It aims to raise awareness on the topic, share experiences, identify existing challenges and opportunities, and draw regional recommendations, which will be reflected in the forthcoming FAO Guidelines on developing cross-sectoral forestry and food security policies.

Objectives

The objectives of the dialogue were:

- 1) To facilitate regional level cross-sectoral policy dialogue on forestry, water, sustainable agriculture and food security;
- 2) To raise awareness and develop capacity among the participants/stakeholders on the link between forests, water, and food security and nutrition;
- 3) To share experiences and reflect on regional cases highlighting cross-sectoral policies and programmes on forestry, water, sustainable agriculture and food security;
- 4) To identify opportunities in cross-sectoral coordination (e.g. among forestry, water, agriculture, food security and nutrition sectors) with a view to strengthen the contribution of forests to food security and nutrition;
- 5) To establish a set of regional policy recommendations to increase the contribution of forests to food security and nutrition at national and regional levels through improved cross-sectoral policy coordination.

A) Opening

In his opening speech, **Sang-mu Lee, CEO of the Korea Rural Community Corporation** noted the need to place more emphasis on forest and food security in relation to this year's forest day which focuses on forests and water. This is because 1.8 billion people face water insecurity and 795 million people face food insecurity, and water conflicts and extreme weather further exacerbate the problem. Agriculture is the largest consumer of water. In the Asia Pacific region, agriculture accounts for almost half of water use. Population pressure is expected to increase this rate. In this context, it is high time to address these challenges in a connected manner. Forests ecosystem can protect water resources and counteract landslide and soil erosion. Coordination is a prerequisite to address these issues, and translate them into concrete actions. This dialogue aims to pave the way for insights and exchanges about the nexus between forest, water and food security, and draw up recommendations about the way forward. The KRC's expertise in agriculture and water can be brought to bear on these issues.

In his welcome remarks **Prof Liu Jinlong, Director, Centre for Forestry and Natural Resource Policy Study at the University of Renmin**, agreed that not only that water is life, and added that forests are our future. They help to ensure good quality water and agriculture. A new approach in China is the holistic management of forest, farmland and water, to replace traditional sector-based management. That the name for this new approach hasn't not yet been dubbed with a good translation, shows how novel it is. The case of north Korea is exemplary here in illustrating how forests impact food security, as in north Korea compared to 1990 about 20% of timber has been lost and 40% of timber stock lost, this has resulted in a food problem. It's important to see forests as part of total agriculture and livelihood picture. This Korean history reflects issues worldwide, how forest management has changed from managing forests for specific timber and non-timber products, to now looking wider than monocultures, and managing them as ecosystems, as social-ecological systems taking a multi sector approach. To illustrate further, the Professor told how half-jokingly how he tried to submit a journal article about "Growing forests for food safety and food security". It was first refused by agricultural journals, and then by forestry journals, for not insufficient emphasis on either topic, but they missed the point of interlinking

disciplinarily. He's still looking for a suitable journal, multidisciplinary journals hardly exist! We need to get away from silos and sectoral thinking. Our challenge is to think wider and cross over these boundaries, recognizing forests as sources of food and nutrition, as well as maintaining the health of dynamic productive ecosystems. For this we need information exchange, including between developing and developed countries, and to promote that various interest groups participate in ensuring we can meet the challenges ahead.

Percy W. Misika, FAO Representative for China, DPR Korea and Mongolia, made congratulatory remarks, stressing the need for global agriculture to meet the food needs of our growing global population. He noted that it is not very often that different sectors, representing 11 countries, 12 academic institutions and 10 international organizations, come together in one place aiming to achieve a common goal. An integrated approach to sustainable land management and the use of natural resources including forests which cover one third of our land surface, in Asia between 19190 and 2015, 11 countries (Georgia, India, Kuwait, Lao, Maldives, Mongolia, Saudi Arabia, Philippines, Turkmenistan, Vietnam, Saudi Arabia) achieved an increase or maintenance of forest cover. In Asia, between 1990 and 2015, eleven countries across the region have achieved an increase in, or maintenance of, forest area in a country and a decrease in the prevalence of undernourishment and number of people undernourished at the same time – thereby ensuring improved food security. FAO estimates that there are about 795 million hungry people today. Although the figure has gone down in the past few years, with the world population projected to exceed nine billion people by 2050, global agricultural output must expand by approximately 60 % to meet global food needs. Adopting a cross sectoral approach and securing stakeholder involvement on ground are some of the ingredients which helped them to ensure both forest cover and food security. This meeting today is unique in bringing together so many institutions from so many countries to address these important issues. This dialogue contributes to at least seven of the SDGs (1, No poverty, 2 Zero hunger, 3, Good health, 6 Clean water and sanitation, 13 Climate action, 14, Life below water and 16, Life on land), and fits with the FAO's new strategy of using cross sectoral and cross cutting themes as a pathway towards meeting the SDGs.

In his keynote speech, **Dominique Reeb, Senior Forestry Officer at the FAO**, stressed that the topics at the heart of this dialogue have been little addressed on the international scene. The role of forests in the water cycle is far more complex than common thinking that forests act as a "sponge". Recent studies have shown that this is not the case, with the prevalent theory pointing towards a trade-off: more trees meaning less water, but in some areas, such as the dry tropics, trees have been shown to aid water retention. The implications for agriculture are critical, as trees and forests contribute to ecosystem services such as pollination and soil fertility. Forests also contribute directly in terms of providing fuelwood, used to cook food, as well as providing wild foods and food supplements, including game and insects, and providing safety nets in terms of food scarcity. Climate change and a lack of adequate management put these services and products at risk; agriculture also contributes to forest loss and degradation. We are here today to ensure we capture and address these relationships, recognizing the importance of forests for sustainable food security and nutrition. The preliminary 2016 State of the World's Forest suggest that sustainable forest and agri can go hand in hand. The most recent major forest meetings such as the *International Conference on Forests for Food Security and Nutrition 2013*, the *22nd Session of the Committee on Forestry (COFO) 2014*, the *41st Session of the Committee on World Food Security*, and the *2015 XIV World Forestry Congress* all reiterated this message to ensure food security is incorporated into forest management. This is the first such regional level dialogue. It is relevant as Asia has achieved MDG 1 halving proportion of malnourished people whilst gaining 4 million ha of forest, which shows that food security can be achieved alongside increases in forest cover, and that the unique experience of this region is worth exploring and sharing with the world.

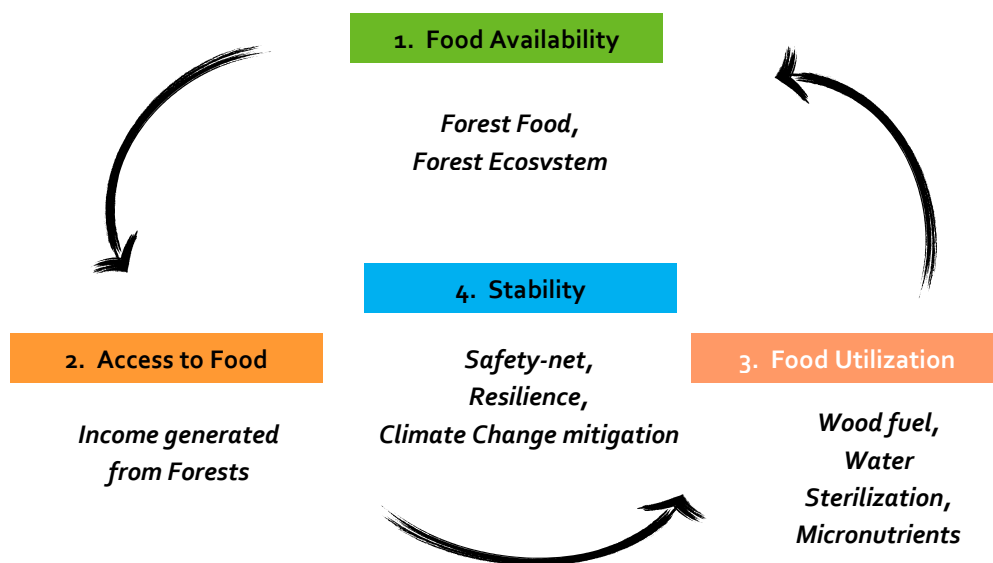
B) Forests, water, sustainable agriculture and food security and nutrition

Moderated by Patrick **Durst, Senior Forestry Officer at the FAO**, this session explored the links between forests, water, sustainable agriculture and food security and nutrition and explained some of the key concepts underlining these linkages.

Sooyeon Jin, Forestry Officer at the FAO, talked about understanding the linkages between forests and food security and nutrition. In most cases the commonly known contribution of forests to food security is limited to the direct provision of forest food. What do we mean by food security? The definition proposed for this meeting is that “Food security exists when all people have physical social and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life” ([Declaration](#) of the World Summit on Food Security, hosted by FAO in November 2009).

The first component of food security is food availability. This is defined as the quantity of food or net food supply (after exports and losses). The second component is access to food, mainly at household level, which addresses how is food distributed (social economic, and physical access – often determined by money to purchase food and infrastructure such as markets and access to food markets). Third is food utilization, the physical capacity of an individual to absorb food nutrients. The fourth dimension is the stability or sustainability of these three dimensions over time. These link food security with forest foods, such as mushrooms, nuts, honey, insects and bush meat. The 2014 State of the World’s Forest report [3] states that on average forests provide 16.5 kilocalories a day, including micronutrients and protein, and can often be very important for specific groups of people. The second aspect is the ecosystem services forests supply that support agriculture. The forest sector is a source of income that enables people to purchase food. For food utilization, 2.4 billion people use woodfuel for cooking, cooking is a critical feature of humans. In Africa and there is a high reliance upon wood fuel for cooking- forests there critical in contributing to food utilization, and 65 million people use wood to sterilize water, allowing people to utilize food and absorb micronutrients. The links are shown in Figure Figure 1.

Figure 1. Links between forests and food security (Jin, 21 April 2016)



Understanding food security and forests has been a gradual process, as the FAO started in 2013 with an international conference on forests for food security and nutrition in May 2013, followed by the COFO 2014, the World Food Security CFS 41 2014, World Forestry Congress XIV 2015 and the commitment from the Committee on World Food Security. Forests contribute to many of the SDGs, particularly SDG 2 No hunger by 2030. The most relevant targets are 1, 2 and 3. Five recommendations to achieve SDGs are to:

1. Coordination across sectors- health, agriculture, livestock, forests
2. Secure land and forest tenure
3. Access to credit, markets, insurance and extension for small holders
4. Ensure gender equality in policies and investment
5. Improve mechanisms for data collection and dissemination

Thus, we have a holistic picture, which captures the full contribution of forests, forest landscapes and sustainable forest management across all four dimensions of food security (including the availability, the access, the utilization and the stability dimensions).

Richard Harper, Murdoch University and coordinator of the International Union of Forest Research Organizations (IUFRO) Task Force on "Forests, Soil and Water Interactions" talked about the Taskforce. The integral role of forests in the supply of clean water and protection of soils is well known, however there are increasing demands on forests due to increasing population and new challenges such as climate change. There are however gaps of knowledge on the impacts of climate change, forest management and soil conservation on water, and the scale of activity that may result from carbon mitigation markets and its resulting extensive changes in land-use. Climate change is expected to manifest itself in different ways, affecting water balance, temperature (frost and heat), and winds and increased CO₂. We therefore need to think in both averages and means but also extremes – for example the pine beetles impact of forests in North America appears climate related. We also need to expect surprises and nonlinear responses by forests. The effects of climate include drought, temperate stress, wind throw, changes in compositions, pests and diseases, fire risks and severity. The task force wants to look at how climate may affect forests and how resilience they are, for example, what are likely impacts on water (balance, discharges, runoff etc.). Climate change has produced a new agenda, and new science. For example Robert Jackson's carbon paper in science 310 1944-47. We know reforestation can improve water quality and yield- although the relationships are not always clear-cut. These changes may in turn have either positive or negative effects on soils and water. Forest carbon mitigation may allow substantial progress to be made by various UN treaties such as the CBD and the UNCCD and the Sustainable Development Goals, by providing finance on a hitherto unseen scale. Alternatively, carbon mitigation may compete with food production and water supplies. The Taskforce will canvas this and other emerging issues. Responses to the challenges include capacity building and creating knowledge. The water implications of climate change and climate change policies include uncertainties around drought and indirect effects of climate (fire, drought, pests) on forests on water yield. Science is thus needed to inform forest management and policy, and people's actions on the ground. IUFRO's taskforce includes running workshops and meetings, often as part of other forest, water and agriculture events (such as the EcoSummit 2016 and the Regional IUFRO meeting in 2016), on themed issues such as the effect of forest climate mitigation markets on water and soils. The taskforce also invites short presentations from thought-leaders on science, policy and management, which can be posted on the web to stimulate discussion. Finally aims to review papers on the subject and build knowledge.

The importance of water and irrigation for sustainable agriculture and food security was discussed by **Myeongill Kim, of the Korea Rural Community Corporation**. After introducing the KRC and its aim to enhance agriculture development in Korea, the agricultural development in Korea over the last decades was presented. Increasing GNP per capita was achieved

since the 1970s when the number of farmers in population decreased from 28% in 1980 to 9% in 1999 and 5.8% in 2012. Also. There was also an increasing focus on food safety, certification, quality, and a return from urban to rural areas. An increase to 80% of paddy fields being irrigated has been achieved, to contribute to self-sufficiency in rice, the Korean staple food. The Water Plan of the government 2011-201020 calculates river discharge, direct loss, and runoff and highlights the need for multifunctional agricultural water infrastructure that not just supplies water for farmers, but also as a rural amenity, and environmental resource. An internet based water resource management and information system helps provide real time information for water users. The Korean agriculture-based policy stresses the important role of water management for food security. It includes agricultural infrastructure against climate change and applying the new agricultural paradigm

Question and answer session

1. Have the relationships between dams and catchment areas in Korea been established? In India it has been found that shelter belts and planting can improve water quality.
2. The food security presentation stimulated the comment that access to credits markets, insurance and farmer extension were relevant, from the Indonesian perspective. However it is difficult to obtain credit when forests are not seen as sufficient guarantee or collateral. An example given from India was that systems of e-marketing, storage, minimum prices and credit have been based on forested land as collateral. It was noted that the FAO is doing work on credit and strengthening farmers to build up small scale enterprises. Especially in African countries such as Zambia and Senegal there are positive experiences. Dominique Reeb noted that secure tenure is critical to enabling farmers to access credit. This is one of the reasons the FAO is continuing to work on tenure reforms, as when forests are state owned this often prohibits communities from obtaining credit.
3. The relationship between forests, water and livestock was questioned, as livestock can both contribute to forest management but also be a pressure on forests.
4. A question was put as to how forest food is related to per capita growth and food income? Has there been research on the contributions of forest food in developed country markets? A response of yes was given. While in less developing countries such as Laos and Myanmar, around half of food comes from forest, as these countries developed economically, wild food has become cultivated. This can be safer from a food security point of view. This common transition raises questions about whom benefits from harvesting and trading food sourced from forest, such as forest dependent people. Laura referred to FAO Korea report [4], and shows how dynamic the direct contribution of forests to livelihoods are as other industries and agriculture takes over from forests in providing food sources. This also raises questions about the definition of NTFPs when they are cultivated, as the current definition is not very accommodating. Dominique indicated that many forest products in developed countries aren't recognized as being sourced from forests once they are nicely packaged – but that it is a huge industry, see for example Schulp et al. 2014 [5].
5. The Philippines experience of watershed management triggered a question about the KRC and FAOs policy of investment in watershed catchments. This question was not able to be responded to however due to time constraints.
6. Dr Quang was happy to see the connections made between forests and food, but playing devil's advocate, wondered about the danger of forests being a poverty trap for forest dependent people. More studies are needed on this.
7. A recommendation was made that post-harvest processing of NTFPs is important to ensure such products end up in markets. This means working with the private sector. An example was given from Laos, where cooperation between harvesters and companies, supported by development partners enabled selling products on international markets.

*The session I. continued with the presentation of Verina Ingram.

Dr. Verina Ingram, Wageningen UR, presented the concept of an integrated landscape approach for sustainable agriculture and food security. A landscape approach implies viewing and managing multiple land uses in an integrated manner, considering both the natural environment and the human systems that depend on it. Landscape approaches are now becoming popular as monocultures have been shown to be successful, but create their own problems; due to the complexity of current global problems; new integrative concepts being used such as landscape restoration, climate smart agriculture, sustainable food and agriculture, food and nutritional security; the rise of international agreements on climate change; increased engagement from business sector and the Sustainable Development Goals. The jigsaw puzzle of the integrated approach was shown to depend on integrating not just different land uses, but also dialogue with the multiple stakeholders, including those involved in (food) value chains originating in the landscape. Dialogue means recognising the challenges of conflicts, differential power relations, representation, transparency and accountability, jurisdictional and administrative boundaries that do not correspond to landscapes and value chains. This can result in designing novel arrangements across actors, sectors and scales that aim to reconnect people to their place, reconnect politics to places, facilitate landscape level dialogue, design integrated policy options and informed negotiated decision making. These are enshrined in 10 principles for landscape approaches [6].

Yang Youlin, Asia-Pacific regional coordinator, UNCCD talked about actions against desertification, land degradation and drought for sustainable agriculture and food security. Vulnerability is defined as the conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards, including land degradation and desertification. Drought refers to a naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems. The basic facts of desertification, land degradation and drought effects are that drought poses a serious challenge in the Asia-Pacific region, as it is estimated that about 1.7 billion hectares of land is affected, one third of the entire region is drylands and 71% of drylands are affected by desertification. Even Pacific island states are affected by deforestation, soil erosion, degradation, drought disaster and fresh water shortage. Dust and sandstorms are prevailing threats to the environment and livelihood in many parts of the Asia-Pacific region and there are 23 of Asia-Pacific countries are suffering from desertification related disasters. Drought impacts land both environmentally (degradation, desertification etc. and water scarcity) and socioeconomically. In Asia Pacific about 1.7 million ha land are affected by drought, especially in Centre, West and Northeast Asia.

An example is shifting sands, dust and sandstorms which seriously affect natural and human environments, alter climate by affecting net radiation and have enormous environmental costs of 70 to 230 million US\$ a year. Revegetation can be a key part in fixing dunes and avoiding sandstorms. Climate change is predicted to affect different regions differently, especially in the northeast and West Asia causing salinization and desertification, and is expected to increase water scarcity, wind erosion in some areas and land soil erosion in the Northeast and West.

Policy reactions include policy development and governance for drought management, at national level and with UNCCD, and measures at local level such as dryland development, irrigation, reforestation/revegetation, and agroforestry through public private partnerships (PPPs), soil and water conservation rotation grazing in desert steppe, protected areas and reserves, active participation of local people /communities. The case of DPRK in Mt Eras helped show how conservation agriculture on sloping lands in non-paddy fields had reduced surface runoff and control soil erosion. Also an example from Iran of hand spreading seeds prior to rainy season to combat over grazing was noted.

Lailai Li, Country director, WRI, talked about forest landscape restoration in China. She gave an example of mining site restoration. China is not rich in arable land with only 14.3% of land cultivated and the amount decreasing, largely due to

water stress. Most agricultural is located in water rich Southeast, with some in the Northwest. Open pit mining is mainly in Southwest- and Northwest, and there are some overlaps between mining and arable land. There are increasing tensions between food production and urban development. Mining is one of destructive uses of cultivated land, using 3 million ha by 2014, equivalent to 3% of arable land, destroying 0.2 million ha of land annually, 60% of which is cultivated. China's ecological development strategy, such as the Loess lands in NW Xhanxi province, have mean the reforestation and cultivation of a huge amount of loess lands. But in some areas this strategy hasn't been very successful, especially in forest belt in North East, East, North and Northwest China, where reforestation isn't well applied. This is due to wrong species selection and inappropriate revegetation. A solution is to make restoration based on science. Restoration implies planning right from the beginning of the mining activity, working with local community, and active restoration post mining. Often these three elements do not happen; especially when local villages withdraw from mining sites as they lose their livelihoods. China has adopted a 30% target by 2015 of actively restoring mining sites and 405 by 2020, and up to now has restored 26.7% of sites, with 30 regulations and 10 miniseries involved. Since 1989 and the first land reclamation project, funded by a tax and a guarantee fund set up when mining commences. However less than 50% of state owned mining companies pay into the fund, and less than 0% of companies paying into it don't get the refund, and so don't need to restore. This creates a lack of incentive to restore and a massive implementation gap. Despite regulations there is also a policy gap, as the issuing of licenses is unconnected with enforcement of restoration, which is the responsibility of another department. There are however success cases, for example a goldmine which worked on agroforestry with ICRAF and WRI [7]. This project shows that different species can be used to provide multiple benefits: fix nitrogen, conserve water, and increase carbon stock, control pollution by absorbing heavy metals and erosion control. However, policy is essential to incentivise restoration and the participation of stakeholders to sustain restoration efforts.

Question and answer session

1. Experiences from India at a landscape level are aided by landscape maps at basin and watershed level, with a scale of 1 to 10,000. However hindrances are that landscape boundaries do not coincide with administrative boundaries, and some information on maps is not publically available due to perceived security issues. Forestry maps are however available from the India Forest Service, but not linked to catchment maps. India has an act for forest restoration compensation, which goes not to mining companies but the Forest dependents- a system that seems to work more than giving money and responsibility to company.
2. Prof Jinlong noted that in China landscape restoration, using a landscape approach, has been taking place in desert areas, with at least two successful examples. However he noted also that the concept is not new but builds on past approaches such as integrated conservation and development and lacks some academic evidence as to how to do it successfully, when facing real world with vested interests and multi sectoral agencies.
3. Nick Schofield shared an example of [restoring China's Sha River watershed](#), which has won awards for river basin restoration, success factors have been condensed from these cases. Patrick Durst also noted that success factors has been pulled out of [28 Asia Pacific forest studies](#), and that it would be interesting to see what overlap these have with the landscape principles.
4. A question was posed about about payments for forest restoration. Lailai Li of WRI replied that the idea of a fund is robust, but enforcement is critical – so the way it works in India is an interesting idea to exchange further upon.

C) Experience sharing in the region – Case-studies

Professor Ji Hong KIM of the Kangwon National University moderated the session which shared experiences from across Asia through a number of cases.

Dr. Nguyen Quang Tan of RECOFTC presented a case study on trends in forests, sustainable agriculture and food security in the Viet Nam between 1990 and 2014/15. This period covers the transition of Viet Nam from the poorest of the poor

countries in 1990s to a developing low-middle income country in 2008. In this time there has been an increase in population to 9 million, 80 % of which rural with an estimated 25 million people in or near forests, many of who are still some of the poorest in the country. Over the last 25 years the economic growth rate has been around 7% per annum. The country has moved from a net importer of staple food to one of the top rice exporters in the world. Average food production value per person doubled between 1990 and 2010. It has also moved from being a net importer of staple food, to become one of two top exporters of rice globally, with average food production per person doubling. The share of agriculture decreased from 34 to 19%, but investment, including foreign direct investment grown. Production patterns changed with markets and yields, but the country still received food aid, even though it is a net exporter. In the forestry sector, important changes have happened in forestland tenure, with significant shifts from state forestry to people centred forestry and legal rights given to individual farmers. Forest cover increased from 28% in 1990s to 40% in 2014, though deforestation and forest degradation continued. There has also been a shift from natural forests to plantations, and increased industrial wood removal from 4 to 6 million m³.

Key factors contributing to such positive trends include 1) the economic reform (Doi Moi) policy, covering trade liberalization, agricultural reform, and State Forest Enterprise reform, land and forest tenure reform, 2) the application of policy instruments to promote agricultural productivity (incl. land tax exemptions, soft loans, export promotion, price guarantees, support for mechanization and reduced post-harvest losses, and agricultural insurance) and policy and legal framework including diversified agricultural production, land laws regulating conversion to other land use; 3) clear targets for agricultural development and food production, as well as forest protection and forest development; 4) political will to maintain and develop forest coverage; and 5) support aiming for both the agriculture and forest sectors. Challenges include enforcing legislation, conflicts of overlapping land use interests – due to tenure confusion (caused by an overwhelming and quick pace of reform and lack of recognition of customary tenure. Using an entitlement approach, can see that an issue was access to food. Some issues have been resolved, such as the credit issue by introducing collateral free loans.

Dr. Byoung Il Yoo of the National Institute of Forest Science (NIFoS) presented the Korean case study on forests for food security. In the early 20th century Korea had around 80 % of its land covered by forest, but this was devastated due to a large amount of logging under Japanese colonialism, the Korean War and post-war social turmoil in the 1950s. In the 1960s, the average growing stock was below 10m³/ha, and deteriorating watersheds and water resources which were directly related with agriculture were considered as a serious social problem. During the First and Second Forest Plans (1973-1978, 1979-1987), around 2 million ha (1/3 of total forestland) were reforested. In 1990, growing stock increased to 38m³/ha, albeit insufficient, it became possible to secure agricultural water and to prevent farmland loss by protecting against landslides and soil erosion. Sustainable forest management has been reinforced since the 1990s and agroforestry been restrictively allowed since the mid 1990's. Silvo-pasture practices have been under review in 2010's. Recently, growing stock reached 135m³/ha. The importance of public value of forest such as watershed conservation and soil erosion preservation are expected to be more emphasized in the future. Korea has been branded as one of the success stories in global forestry practices. However, the average growing stock at 80m³/ha is well below Asian average.

Korea is a small country, but forested land is 65%, with private forest 68% equivalent to 2.3 million (small scale largely) owners, on average less than two ha per person. Korea is also well known for its successful watershed management. The public benefits of forestry are well accounted for e.g. erosion and landslide control - which used to be a major problem in 1960s and 1970s, such that children had tree planting days and planted 2.1 million ha, 12 billion trees. Also, Korea has seen an increase in GNI. Several factors contribute towards reforestation, including: Strong leadership and government, efficient administration, resonation of achievements, conservative establishment of a National Forest Plans, active

community engagement; strategic fuel pricing and availability of alternatives, and support by bilateral and multi-lateral aid projects, which finished in 1993. Despite these actions Korea still has had big landslide problems i.e. large slides in 2002. Agroforestry has been a major feature of the policy, increasing planted area and income. Future issues to deal with include harmonizing forestland use, more attention to the SDGs and policy change of ODA to focus not just on climate change also forests and agriculture together.

Guangzhou Lin of Tsinghua University shared a case study on mangrove resources for fishery and seafood production in China. Mangrove wetlands are the characteristic intertidal ecosystems distributed in tropical and subtropical coastlines worldwide. Mangroves provide a wide range of ecosystem services. Over the last few decades, mangrove areas have become smaller or fragmented and their long-term health is at great risk, significantly reducing their values as a nursery for marine fisheries and agriculture production. In China, the population boom and rapid economic development, especially in aquaculture, and biological invasion into mangrove habitats have reduced mangrove areas by about half since 1950s, leaving only 25,000 ha mangroves now in the whole country. There are 24 true mangrove species in China, half of the global total. On global scale there is a loss of 1 to 2% of area under mangroves per year. To remedy these problems the Chinese government launched a series of programs to protect and restore mangrove wetlands since early 1980 and has established mangrove ecosystems as high-priority areas for improving environmental and nature resource managements. During last three decades, 34 mangrove nature reserves have been established, which accounts for 80% of the total mangrove areas in China. Mangrove restoration areas in mainland China account for about 10% of today's total mangrove area.

Most of the state and provincial mangrove nature reserves have been managed not only for biodiversity conservation but also to provide optimum opportunities to maximize aquaculture outputs, fishery harvesting and ecotourism. A series of mangrove restoration projects has been implemented in Guangxi and Guangdong to test the feasibilities of using degraded mangrove wetlands for sustainable and high return agriculture operations. This mangrove wetland restoration uses a mix of fish cultivation in artificial ponds linked to ocean by plastic pipes. There are promising economic returns from the sale of seafood products. There is also the possibility for carbon credit offsets from mangrove projects. This example shows the multiple food, income and carbon services from mangroves. What has been learnt about mangrove resource management in this project has broad implications for Asian, African and South American countries where a large proportions of world's mangrove forests are found, as these are also countries experiencing rapid economic development.

Hermanto Siregar of Bogor Agricultural University presented a case study of forest for water and sustainable agriculture in Indonesia. Challenges in the agricultural sector and food security in Indonesia include food production, more specifically and national rice production which is highly depending on irrigation systems performance. Challenges include availability of land, due to increasing competition for land and stagnating yields which have led to farmers going out of business. There is a large degree of asset inequality between farmers, and an increase in large scale farming. A challenge is water availability, as around half of rice paddies are rain fed and very vulnerable to climate change. There has been an increase in demand for irrigation water. Climate change (notably El Nino and El Nina) create uncertainty due to increases in temperate and sea level surface which threaten paddy fields in coastal areas. Regarding infrastructure systems, recent data shows that irrigated areas contribute about 84 % to national rice production. Strengthening irrigation services through proper water management should improve the performance of rice production in efforts to achieve food security and sustainable self-sufficiency for rice. The importance of water has been noted in the national policy for sustainable water resources, as well as problems associated with water resource management and irrigation for agriculture, water availability and crop dependency, watershed management.

The role of forests in facing these challenges is important. Agroforestry can strengthen food security, but also replaces forested land. Forested land has declined from 65 to 50% forested protection areas about 44%, rest are for production in some form. Around 40% of designated forested lands are not actually forested- which means that they are ripe for conversion. There was a deforestation rate of 6.5 million ha from 2000 to 2011, with a decreasing rate of forest area loss of about 1% per year. Policies to support forest include increased land area for farmers in state forest company land, allowing rice paddy and corn to be grown on non-forested forest land forest. Policies support community involvement and upstream restoration and protection of Indonesia's four biggest watersheds, increased community involvement in water shed management programme taking a landscape approach. There are internationally supported initiatives for 108 integrated watershed management plans to be integrated into a regional and spatial development plans, the restoration of burnt peat bogs and mitigation measures of the effects of climate change via prioritization. This points towards an ecological focus, instead of exploitation focus. A challenge is maintaining interest among institutions managing the forest area and maintain investment in forestry issues.

Rural institutions and agricultural technology also play a role in enhancing food security and agricultural sustainability: Agricultural institutions in food production includes Water User's Associations, technology adaptation against global climate anomaly, and the anticipation on farm risks , irrigation systems and infrastructures, farmers participation in irrigation management. Policy implications include the need to strengthen FMIS for food security and setting up more PPPs for sustainable water resource management for agriculture.

Question and answer session

1. Reforestation of the huge amounts of denuded and degraded lands appears to be an issue in many Asian countries - due to numerous causes (agriculture, fires, droughts, illegal logging). There are however exceptions such as Korea and parts of China. A trade-off is apparent in the highly populated Southeast Asian countries which need more land to produce food and maintaining forests. This trade of is still seen largely in terms of competing land uses, rather than being framed as an opportunity and exploring the challenges of how to combine both.
2. The mangrove example from China was interesting, as in countries such as India the role of mangroves in coastal protection seems to have been overlooked in favour of human made coastal construction. This is an area where more lessons could be shared.
3. In China all land is state owned, and use and management rights can-not be contracted out to private companies and households. The land classification system means that converting forest to construction land is difficult as different ministries are responsible. This provides both advantages in slowing down changes in land use, but also disadvantages.
4. The issue of indigenous peoples traditional land use practices was raised, as a vast majority of indigenous peoples in Asia practice shifting cultivation, traditionally seen as contributing to deforestation. Many forestry authorities see shifting cultivation as a bad practice, but it can also be seen as rotational agroforestry. A question was posed of what is our view as researchers- how can we help authorities see both sides of the impacts of shifting cultivation and ensure that indigenous peoples have food security.
5. A question was posed to Dr. Byong-Il Yoo of Korea, about the density of planted trees, and if they need to thin, and which species have been used? Thinning is indeed an issue, not from a commercial perspective as most species planted are not of commercial value, but because thinning costs a lot as labour is expensive. A dilemma for the government is that as mainly Japanese larch has been planted, which will be harvest-ready in 10 to 20 years, they are thinking what to replace it with, as now soil condition has improved and different species could be planted.
6. It was noted that de-vegetation affects not just plains, but also large areas of deserts, steppes and upstream river and mountain areas in Bhutan and Nepal. We need to consider revegetation with grasses to aid food security) and restoration grasslands, rather than only reforestation.

7. Dr. Quang was asked about the 70 year allocation rights to forests in Viet Nam, and if people can grow crops in the forest. The response was that annual crop rights can be obtained for 20 years and if people decide to grow trees, rights can be allocated for up to 70 years tax free. The conversion of forest to other land uses has to be approved – often at high level provincial level - and when it concerns very large areas, at central government level. In contrast, it is easy to plant trees on degraded agricultural land. It is possible to grow crops on a small percentage on non-forested forest land but not that forest land can be cleared.

It was observed that in Myanmar a similar situation exists, with different authorities being responsible for forest and agriculture. Also in Myanmar even when there is encroachment, land is still classified as forest, but people can lease this land for crops for up to 30 years, at 1\$ per acre for year. Some crops however are not allowed and some crops are encouraged such as certain tree crops.

In India it was noted that there is a new law that gives tribal peoples land rights. The law allows them to sell land to other tribal people but not to outsiders. This land can be used as people like, allowing them to practice traditional (often long term) rotational slash and burn forestry, but should not roam and destroy other forest. Seen as quite successful in India.

8. On the mangrove reforestation, it was noted that setting up restoration has high costs as sandbagging is needed to start of restoration. But experiences in Philippines indicate that these costs are paid back in terms of food resources and security that mangrove restoration provides.
9. Majig Tungalag talked about tree planting projects in Mongolia which were not successful, leading to a search for innovation. The response was to use the saxaul (*Haloxylon ammodendron*). She stressed that some degradation in the Gobi is a natural process and not caused by human activities, indicating that we shouldn't be so worried about this process. The effects of mining in this area are also marginal. Several foreign companies in the Gobi are collaborating on the greenbelt saxaul revegetation programme.

D) Challenges and opportunities for cross-sectoral coordination

This session was moderated by **Majig Tungalag, Director, Forest Policy and Coordination Department, Ministry of Environment, Green Development and Tourism in Mongolia.**

Nick Schofield, Director of the UNSW Global Water Institute, talked about the importance of investments in the watershed sector for food and water security. He summarized the drivers for investment in watersheds in developed and developing countries; highlighting the biodiversity and natural disaster aspects, which have not been brought so much into the discussions in the last two days. He explained why watersheds are a good framework for investment – due to water scarcity with a number of hotspots in Asia. Also as there is an increase in the number of water related natural disasters. The direct connection between watershed investment and food security has shown that if we can now manage watersheds directly for drinking and agriculture, we can build resilience, social and community capital, protect water quality, and ensure sustainable use of surface and ground water.

Relatively little comprehensive analysis of trends has been made. This includes trends in who is investing, where and why. He briefly examined who are the investors (international banks, governments, NGOs), and why and how they invest; and discussed an approach to quantify the return on this investment. The investment drivers include: a lack of safe water and sanitation and its nutrition and health impacts; vulnerability to natural disasters resulting from poor watershed management; impacts of declining aquatic biodiversity and ecosystems on river and wetland food sources; increasing frequency and intensity of floods, droughts and storms due to climate change, resulting in increasing soil erosion, crop loss and population displacement; increasing global population requiring more food and water; changing diets towards more water and nutrient intense food; and economic demand for future water out-competing irrigated agriculture. Investment in watersheds has tended to wax and wane, but protecting, sustainably managing/developing or restoring

natural capital is critical to improving the health, wellbeing and resilience of rural low-income communities in the face of the above challenges. Equally, social capital investment through education and gender programs, in conjunction with watershed farmer groups, volunteer organisations or local management committees is essential for working towards a sustainable and secure future. Returns on investment are rarely measured- even international development organisations who conduct monitoring and evaluation but rarely assess cost benefits. But such evaluations can be done. One way is a 'triple bottom line ROI' (economic social and environmental) benefit cost analysis. Using this methodology, 500 projects with 30 cases show a BCA of >5:1 average over all the investments. This method can also be repeated over time showing how ratios mature. Typical a wide range of economic, social and environmental benefits occurred. One step was to list all types and they see what could be evaluated and cost those that could, to end up with a conservative evaluation [8]. It was found that watersheds are valuable investments and given that we know how to manage them sustainably, increased investment could yield a higher return, but it is not easy. Measurements of return on investment in watersheds help us learn, and are important because we see now wide range of investments by different players , with different aims and approaches- we need to learn from this diversity.

Gao Zhanyi, Engineer in chief of the China Institute of Water Resources and Hydropower Research talked about the water-energy-food nexus and role of ecosystems. The nexus concept places human life at the centre with food, energy, water and environment (ecosystems), water and energy footprints strongly interlinked. About 70% of global fresh water withdrawals are consumed for agricultural irrigation. Irrigated areas account for 20% of total world farmland, but produce 40% of world food. Rain-fed agriculture produces 60% of world food. A role can be seen for forests in protecting rain fed agriculture areas. The effective and efficient use of 'blue' and 'green' water is the key to the sustainable use of water for food. A nexus approach helps us to better understand complex and dynamic interrelationships between water, energy and food, to manage these limited resources sustainably and think of impact of decisions on these interlinked sectors. Nearly all forms of energy require water in their production process. Freshwater withdrawals for energy production account for 15% of the world's total and are expected to increase by 20% by 2035. Energy is required for the collection, treatment and delivery of water. Electricity accounts for an estimated 5 to 30% of the total operating cost of water and wastewater utilities. Food prices tend to be closely interlinked with energy prices. High-energy prices push up the costs of fertilizer, fuel for irrigation pumps and transportation of goods to markets, and thereby squeeze farmers' profits. The food production and supply chain consumes about 30 % of total energy consumed globally. A better understanding of the complex and dynamic interrelationships between water, energy and food is essential for using and managing the limited resources sustainably, and thinking about impacts of the decisions on all interlinked sectors, anticipating potential trade-offs and synergies; designing, appraising response options that are viable across different sectors. In China, 28% of water for irrigation is derived using gravity diversion via rivers, 31% reservoir storage, 19% by pumping lift from rivers, 18% by groundwater pumping, and 4% from other sources. These figures remind us that although the 1960s and 1970s food crop shortages were linked to deforestation and the situation now is very different, reforestation was introduced in the 1970s as a remedy. Yield increases are as important as increasing farmland area.

Katarina Veem, Director, Stockholm International Water Institute. Also known as Swedish WaterHouse, a not-for-profit think tank, Katarina talked about the challenges and opportunities in cross-sectoral coordination for improved water and food security. SIWI works closely with UN, including on World Water Week. This year its water and jobs or water and sustainable growth. SIWIs thinking based on the concepts of blue and green water, and current work on social-ecological systems. Water is a good example of a resource which connects and ties together ecosystem services up and down stream. We still don't know how some air flow mechanisms work, returning water flow to the atmosphere - forests in one part of the work provide rain flow for others through complex hydrological cycles, 105 years ago Sweden was virtually deforested and dominantly agriculture, now are one of most forested nations, with a small number of species, slow growth rates >60

years, but have really changed occurrence of blue and green water in Sweden in this time. Small holders initiated the forestation, together with the government. The largest and arguably most innovative forest company is actually smallholder owned (>20,000), nationally coordinated using inventories and hi-tech communications and tools. SIWI has brought together history of forest and water into a synthesis policy brief: [Water, forests, people: Building resilient landscapes](#). SIWI also advocates a landscape approach, to connect stakeholders and give voice to those without power, to inventory and to formulate policy – at all level. This type of dialogue we are having is essential, alongside taking large-scale approaches. Challenges are to link ecosystems- the biggest incentive for cross-sectoral dialogues is recognising this interlinks, and getting away from silos. A serious challenge is that our current economic paradigm assumes continuous growth and a degenerative valuation of our limited natural resources. This however is also an opportunity, to make use of land and forest interdependent if we start seeing a circular economy with regenerative economy, providing long-term stability as a goal rather than short-term profit. An example is last year's Stockholm Water Prize winner Rajendra Singh, who combined ancient and modern methods to replenish acquirers in dry India to revegetate and reforest lands, and made five rivers flow by channelling rain into aquifers and engaging local communities.

Question and answer session

1. How were social and environmental benefits quantified in the cost benefit assessment? In addition, can the methodology be shared? Nick responded that it has been [published](#) in [some journals](#), and detailed methodology in series of reports, 30 cases are all on internet. For example, adopted social and medical science indicators, such as anxiety among water users under pressure, to highlight social aspects.

It was questioned if the conventional economic rate of return on investment also calculated. Ecological values can be variable and depend strongly on methodology, and this is still a tricky area to calculate. The valuation methodology was highly cautious and conservative to avoid overstating investment returns, given the dangers of previous valuations. Experience from Philippines shows that type of investment and the area covered can have highly variable effects. Experiences from Korea indicate that investment patterns have changed, risks are now included and not only physical infrastructure, this means coordination between water, environmental, agriculture and construction is essential for both small and large scale projects.

2. Mr Samara indicated that he also can provide methodology for collecting participatory returns on watershed benefits from India.
3. In India the tree component in watershed development can be very important, especially for rainfed agriculture, but careful selection of highly drought resilient tree and livestock species is needed that can with stand prolonged drought periods.

E) Ways forward

This session was facilitated by Verina Ingram, Dominique Reeb, Patrick Durst and Sooyoen Jin. The participants split into three groups and discussed the challenges and opportunities to enhance the contribution of forests to sustainable agriculture and food security and nutrition. These are summarised in Table 1.

Photo 1. Group C in action, facilitated by Dominique Reeb



Table 1. Challenges and opportunities to enhance the contribution of forests to sustainable agriculture, food security and nutrition

Theme	Challenges	Opportunities
Policy and governance	<ul style="list-style-type: none"> • PPPs hardly doesn't exist in forestry, in agriculture and water they do more) • Lack of responsibility or control over land by local government • Competing demands for land uses, particularly for forested land by agricultural/pasture • Lack of cooperation by different national ministries for land. Food, water and forests • Lack of multi-agency interest in developing nexus policies • Lack of cross sectoral policies and coordination • Institutional turfing • Multi-stakeholder interest group conflicts • Conflicts related to regulating planning of land uses are not systematically addressed cross-sectorally 	<ul style="list-style-type: none"> • Link up to existing international agreements (climate, biodiversity, SDGs, desertification) as incentive for action • South-south cooperation • Regional level cross sectoral ministerial level summit • Regional level meeting with stakeholders • Establishment of national level coordinating committees • Establishing forests on degraded lands • Sectoral approach enhanced by human behaviour • Better understanding and communication leads to improved cross sectoral mechanisms • Message to EU: EU to make recommendation on cross sectoral coordination • <u>National</u>: Create nested sector integration mechanisms (from cabinets into departments) • Use SDGs as international driver for cross sectoral legal and policy development • Annual meeting for continuing cross-sectoral approaches (World Water Week) • Regular round table events • Granting land tenure and land stewardship to forest dwellers • Collaboration on IWRM • Inter-sectoral complementarities • Using integrated landscape approaches •
Awareness and capacity building	<ul style="list-style-type: none"> • Dispelling ignorance on links between forest, food and water • Lack of communication between • How to converge resources • Silo (mono sectoral) mentality as an institutional constraint • Insufficient dissemination of information about ecological principles for restoring forests in developing countries 	<ul style="list-style-type: none"> • Foresters can pay more attention to food production • Change towards circular, bio-economy and more environmental friendly lifestyle • Capacity building for policy makers and managers on cross sectoral approaches • Every 2 years regional workshop for sharing experiences • Opening minds to complexity and possibility of cross sectoral approaches • Mainstreaming sustainability issues • Use Paris meeting on climate change adaptation to raise awareness on food security
Knowledge sharing, innovation and technology transfer	<ul style="list-style-type: none"> • Lack of nexus inputs to technical training or extension at farmer community • Lack of understanding of the role of forest in food security • Lack of quantification of responses in terms of water yield to changing forest and farm management and climate 	<ul style="list-style-type: none"> • Sharing forest and landscape policy successes in the Asia region • Stimulating working together in region on agricultural nutritional and food security • Making use of ICT and social networks • Using integrated development processes with multi-stakeholder platforms

Theme	Challenges	Opportunities
	<ul style="list-style-type: none"> How to transfer cross-sectorally positive technology and knowledge to all stakeholders How to ensure that forest occupants practice balanced agroforestry (currently is food vs trees) 	
Finance and investments	<ul style="list-style-type: none"> Lack of integration of forest, water and agriculture related investments Payments for watershed services alone will not solve the problem of watershed degradation and deforestation Declining investment in forest management in the region (e.g. mangroves) Non common fund arrangements 	<ul style="list-style-type: none"> Policy interventions in environmental protection in investments in water infrastructure Use blue carbon initiative and biodiversity treaty to attract funds for mangrove restoration
Societal changes	<ul style="list-style-type: none"> Curricula that combine forest, food and water are rare – at academic and practical level Lack of involvement of grass roots players in discussion of the nexus issues Increasing incomes and changing lifestyles 	<ul style="list-style-type: none"> Decreasing populations in rural areas See forests as a legacy for the future Changing value of appreciating rich, biodiverse forest resources Increasing use of forests for leisure
Environmental products	<ul style="list-style-type: none"> Bioprospecting competing with conventional products Feeding a growing population Climate change threaten food security 	<ul style="list-style-type: none"> forest food discoveries Forest based medicines Bio-prospecting Commercialisation of high value forest products Improve rural peoples incomes through better use of forest products Better use of tree marketable species for multiple uses including food
Environmental services	<ul style="list-style-type: none"> How to increase/improve forest cover in areas denuded by forest fires, logging and slash-and-burn agriculture 	<ul style="list-style-type: none"> Valuing and paying for water resulting from improved forest management Forests to mitigate climate change Increasing forests water holding capacity Increasing joint forest and agriculture innovative financing Gaining water co-benefits from carbon mitigation Future markets for forest carbon and water, and protection against climate change threats. Organize scientists, managers through international institutions (FAO, UNEP etc.) to train local people to participate in mangrove restoration projects

Key: Group A Group B Group C

Participants then drafted a set of recommendations to enhance the contribution of forests to sustainable agriculture and food security and nutrition on national and regional level.

Table 2. National and Asia Pacific level recommendations to enhance the contribution of forests to sustainable agriculture, food security and nutrition

Group A

Theme	Regional level	National level
Policy and governance	<ul style="list-style-type: none"> Regional level cross sectoral ministerial level Summit Regional level meeting with stakeholders South-south cooperation International coordination of climate mitigation work 	<ul style="list-style-type: none"> PPP in forestry (doesn't exist in forestry, in agriculture it does) Privatizing forest tenure/revising ownership
Investment & finance	<ul style="list-style-type: none"> Regional level trust fund wildlife fund Forest product trading 	
Knowledge and technology	<ul style="list-style-type: none"> Acceleration of translation from science knowledge to the field 	
Capacity building	<ul style="list-style-type: none"> Tertiary level and technical and extension level education capturing nexus, cross disciplinary 	
	<ul style="list-style-type: none"> Developing water, biodiversity and other environmental services markets 	
Environmental products	<ul style="list-style-type: none"> Regional certification (i.e. inspired by or together with ITTO, FSC etc.) 	

Group B

Theme	Regional	National
Policy and governance	<ul style="list-style-type: none"> Build on existing Regional coordination through mechanisms e.g. ASEC, SARC, EMS, APAP Inter-sectoral coordination of lands. Energy, forest, land, agriculture 	
Investment & finance		<ul style="list-style-type: none"> Funding mechanisms Develop innovative financial incentives for inter-sectoral coordination Financial mechanisms from local and central government
Knowledge and technology	<ul style="list-style-type: none"> Sharing success stories and lessons and sharing Sharing of technologies (south-south and regional) 	<ul style="list-style-type: none"> learn from past
Capacity building	<ul style="list-style-type: none"> Financial support for (farmer) capacity building 	

Group C

Theme	Regional	National
Policy and governance	<ul style="list-style-type: none"> Coordination of professional/sectors Build on existing regional bodies i.e. ASEAN summits and meetings- include agenda on cross sectoral into their meetings (can see how EU does it with EU level recommendations if agree on regional level, then at national level have to address the topic) Annual meeting World Water Week meeting – convene a cross sectoral dialogue 	<ul style="list-style-type: none"> Use SDGs as driver for forest & food security framework Created nested institutional coordination mechanisms for inter-sectoral levels (linked to education and training on the theme)
Knowledge and technology	<ul style="list-style-type: none"> Education and make aware of nexus-inter-sectoral importance 	
Capacity building	<ul style="list-style-type: none"> Workshop sharing experience on cross sectoral experiences- could link to learn from success and past experiences 	<ul style="list-style-type: none"> National level capacity understanding building policymakers and managers

3. Recommendations

Pulling together the responses from the group work, the following recommendations are proposed:

Regional level

1. **Regional cross-sectoral policy actions on forests for improved food security**
 - a. Regional level cross-sectoral ministerial level Summit, building on existing regional level coordination mechanisms (e.g. ASEAN Summit, ASEC, SARC, EMS, APAP and the SDGs)
 - b. Regional level meetings (e.g. conference) with the range of cross-sectoral/professional forests, agriculture, food security and water stakeholders (professionals, academics, practitioners and community level) - including south-south cooperation – which includes sharing success stories and lessons and technologies to agree, develop and implement actions.
 - c. (International) coordination of climate mitigation work integrating the forest-water-agriculture-food security nexus (e.g. through other relevant international platforms: UNFF, CBD, UNCCD, UNFCCC).
2. **Capacity building**
 - a. Workshops and information sharing to build understanding among national policymakers and forests/agriculture/land/water/nutrition managers – on a transboundary, regional level
 - b. At farmer level capacity building to address forest-water-agriculture nexus issues
3. **Stimulating investment**
 - a. A regional level trust fund for wildlife
 - b. Stimulating (sustainable) forest product trading
4. **Accelerating knowledge and technology on the forest-water-agriculture nexus**
 - a. Acceleration of translation from scientific knowledge to the field
 - b. Developing tertiary level, technical and extension level education curricula that captures the cross disciplinary aspects of the forest, water, food security, agriculture nexus.
 - c. Sharing success stories and lessons between policymakers, practitioners and academics.
 - d. Sharing technologies, which enhance sustainable agriculture and food security, both regionally, North-South and South-South.
5. **Stimulating ecosystem services from forests, watersheds and agriculture**
 - a. Developing water, carbon, biodiversity and other environmental services markets.
 - b. Setting up (regional level) certification for forest and agriculture products with positive impacts on land, agriculture, forests and biodiversity.

Whilst many of the regional level actions also apply to a national level, the following specific actions on a national level were proposed:

National level

1. **Policy actions on forests for improved food security**
 - a. Create nested institutional coordination mechanisms for inter-sectoral levels (linked to education and training on the forest, food security, water, agriculture themes).
 - b. Stimulating public-private-(research) partnerships that take into account forest-water-agriculture-food security nexus issues.
 - c. Privatizing forest tenure and revising ownership to enable enhanced control and responsibility at field, forest and landscape level.
2. **Capacity building**

- a. Building understanding among national level policymakers and land/water/forest managers of forest-water-agriculture –food security nexus issues.
 - b. Capacity building at farmer level to enable farmers to better address forest-water-agriculture-food security nexus issues
3. **Stimulating investment and financing**
- a. Develop innovative funding mechanisms and financial incentives for inter-sectoral coordination
 - b. Develop financial support mechanisms for integrating forests, sustainable agriculture, water and food security issues at local and central government level.

4. Wrap-up/closing and Conclusions

Sooyeon Jin of the FAO praised the progress and participation of the meeting’s participants, quoting Henry Ford, who said, “*Coming together is a beginning. Keeping together is progress.*” One next step forward is that the FAO will bring the recommendations from this meeting to the 23rd Session of the Committee on Forestry (COFO) in 18-22 July 2016 through a side-event and to other relevant policy dialogues (the Committee on World Food Security etc.) and to bring them into upcoming policy guidelines. All participants were asked to take these recommendations back to their daily life and organisations.

Please contact Laura Sooyeon Jin Sooyeon.Jin@fao.org at the FAO with any further suggestions or recommendations from the meeting or on this report.

References

1. Alexandratos, N. and J. Bruinsma, 2012, *World Agriculture Towards 2030/2050. The 2012 Revision*, in *ESA Working Paper No. 12-03*, F.A.D.E. Division, Editor. FAO Rome.
2. FAO, 2013, *Towards food security and improved nutrition: Increasing the contribution of forests and trees*. FAO: Rome. p. 16.
3. FAO, 2015, *State of the World's Forests 2014*. Food and Agricultural Organisation of the United Nations: Rome.
4. FAO, 2016, *Integrated policy for forests, food security and sustainable livelihoods. Lessons from the Republic of Korea*, in *Working paper*. p. 54.
5. Schulp, C., W. Thuiller, and P. Verburg, 2014. *Wild food in Europe: A synthesis of knowledge and data of terrestrial wild food as an ecosystem service*. *Ecological Economics*, 105: p. 292-305.
6. Sayer, J., T. Sunderland, J. Ghazoul, J.-L. Pfund, D. Sheil, E. Meijaard, M. Venter, A.K. Boedhihartono, M. Day, and C. Garcia, 2013. *Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses*. *Proceedings of the national academy of sciences*, 110(21): p. 8349-8356.
7. Ghestem, M., K. Cao, W. Ma, N. Rowe, R. Leclerc, C. Gadenne, and A. Stokes, 2014. *A framework for identifying plant species to be used as ‘ecological engineers’ for fixing soil on unstable slopes*. *PLoS one*, 9(8): p. e95876.
8. Pearson, S., P. Chudleigh, S. Simpson, and N. Schofield, 2012. *Learning to invest better: Using ex post investment analysis on agri-environmental research and development*. *Research Evaluation*: p. rvs008.

Annex 1 Programme

Asia-Pacific Agricultural Policy Roundtable, 20 April 2016

08:30-09:00 Registration

09:00-09:40 [Opening Program]

- Opening Address (Dr. Saifullah Syed Secretary General, APAP Forum & President, Euro Asian Centre for Policy Studies and Management, Bangladesh)
- Welcome Remarks (Dr. Lee, Sang Mu, Chairman, APAP Forum & President, Korea Rural Community Corporation, Korea)
- Congratulatory Remarks (Dr. Liu, Wei, President, Renmin University of China)
- Keynote Speech (Mr. Chen, Xi Wen, Deputy Director, Central Rural Work Leading Group, China)

09:40-10:00 [Photo Session + Coffee Break]

10:00-12:00 [Session 1 Global/Regional Issues and Actions for Sustainable Water Resource Management for Climate Change in Agriculture]

Moderator: Mr. Tin Htut Oo, Chairman, National Economic and Social Advisory Council, Myanmar

- Global Actions for Sustainable Water Resources Management (Dr. Ryu, Ki Hee, Professor, Institute of Green Bio Science & Technology, Seoul National University)
- Sustainable Small-Scale Irrigation in Asia: Some Issues and Opportunities (Dr. Ganesh Thapa Visiting Scientist, International Centre for Integrated Mountain Development, Nepal)
- Farmers Affordability to Improving Irrigation Water Price (Dr. Wang Xiqin, Professor, School of Agricultural Economics and Rural Development, Renmin University of China)

Discussant :

- Dr. Tirso B. Paris, Jr, Former Professor, University of Philippines Los Banos, Philippines
- Dr. Ito, Shoichi Professor, Faculty of Agriculture, Kyushu University, Japan
- Mr. Lee, Bong Hoon, Chairperson, Korean National Committee on Irrigation and Drainage

12:00 - 14:00 [Lunch]

14:00-15:00 [Session 2. Country Experiences In Water Resource Management For Climate Change In Agriculture]

Moderator: Dr. Larry C. Wong (Visiting Fellow, Institute of Strategic and International Studies, Malaysia)

- Integrated and Participatory Water Resource Planning and Management: The Philippine Experience (Mr. Herman Ongkiko, Undersecretary for Foreign Assisted and Special Projects, Department of Agrarian Reform, Philippines)
- Water for Myanmar (Ms. Phyu Yamin Myat / Mr. Tin Htut Oo Managing director, Myanmar Development Partners Co., Ltd / Chairman, National Economic and Social Advisory Council, Myanmar)
- Water for Life, Livelihood and Food Security: A Critical Analysis of Southwestern Coast of Bangladesh (Mr. A.S. Moniruzzaman Khan Director, Centre for Climate Change and Environmental Research, BRAC University, Bangladesh)

- Water Management Policy: A Case of Chao Phraya River Basin (Dr. Nipon Poapongsakorn, Distinguished Fellow, Thailand Development Research Institute, Thailand)

15:00-15:10 [Break]

15:10-16:10 [Session 2 : Continued]

- Climate Change, Water Resource and Agricultural Adaptation in China (Dr. Jinxia Wang, Deputy Director, Center for Chinese Agricultural Policy, Chinese Academy of Sciences, Institute of Geographic Sciences and Natural Resources Research, China)
- Strengthening Farmer-Managed Irrigation Systems for Food Security in Indonesia (Dr. Sahat M. Pasaribu, Senior Researcher, Indonesian Center for Agro-Socioeconomic and Policy Studies, Indonesia)
- Issues and Actions for Sustainable Water Resources Management for Adapting to Climate Change in Agriculture in India (Dr. J.S. Samra, Former CEO, National Rainfed Area Authority, Government of India, India)
- Irrigation Water Supply against Desertification in Mongolia (Dr. Ryu, Ki Hee, Professor, Institute of Green Bio Science & Technology, Seoul National University, Korea)

16:10-16:30 [Coffee Break]

16:30-17:30 [Session 2 : Continued - Discussion]

Discussants:

- Mr. Choi, Yong Kyu, President, Global Agriculture Policy Institute, Korea
- Ms. Hoang Thi Dzung, Secretary General, Vietnam Federation of Agricultural and Rural Development Associations, Vietnam
- Dr. Joo Pilju Kim, Dean, School of Agriculture & Life Sciences, Pyongyang University of Science & Technology, Korea

17:30-17:50 [Session 3: Wrap-Up Discussion]

Moderator : Dr. Saifullah Syed, Secretary General, APAP Forum & President, Euro Asian Centre for Policy Studies and Management, Bangladesh

17:50-18:00 [Closing Remarks]

Mr. Yoo, Byung-Rin, Chairman, Korea FAO Association, Korea

18:00-18:30 [Board Meeting of APAP Forum]

08:30-09:15 [Arrival, Opening & Introduction]

Moderator: Sooyeon Jin (FAO)

- Arrival & Registration
- Opening Speech (**Sang-mu Lee, CEO, Korea Rural Community Corporation**)
- Welcome Remarks (**Liu Jinlong, Director, Centre for Forestry and Natural Resource Policy Study**)
- Congratulatory Remarks (**Percy Misika, FAO-China**)
- Keynote Speech (**Dominique Reeb, FAO**)
- Introduction of participants, workshop objectives and agenda (**Sooyeon Jin, FAO**)

09:15-09:45 [Coffee Break + Group Photo]

09:45-10:45 [Session 1: Forests, Water, Sustainable Agriculture and Food Security and Nutrition]

Moderator: Patrick Durst (FAO)

- 09:45-10:00 Understanding the linkages between forests and food security and nutrition (**Sooyeon Jin, FAO**)
- 10:00-10:15 Forests and Water (**Richard Harper, IUFRO**)
- 10:15-10:30 Important role of water and irrigation for sustainable agriculture and food security (**Myeonglll Kim, Korea Rural Community Corporation**)
- 10:30 - 10:45 Q&A

10:45 - 11:00 Break

11:00-12:00 [Session 1 Cont.]

Moderator: Patrick Durst (FAO)

- 11:00-11:15 Integrated landscape approach for sustainable agriculture and food security (**Verina Ingram, Wageningen University**)
- 11:15-11:30 Actions against Desertification, Land Degradation and Drought for Sustainable Agriculture and Food Security (**Yang Youlin, Asia-Pacific regional coordinator, UNCCD**)
- 11:30-11:45 Forest Landscape Restoration in China (**Lilai Li, Country director, WRI**)
- 11:45-12:00 Q&A

12:00-13:00 [Lunch]

13:00-14:00 [Session 2: Experience sharing of the region – Case-studies]

Moderator: Professor Ji Hong KIM (Kangwon National University)

- 13:00 – 13:15 Case-study Vietnam (**Tan Ngyuen Quang, RECOFTC**)
- 13:15 – 13:30 Case-study Korea (**Dr. Byoung Il YOO, National Institute of Forest Science (NIFoS)**)
- 13:30 – 13:45 Case-study China (**Lin, Guanghui, Tsinghua University**)

- 13:45 – 14:00 Case-study Indonesia (**Hermanto Siregar, Bogor Agricultural University**)

14:00-14:30 [Coffee Break]

14:30-15:00 [Session 2 Q&A]

15:00-16:00 [Session 3: Challenges and opportunities for cross-sectoral coordination]

Moderator: Majig Tungalag, Mongolia (Director, Forest Policy and Coordination Department, Ministry of Environment, Green Development and Tourism)

- 15:00-15:10 Importance of investment in the watershed sector for food and water security (**Nick Schofield, UNSW Global Water Institute**)
- 15:10 – 15:20 Water-Energy-Food Nexus and role of ecosystems (**Gao Zhanyi, Engineer in Chief, China Institute of Water Resources and Hydropower Research**)
- 15:20-15:30 Challenges and opportunities in cross-sectoral coordination for improved water and food security (**Katarina Veem, Director, Swedish Water House**)
- 15:30 – 16:00 Q&A

16:00-17:45 [Session 4: The Way Forward]

Facilitator: Verina Ingram, Patrick Durst, Dominique Reeb

- 16:00-17:45 Drafting a set of Recommendations to enhance the contribution of forests to sustainable agriculture and food security and nutrition (*all participants provide 2-3 recommendation items*)

17:45-18:00 [Closing and Wrap-up]

<http://www.fao.org/forestry/food>

Annex 2 Participants

Asia-Pacific Agricultural Policy Round Table, 20 April 2016

Nº	Name	Title	Institution
1	Chen, Xi Wen	Deputy Director	Central Rural Work Leading Group
2	Choi, Yong Kyu	Chairman	Global Agriculture Policy Institute (GAPI)
3	Dzung, Hoang Thi	Director General	Vietnam Federation of Agricultural and Rural Development Associations
4	Ito, Shoichi	Full Professor	Faculty of Agriculture, Kyushu University
5	Khan, Moniruzzaman	Director	Centre for Climate Change and Environmental Research, BRAC University
6	Kim, Pilju	Professor	Pyongyang University of Science & Technology
7	Lee, Bong Hoon	Chairman	Korean National Committee on Irrigation and Drainage
8	Lee, Sang Mu	Chairman / CEO	APAP Forum / Korea Rural Community Corporation
9	Liu, Wei	President	Renmin University of China
10	Ongkiko, Herman	Undersecretary for Foreign Assisted and Special Projects	Department of Agrarian Reform, Philippines
11	Paris, Tirso Jr. B.	Former Professor	University of the Philippines Los Banos
12	Pasaribu, Sahat M.	Senior Researcher	Indonesian Center for Agro-Socioeconomic and Policy Studies
13	Phyu Yamin Myat	Managing director	Myanmar Development Partners Co., Ltd
14	Poapongsakorn, Nipon	Distinguished fellow	Thailand Development Research Institute Foundation
15	Ryu, Ki Hee	Professor, Institute of Green Bio Science & Technology	Seoul National University
16	Samra, J. S.	Former CEO	National Rainfed Area Authority, Government of India
17	Syed, Saifullah	Secretary General / President	APAP Forum / Euro Asian Centre for Policy Studies and Management
18	Tang, Zhong	Dean	School of Agricultural Economics and Rural Development, Renmin University of China
19	Thapa, Ganesh B.	Visiting Scientist	International Centre for Integrated Mountain Development
20	Tin Htut Oo	Chairman	National Economic and Social Advisory Council, Myanmar
21	Wang, Jinxia	Deputy Director and Professor, Center for Chinese Agricultural Policy	Chinese Academy of Science
22	Wang, Xiqin	Professor, School of Agricultural Economics and Rural Development	Renmin University of China
23	Wong, Larry C.	Visiting Fellow	Institute of Strategic and International Studies
24	Yoo, Byung Rin	Chairman	Korea FAO Association

FAO-KRC Regional Cross-sectoral Policy Dialogue, 21 April 2016

Nº	Name	Title	Institution
1	Durst, Pat	Senior Forestry Officer	Food and Agriculture Organization (FAO)
2	Frith, Oliver	Director of Global Program	International Network for Bamboo and Rattan (INBAR)
3	Harper, Richard	Chair of the Forests, Soil and Water Taskforce, Professor	International Union of Forest Research Organizations (IUFRO) and Murdoch University
4	Ingram, Verina	Associate Professor	Forest and Nature Conservation Policy, Wageningen University
5	Jin, Sooyeon	Forestry Officer	Food and Agriculture Organization (FAO)
6	Kim, Ji Hong	Professor	Kangwon National University
7	Kim, Myeong Ill	Director, Project Planning Department, Gangwon Regional Headquarter	Korea Rural Community Corporation (KRC)
8	Lee, Sang Mu	CEO	Korea Rural Community Corporation (KRC)
9	Li, Lailai	China Office Director	World Resource Institute (WRI)
10	Li, Yanxia	Senior Program Officer	International Network for Bamboo and Rattan (INBAR)
11	Lin, Guanghui	Professor at the Institute for Global Change Study and Center for Earth System Science	Tsinghua University
12	Liu, Jinlong	Director, Center for Forestry and Natural Resource Policy Study	Renmin University of China
13	Misika, Percy	FAO Rep. China, DPRK, Mongolia	Food and Agriculture Organization (FAO)
14	Mu, Jianxin	Senior Engineer	Chinese National Committee on Irrigation and Drainage
15	Quang, Tan Ngyuen	Country Program Coordinator	Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC)
16	Reeb, Dominique	Senior Forestry Officer	Food and Agriculture Organization (FAO)
17	Samaha, Ziad	Programme Officer of the Regional Office of West-Asia	International Union for the Conservation of Nature (IUCN)
18	Schofield, Nicholas	Director, Global Water Institute	University of New-South Wales
19	Siregar, Hermanto	Vice Rector	Bogor Agricultural University
20	Tsevegmid, Solongo	Interim National Programme Officer, FAO Mongolia	Food and Agriculture Organization (FAO)
21	Tungalag, Majig	Director of the Forest Policy and Coordination Department	Mongolian Ministry of Environment, Green Development and Tourism
22	Veem, Katarina	Director	Swedish Water House
23	Yang, Youlin	Asia-Pacific Regional Coordinator	United Nations Convention to Combat Desertification (UNCCD)
24	Yoo, Byoung Il	Senior Researcher	National Institute of Forest Science (Nifos)
25	Zhanyi, Gao	Engineer in Chief	China Institute of Water Resources and Hydropower Research (IWHR)

Annex 3 Description of the participants

Chen XiWen

Chairman

Central Rural Work Leading Group

BIO

Chen Xiwen is the deputy director of the Central Leading Group on Rural Affairs and the Central Leading Group on Financial and Economic Affairs. He is the member of the Central Leading Group on Party-building work. His main research field is the agricultural economy. He has participated in drafting the most of central file on agricultural and rural policies since the mid-eighties. He is the adjunct professor and doctoral tutor of Renmin University of China, China Agricultural University, Nanjing Agricultural University, and other universities. He has won three times of Sun Yefang Award and a third prize for National Science and Technology Progress Award (soft science).



CHOI, Yong Kyu

Chairman

Global Agriculture Policy Institute

BIO

Educational Background

1963.03~1967.02 : Korea University, B.S in Economics, Dept. of Statistics

1969.09~1970.08 : USDA Graduate School

Professional Background

1982.02~1986.04 : Agricultural Attaché, Korean Embassy in Japan, M.A.F.F

1991.12~1995.01 : Agricultural Attaché, Korean Mission in Geneva, Switzerland, M.A.F.F

1995.02~1995.05: Director-General, Bureau of International Agriculture, WTO/DDA Negotiation; Agricultural Head Delegate, M.A.F.F

1997.06~1998.06: Director-General, Bureau of Horticulture, M.A.F.F

2001.05~2001.12: Deputy Administrator, Korea Forest Service

2002~2013.09: President, Global Agriculture Policy Institute

2005.09~ 2008.08: Visiting Professor, Jeju National University

2005.03~ 2013.09: Vice Chairman, Korea FAO Association

2013.09~Present: Chairman, Global Agriculture Policy Institute

2013.09~2014.02: Acting Chairman, Korea FAO Association

2014.02~2016.02: Chairman, Korea FAO Association & Honorary Regional Representative, Regional Office of AARDO for Far East



Hoang Thi Dzung

Director General

*Vietnam Federation of Agriculture and Rural Development
Associations*



BIO

Education, training :

BSc in Economy, Post Graduate in Sociology,

MA in Agriculture and Rural development,

Trained in Hanoi, Vietnam, the Netherlands, England and USA

Working experiences :

1979-1995: Official, Ministry of Agriculture and Food industries

1995 -2000: Senior Programme Manager, Ministry of Agriculture and Rural development.

2003-8/2012: Deputy-Director General, Department of International Cooperation Department, MARD

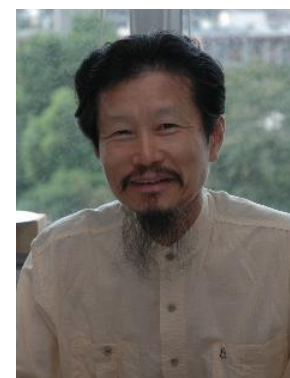
2008-12/2012: Director General of Vietnam SPS Office.

4/2013 up to now: Director General of International Cooperation Department, Vietnam Federation of agriculture and rural development Associations, Vietnam.

Shoichi Ito

Full Professor

*Laboratory of Food and Agricultural Policies, Graduate School and
Faculty of Agriculture, Kyushu University*



BIO

Earned his PhD at Texas A&M University, majored in Agricultural Economics focusing on US and global rice policies and trade in 1988. Experiencing Professor at Tottori University, Japan and Research Fellow at IFPRI in Washington, the current position has been since 2006.

International field surveys have been the major sources of his research. Hosting various international/domestic symposiums. Working with several domestic and international graduate students as the major advisor. Putting various kinds of international prices of the major grains and soybeans as well as individual countries' supply/demand data and graphs for many ag. products on the website: <http://worldfood.apionet.or.jp>

A S Moniruzzaman Khan

Director

Centre for Climate Change and Environmental Research (C3ER)

BRAC University, Bangladesh



BIO

A S Moniruzzaman Khan is the Director of Centre for Climate Change and Environmental Research (C3ER) at BRAC University in Bangladesh. Mr. Khan has been involved in teaching, research and development work and provided consultancy services to the UNDP Regional Centre and Asian Institute of Technology (AIT) at Bangkok, Thailand.

Mr. Khan graduated from Southern Illinois University Carbondale, USA with a master's in Geography and Environmental Resources. As a passionate environmental practitioner he has worked across a large number of international and local organizations for coordination and implementation of several ecological/ environmental/water resources management/ climate change adaptation projects in different regions of Bangladesh. Mr. Khan taught at the Southern Illinois University Carbondale and carried out research on bio-ecological parameters of local food systems. Working with the Indigenous people, especially exploring their knowledge on landuse dynamics is one of his favorite research areas. He published several books on environment in Bangladesh and Thailand. Mr. Khan also holds an M.Sc. in Natural Resources Management from Asian Institute of Technology, Thailand and another M.Sc. in Geography from the University of Dhaka.

Pilju Kim, PhD

Professor/Dr.

Pyongyang University of Science & Technology(PUST)



BIO

Dr. Pilju Kim Joo is the Dean of School of Agriculture & Life Sciences at PUST. She earned BS in agronomy at Seoul National University and later received her PhD in crop science from Cornell University specializing Seed Science to pursue her carrier for seed improvement and food security.

She is also the Chair of Agglobe Services International, a US based NGO promoting global food security improvement through sustainable agriculture in balance of ecosystem. She has been engaged in humanitarian and agricultural assistance to North Korea since 1989. Currently she is working with 5 cooperative farms, for over 10 years, promoting Sustainable Community Development Project through sustainable agricultural practices.

As the former Technical Services Director for International basin in Pioneer Hi-Bred International, Inc., she had traveled throughout the world to train specialists & farmers for quality seed production and standardizing seed quality testing. In March 2011 Newsweek magazine presented a portfolio of 150 "brave, imaginative and inspiring women who shake the world." and she was one of those honoured.

LEE, Bong Hoon

Chairperson

Korean National Committee on Irrigation and Drainage (KCID)



BIO

Education:

Master's, Agricultural Engineering, Seoul National University (1988)

Qualified Certificate:

Professional Engineer Civil Engineering Agricultural Fishery

Job Records:

2014.10 to Present : President, Korean National Committee on Irrigation and Drainage(KCID)

2014.09 to Present : Vice-President, International Commission on Irrigation and Drainage(ICID)

2012.08 to 2014.11 : Vice-President & Executive Director, Korean Rural Community Corporation(KRC)

2012.05 to 2012.07 : President, Food and Agriculture Officials Training Institute

1995 to 2012 : Deputy Commissioner, Ministry of Agriculture, Food and Rural Affairs

Sang Mu LEE

CEO

Korea Rural Community Corporation (KRC)



BIO

Dr. LEE is President of Korea Rural Community Corporation (KRC), the state-run public enterprise for rural community development. He gained extensive experiences in formulating agricultural policies as a government official before being appointed as Deputy Minister at the Ministry of Agriculture, Forestry and Fisheries in 1996.

He acted as FAO Representative to the Philippines from 1999 to 2004 and led Korea FAO Association and Regional Office of AARDO for Far East for years prior to joining KRC. Also, he has been serving as Chairman of Asia Pacific Agricultural Policy Forum since its inception in 2002.

Having earned a Bachelor's degree in Agronomy and Master's degree in Public Administration from Seoul National University, he received another Master's degree and a Ph.D. in Agricultural Economics at Michigan State University.

He has written several books on domestic and international agricultural policies, and also contributed many articles to newspapers and magazines.

LIU Wei
President
Renmin University of China



BIO

LIU Wei is doctor of Economics, professor, and doctoral tutor. Former executive vice president of Peking University, he is now the current president of Renmin University of China. And he is the member of the Academic Degrees Committee of the State Council, deputy director of the Committee of Experts on the Ministry of Education Discipline Development and Specialty.

His main academic research field include: Economic Theory of Socialism, Transitional Economic, Theory Industrial Structure Evolution Theory, Economic growth and enterprise property rights and other issues. Prof. Liu had published more than two hundred papers and dozens of academic books, He received numerous academic awards, including two times of Sun Yefang Award and three times of Humanities and Social Sciences economics prize of the Minister of Education. And he has Presided over a number of independent countries, the Ministry of Education, Social Science Fund Project. Since 1991, he received special government allowances; he was hired as Changjiang Scholar.

Herman Z. Ongkiko
Undersecretary
Department of Agrarian Reform



BIO

Mr. Herman Ongkiko is currently the Undersecretary for Foreign-assisted and Special Projects of the Department of Agrarian Reform. He oversees and supervises the planning, implementation and management of agrarian reform communities projects funded by bilateral organizations and multi-lateral institutions including the conduct of policy research and special studies related to the comprehensive agrarian reform program in the Philippines. Mr. Ongkiko worked closely with Experts from the Korean Rural Communities Corporation (KRC) in the formulation and identification of potential development investment projects in the Southern Philippines. He has attended in several APAP Roundtable discussions as participant/presenter. Prior to his government assignment, Mr. Ongkiko served as Team Leader of the ADB-assisted Greater Mekong Subregion (GMS) Corridor Towns Development Project and ADB Consultant for the GMS Regional Investment Framework. Mr. Ongkiko has a Master's degree in Economics and specializes in the planning and management of integrated and multi-sector development projects

Paris, Tirso Jr. B.

Former Professor

University of the Philippines Los Banos



BIO

Dr. Tirso B. Paris is a former professor of Economics, at the College of Economics and Management of the University of the Philippines Los Banos.

EDUCATIONAL BACKGROUND

PhD in Agricultural Economics, Michigan State University, 1978.

M.A. in Economics, University of the Philippines School of Economics, 1971.

B.S. in Agriculture (*magna cum laude*), major in Agricultural Economics, University of the Philippines, College of Agriculture, 1968

PREVIOUS ADMINISTRATIVE POSITIONS

Dean, College of Economics and Management, University of the Philippines at Los Banos, College, Laguna, Philippines for two terms : (1) May 1986 to May 31, 1991 and (2) June 1994 to May 31, 1997
Chairman, Department of Economics, College of Economics and Management, University of the Philippines at Los Baños, October 1979- June 1984.

Chairman of the Board, Asia-Pacific Policy Center, August 2001 to September 2002.

Sahat M. Pasaribu

Senior Researcher/Agricultural Economist

*Indonesian Center for Agro-Socioeconomic and Policy Studies,
Ministry of Agriculture*



BIO

Conduct a wide range research of cross commodity sectors in the field of agro-socioeconomic development, including topics on agricultural insurance and rural and agricultural finance, agricultural production and marketing, agribusiness and agro-industry, agricultural institutions and institutional building, water management and irrigation systems, community and rural organization development, and other related rural poverty alleviation issues. Actively involved in design and implement research project, from terms of reference to working proposals and from data collection/organization to data processing and report writing to produce valuable alternative policy recommendations in agricultural issues and rural-related development.

Phyu Yamin Myat

Managing Director

Myanmar Development Partners Co., Ltd

BIO

Phyu Yamin Myat holds a Masters in Public Policy from Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore. Since 2010, she became a trainer for Fundamentals Public Policy in several state-building organizations. She involved in several policies paper projects including Agriculture Governance and Development Governance. She focuses on Socio-economic Development policies and issues, also working on Financial Literacy & Micro-financing projects. She is the founder and managing director of Myanmar Development Partners Co., Ltd.



Nipon Poapongsakorn

Distinguished Fellow

Thailand Development Research Institute Foundation

BIO

Dr. Nipon Poapongsakorn formerly held the position of President of TDRI, and Dean, Faculty of Economics, Thammasat University, where he was also Associate Professor. He has been also teaching business and political economy course in the Executive MBA program of Thammasat University. Nipon Poapongsakorn is the author of over 160 research articles and publications related to labour economics and human resources; agricultural and livestock policies; industrial economics, trade and investment; corruption and conflicts of interest, as well as economic evaluation and planning assessment. His on-going research is the rice research and long-term issues facing the rice industry. He now begins to do new research in the areas of water management, emphasizing on the institutional arrangement of flood management.

Nipon Poapongsakorn has advised governments, the ADB and the World Bank on issues from the rice price and agricultural policy, education and industrial policy to trade strategy. He is currently an executive member of the Asian Society of Agricultural Economists, member of the Tribunal of Public Information on Economy and Fiscal Information, the Legal Development Committee of the Council of State, and the National Reform Assembly Committee etc. He used to serve as committee members and directors of several government agencies, state enterprises and foundations, e.g., the Board of Investment, the National Economic and Social Development Board, the Trade Competition Committee, the Port Authority of Thailand, the Government Saving Bank, TMB Board of Directors and the Foundation of Rural Reconstruction and Development, etc



Ryu, Ki Hee

Professor

Institute of Green Bio Science and Technology, Seoul National University

BIO

Dr. Ki Hee Ryu, Professor, Institute of Green Bio Science and Technology, Seoul national University has been involved in research projects for international water resources management. He also worked as Head, Project Administration Unit of the Environment, Natural Resources and Agriculture Division in the Southeast Asia Department of Asian Development Bank (ADB) for the water resources sector in Asia and the Pacific for 15 years, mostly in the field of water resources investigation, planning and processing, administration and monitoring and evaluation in the water resources management.

He earned a Bachelor degree in 1976 and a Master degree in 1981 in Agricultural Engineering from Seoul National University in Korea and obtained a PhD degree in 1988 in Agricultural Engineering from Colorado State University in the USA. From 1989, he has been a water resources management specialist for the ADB projects in Indonesia and Malaysia. He also served the Head for Agriculture and Irrigation Unit of the Mekong River Commission Secretariat in Bangkok, Thailand from 1993 to 1997. Since 1997 he was responsible for ADB-financed water resources management projects in the Indus, Ganges, Amu Darya and Mekong rivers, and participated in disaster management projects from typhoons, tsunami, earthquake, floods and droughts in Asia. He has been in charge in water resources development in Southeast Asian countries, in particular bulk water supply, irrigation, capacity development for integrated water resources management (IWRM) and flood management in Indonesia and Viet Nam.



J.S. Samra

Ex-CEO

National Rainfed Area Authority, Government of India

BIO

Dr. Jagir Singh Samra has served National Institute of Transforming India (Planning Commission) and Ministry of Agriculture for 8 years in the rank of Secretary to the Government of India.

He previously served as Deputy Director General, Indian Council of Agricultural Research (ICAR) for seven years and steered research, development and capacity building programme of Natural Resource Management of India. He has been decorated with six national awards in watershed management, agriculture and forest farming. He holds experience of 40 years in participatory research and management of natural resources irrigation, diversification, planning, advocacy, governance, inter-sectoral coordination etc. He is a fellow of 3 International and National Academies and President/Member of several professional societies. He published more than 240 research papers, books, popular articles and bulletins including 10 in American and 21 in European Journals of international repute. He rendered 16 national and international consultancies. He holds membership of several international organizations and committees.



Saifullah Syed

Secretary General / President

*APAP Forum / Euro-Asian Centre for Policy Studies and
Management (ERUSMA)*



BIO

Dr. Saifullah Syed, born in Thakurgaon, Bangladesh, has a Master Degree in Economics from Birkbeck College, University of London, UK (1978) and Doctorate from the University of Paris-Dauphine, Paris, France, (1985). He retired from the Food and Agriculture Organization of the United Nations (FAO), after 30 years.

During his years in FAO, he was Chief, Policy Assistance Branch for Asia and the Pacific, and Senior Investment Policy Officer, Investment Centre of FAO. He has co-authored several books and published several articles in various professional journals.

Currently, he is the President of (i) Euro-Asian Centre for Policy Studies and Management (ERUSMA), Rome, Italy and (ii) Pollibir Development Organization (Pollibir Unnayan Sangstha), an NGO in Bangladesh.

Tang Zhong

Professor, Dean of the School of Agriculture and Rural
Development

Renmin University

BIO

Dr. Tang Zhong is a Professor and Dean at the School of Agricultural Economics and Rural Development, Renmin University of China. His main research fields are agricultural policy analysis, land resource economics, international trade of agricultural products, and foreign Agricultural Economics and Policy, and he is the author of 50 journal papers and 10 books.

He received his Ph.D in Agricultural Economics from Renmin University of China in 1995 and got his full professorship in 2000. He once visited Nyenrode University, the Netherlands in 1995-1996, The University of Bonn, Germany in 1998 as visiting scholar and visited Kyushu University, Japan as JSPS Professor in 2003. He served as Fulbright Research Scholar at International Food Policy Research Institute between 2003 and 2004.



Ganesh Thapa

Visiting Scientist

*International Centre for Integrated Mountain Development
(ICIMOD)*



BIO

Dr. Ganesh Thapa is currently a Visiting Scientist at the International Centre for Integrated Mountain Development (ICIMOD). He is also a Board Member of the Mountain Institute (TMI), Washington D.C. and the Asia-Pacific Agricultural Policy Forum (APAP). He worked for the International Fund for Agricultural Development (IFAD) from 1998 to 2014 as the Regional Economist for Asia and the Pacific Region and as the Country Programme Manager for North Korea from 2008 to 2011. Prior to this, he has worked as Country Director for Winrock International in Nepal and as a Senior Economist for the Ministry of Agriculture, Nepal. He has a Ph.D. in Agricultural Economics from Cornell University, USA and a MS in Agricultural Economics from the University of the Philippines. He has undertaken research and published books and articles on risks, vulnerability and poverty reduction; microfinance; indigenous peoples; impact of new agricultural technologies; agricultural marketing; and food security.

Tin Htut Oo

Chairman

National Economic and Social Advisory Council, Myanmar



BIO

Tin Htut Oo holds a Bachelor of Agriculture (B.Ag) from the Institute of Agriculture, University of Mandalay (1971) and M.Sc (Agricultural Economics) from Ohio State University (1985), USA. From 2001 to 2009, he was the Director-General of the Department of Agricultural Planning, Ministry of Agriculture and Irrigation, Myanmar. In Myanmar's first democratic government, he became the Economic Advisor and Chairman of the National Economic and Social Advisory Council (NESAC), Office of the President, the Republic of the Union of Myanmar. He is the Chairman of Agriculture Group of Yoma Strategic Holdings Ltd. and the CEO of Agribusiness and Rural Development Consultants in Myanmar.

Jinxia Wang

Professor

School of Advanced Agricultural Sciences, Peking University

BIO

Dr. Jinxia Wang is Professor at School of Advanced Agricultural Sciences in Peking University, and Deputy Director and Professor at Center for Chinese Agricultural Policy in Chinese Academy of Sciences. Her research focuses on water management, institution and policy, impact evaluation and adaptation strategies of climate change, and rural environmental policy. She received her Ph.D. in Agricultural Economics (2000) at Chinese Academy of Agricultural Sciences.

She has published more than 160 papers (more than 60 are in English) and 6 Chinese and English books. In 2009, she received the Outstanding Young Scientist Award from the National Natural Science Foundation in China. In 2015, she was funded by "The 100-Talent Programme" of Chinese Academy of Sciences; and also obtained the honor "Honorable Council Member" from Research Association of China Management Modernization.



Xiqin Wang

Professor

*School of Agricultural Economics and Rural Development,
Renmin University of China*

BIO

Xiqin Wang is a Natural Resource Management and Environmental Economics Professor at Renmin University of China. She is a member of the Water Resource Commission of Chinese Society of Natural Resource.

Teaching Experience: Water Resources Economics, Ecological Economics, and Natural Resource Management.

Current projects include:

1. Watershed environmental carrying capacity
2. Agricultural water price
3. Natural capital and the value of ecosystem services

River's Environmental Flow(2002-2013), funded individually by the National Natural Science Foundation of China(NNSF), the Chinese Ministry of Water Resources (MWR).

Prevention Strategy of Water Pollution and Industry Restructuring (2005-2009), funded by the Global Environment Fund (GEF).

Precaution of the Ecological System Stress From Economic Development (2006-2010), funded by the National Scientific and Technological Projects Published Books include Water Ecological Carrying Capacity in the Taihu Lake Basin, 2013.; Definition and Management of Environmental Flows, 2010.and recent reports: include the Agricultural Water Price Reform Report (2015) Strategic Research of Modern Agricultural Water Use (2012)



Larry Chee-Yoong Wong

Visiting Fellow

Institute of Strategic and International Studies (ISIS) Malaysia



BIO

Dr Larry Wong, a development economist by training, has over 35 years operational experience in development and business planning, implementation and policy analysis and his engagement continues to straddle both the public and private sectors. He is currently Visiting Fellow (Ex-Program Director), Institute of Strategic and International Studies (ISIS) Malaysia; Co-Founder of Myanmar Praxis Co Ltd; and Senior Advisor, Myanmar Rice Federation (MRF). From 1996 to 2004, he headed BERNAS' (a Malaysian public listed, privatized former state trading enterprise) international business, developing and managing agro-food supply chains and trading networks spanning Asia and Africa. He has consulted for The World Bank, Asian Development Bank, ADBI, UNDP, FAO, UNESCAP, IFPRI, IRRI and USAID as well as governments and business conglomerates. His expertise and research interests include developing and managing agro-food supply/value chains and trading networks; agribusiness; food-water-energy nexus; food security; and sustainable development.

YOO, Byung-Rin

Chairman

Korea FAO Association



BIO

Education:

Graduated from Korea University in 1981(B.S in Ag. Economics)

Graduated from Ohio State University in 1997(M.S. in Ag. Economics)

Experience:

1980: Passed the 24th Recruitment Examination for Senior Government Officials / Joined the Ministry of Agriculture, Forestry and Fisheries(MAFF)

1981~93: Deputy Director of Planning Division, Rural Development Division, International Cooperation Division, Bilateral Trade Division

1993.08~1994.04: Director of Bilateral Trade Division, MAFF

1993~95: Director of Rural Development Division, MAFF

1997~2001: Director of Bilateral Cooperation Division, Ministry of Agriculture and Forestry(MAF)

2001.06~2005.02: Counsellor for WTO Affairs(agriculture) to Korean Mission in Geneva

2005.02~2005.09: Director General of Statistics and Investment Evaluation in MAF

2005.09~2006.02: Director General of Public Relations and Spokesperson Office in MAF

2007.02~2008.03: Director General of Presidential Commission on Agriculture, Forestry and Fisheries

2008.03~2008.12: Director General of Rural Development Bureau in the Ministry for Food, Agriculture, Forestry and Fisheries(MIFAFF)

2008.12~2010.10: Deputy Minister for Trade Policy in the MIFAFF

2010.10~2013.9: President, IPET, Korea Institute of Planning & Evaluation for Technology in Food, Agriculture, Forestry and Fisheries

2013.11~2014.8: Visiting Professor, College of Life and Science, Konkuk University, Korea

2014.9~ Present: Visiting Professor, College of Life and Science, Kyungpook University

2016.2~ Present: Chairman, FAO Korea Association

Patrick Durst

Senior Forestry Officer

Food and Agriculture Organization of the United Nations

BIO

Patrick Durst is Senior Forestry Officer with the FAO Regional Office for Asia and the Pacific, where he has coordinated and supported FAO's forestry and natural resources projects and activities in the region for the past two decades. He is also the Secretary of the Asia-Pacific Forestry Commission, which serves as a leading mechanism for regional policy analysis and collaborative action. Durst previously worked with Asia and the Near East programs of USDA Forest Service, USAID, and the U.S. Peace Corps. He has degrees in forest management and forest economics from the University of Wisconsin—Stevens Point and North Carolina State University, respectively.



Richard J. Harper

Leader in Agricultural Sciences, Chair IUFRO Forests, Water and
Soil Taskforce
Murdoch University

BIO

Professor Richard Harper is Chair in Sustainable Water Management and leader of Agricultural Sciences at Murdoch University, Australia. Prior to moving to Murdoch University in 2009 he worked in science and policy roles with the Western Australian Government developing forest-based carbon mitigation to manage landscape hydrology. Current PhD students are working on topics such the carbon opportunities for Indigenous communities, the role of forests in carbon and water management, the impacts of climate change on carbon sinks and plant effects on soil water repellency. He is chair of the International Union of Forest Research Organizations (IUFRO) Taskforce on Forests, Water and Soils, is Vice President of the Australian Council of Agricultural Deans, sits on the Australian Government's Emission Reduction Assurance Committee, is a visiting Professor with the Chinese Academy of Forestry and was a lead author on the recent IPCC 5th Assessment Report chapter on land-based mitigation (AFOLU)



Verina Ingram

Assistant professor

*Forest and Nature Conservation Policy Group Wageningen UR, The
Netherlands*

BIO

Verina is social scientist focusing on the interactions between people, natural resources – especially forests – and markets. She has 20 years of experience working with governments, NGOs, business, researchers and communities in Africa, Europe and Asia. Verina currently works on tropical commodities including timber and non-timber products, evaluating impacts on sustainability and livelihoods including food security and vulnerability. Her work includes how improvements can be made through governance, regulation, customary, collective and market driven actions such as certification and corporate social responsibility schemes. Verina has worked with Wageningen UR since 2012 and with the Centre for International Forestry Research since 2008. Her PhD from the University of Amsterdam concerned the impacts of governance arrangements on the sustainability of forest value chains in the Congo Basin. She holds MScs in environmental sciences and human resources and a BSc in management sciences.



Sooyeon Jin
Forestry Food Security Officer
FAO



BIO

Sooyeon Laura Jin is a Forestry Food Security officer of the FAO Forestry Department, based in Rome. She has been working with FAO since 2012, and prior to that, she worked for a number of organizations including the United Nations Convention to Combat Desertification (UNCCD) and the National Forestry Commission of Mexico (CONAFOR) since 2008.

With her various positions and experiences in South and East Asia, Central Asia and Latin America, she has been working on enhancing the benefits of sustainable management of land and forest resources for improved livelihoods including issues related to food security and poverty alleviation. She holds two Master's degrees, one in Human Development and Food Security from the University of Rome Tre, Rome, Italy, and the other one in European Studies from the University of Bonn, Germany.

Ji Hong KIM
Professor
Kangwon National University, Republic of Korea



BIO

After completing college education and receiving my academic degrees in forestry, bachelor from Seoul National University, and master and doctorate from Michigan State University, I was appointed the post of a professor by Kangwon National University (KNU) of Korea in 1984. Teaching ecology and silviculture, I have been engaged in doing research on the subject of ecological application of forest management mostly in natural forests. My professorship has somewhat succeeded to realize the anticipated result. In addition to my students who are working in various organizations, my footmarks of scientific articles, books, and other publications were behind to be worthwhile and make me gratified with them. It was sheer lagniappe in my professional career that I honorably had opportunities to serve as Dean of College of Forest & Environmental Science in KNU and as President of Korean Forest Society.

Myeong-ill Kim
Project planning department director
Korea Rural Community Corporation (KRC)



BIO

Myeong-ill Kim is currently working as a project planning department director at Korea Rural Community Corporation.

He graduated with a bachelor's degree in dept of regional infrastructure engineering at Gangwon university in 1993, and has been working on the doctorate in water resource engineering at Konkuk university from 2014 to the present.

He have a licensed 'Professional Engineer Civil Engineering Agricultural Fishery'

His main duties are a development plan of production-based maintenance project, and a development plan of farming, mountain and fishing villages.

Sang Mu LEE
CEO

Korea Rural Community Corporation (KRC)

BIO

Dr. LEE is President of Korea Rural Community Corporation (KRC), the state-run public enterprise for rural community development. He gained extensive experiences in formulating agricultural policies as a government official before being appointed as Deputy Minister at the Ministry of Agriculture, Forestry and Fisheries in 1996.



He acted as FAO Representative to the Philippines from 1999 to 2004 and led Korea FAO Association and Regional Office of AARDO for Far East for years prior to joining KRC. Also, he has been serving as Chairman of Asia Pacific Agricultural Policy Forum since its inception in 2002. Having earned a Bachelor's degree in Agronomy and Master's degree in Public Administration from Seoul National University, he received another Master's degree and a Ph.D. in Agricultural Economics at Michigan State University. He has written several books on domestic and international agricultural policies, and also contributed many articles to newspapers and magazines.

Lailai Li

China Country Director
World Resource Institute (WRI)

BIO

Dr. Lailai Li is the China Country Director for WRI China. Dr. Li serves as the lead representative for WRI China and is responsible for formulating, leading, and implementing WRI's vision and strategy in China. She manages relationships and guides its work to advance China's environmental and sustainability goals. Dr. Li works closely with the program leads in China and with WRI's headquarters in Washington, D.C., to achieve our mission and ensure that our projects and approach are strategically aligned.

Prior joining WRI, Dr. Li was the Deputy Director of the Stockholm Environment Institute and Director of SEI Asia Centre. She also served as a deputy director of China Urban Sustainable Transport Research Centre based in Beijing. Previously, she directed the LEAD-China program for 10 years, which is a worldwide network of new generation leadership in the environment and development arena.

Dr. Li is a globally recognized leader in sustainability and environmental issues with nearly 20 years of experience, including a focus on poverty alleviation and environment issues, climate change adaptation, low-carbon urban transport, and more. Her recent research work and research include: economics of climate change in China; China's ecosystem services and management strategy; low-carbon development of small and medium sized cities in China; the regional climate change adaptation knowledge platform in Asia; and the Sustainable Mekong Research Network, among others.

Dr. Li is a widely recognized expert and published author. She received her Post-Doctoral Fellow at Peking University, in Beijing, and received her PhD and MA from the University of Pittsburgh, in the United States. WRI has worked in China for many years, and established its first overseas office in Beijing in 2008. WRI China focuses on issues related to energy, climate change, water, transport, integrated urban development and sustainable cities. It currently has more than two dozen full-time staff in China and is looking to expand in the coming years.



Li Yanxia

Senior Programme Officer

BIO

Mrs. Li Yanxia holds a M.Sc. in Ecology from Chinese Academy of Forestry and a BA in Environmental Science from Beijing Forestry University. She has worked at INBAR for seven years with key responsibilities of forest projects implementation and management in China.



Guanghui Lin

Professor
Tsinghua University, China

BIO

Dr. Guanghui Lin received his Ph.D. from University of Miami in 1992, and had worked in University of Utah and Columbia University, USA before returning to China. Now as a professor and leader for the ecology program at Tsinghua University, he works at Tsinghua's Graduate School at Shenzhen and Centre for Earth System Science.

His research interests include mangrove ecology, global change ecology and coastal wetland restoration. He is the author of over 150 academic papers and 5 books. He served as a lead author for "2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands" (Chapter 4 Coastal Wetlands). He was the chairman for Chinese Society of Mangroves (2008-2015), and has been the vice chairperson for Ecological Society of China's Division of Wetland Ecology since 2009 and the chairperson for Ecological Society of China's Division of Stable Isotope Ecology since 2015.



Liu Jinlong

Professor
Renmin University of China

BIO

Dr. Jinlong Liu is currently Professor and Chair of Forest and Resources Economics, School of Agricultural Economics and Rural Development, Director, Centre for Forest, Environmental and Resources Policy Study, Renming University of China. He is Coordinator, IUFRO Working Group 9:03:05.

He earned a B.S. in Forestry Sciences at 1987, master's in Agroforestry at 1990 from Nanjing Forestry University, and Ph.D. in Rural Development Sociology from the Wageningen University in 2006. His research fields: participatory forest management, traditional forest knowledge and culture, nature resource management and community development. He has published over 100 peer review journal articles.



Percy Misika
FAO Representative
FAO China



BIO

Mr Misika, a national of Namibia, a M.Sc. holder in Agricultural Extension of the University of Reading, United Kingdom. Mr Misika has served as the Under Secretary, Department of Agriculture and Rural Development, at the Ministry of Agriculture, Water and Rural Development, Namibia.

From 2003-2005 as the Minister Counsellor at the Embassy of Namibia in Paris, France, Mr. Misika represented his country to FAO, WFP, IFAD and OIE as well as serving as the Head of the Namibian Delegation to WTO Doha Round negotiations on the Agreement on Agriculture in Geneva before he joined FAO in 2005 as the FAO Representative in Uganda. Since 1 May 2011, Mr. Percy W. Misika has been appointed FAO Representative in China, DPR Korea and Mongolia.

Jianxin MU
Professor

China Institute of Water Resources & Hydropower Research



BIO

Dr. Jianxin MU is Professor of China Institute of Water Resources and Hydropower Research (IWHR), Ministry of Water Resources, China. She received her PhD degree in climate change and water management from Charles Sturt University, Australia. Her research interests include climate change, water resources management, irrigation and drainage, and food security.

Dr. Mu has acted as the Executive Secretary of Chinese National Committee on Irrigation and Drainage (CNCID) for over ten years. She received a number of awards, including the Best paper award by Journal of Irrigation and Drainage in 2009 and the Commonwealth Scientific, Industrial Research Organization (CSIRO) of Australia Research Achievement Medal in 2008. Dr. Mu has over 50 scientific publications, including journal and conference papers, book chapters and scientific report.

Nguyen Quang Tan, Ph.D.

Country Program Coordinator, Viet Nam
RECOFTC - The Center for People and Forests



BIO

Dr. Nguyen Quang Tan is a Vietnamese national with BA in English, BA in Economics (both from Viet Nam), MSc in Agricultural and Resource Economics from the USA (2000) and PhD in agricultural sciences from Germany (2004). He has 23 years of work experience in forest sector of Viet Nam and other countries in the region. He has been leading the Viet Nam Country Program Office of RECCOFTC - The Center for People and Forests since 2010.

His key qualifications include: Research and analyses: main areas of interest include forest governance, (forest) policy analysis, forest tenure, poverty

alleviation, commodity chain analysis, Capacity building: capacity building needs assessment, CB program development, and training and development of training materials in climate change and REDD+, forest tenure analysis, forest governance, participatory natural resource management Program/ project appraisal, planning, development and review , Strategic communication, including development of communication tools

Dominique Reeb

Senior Forestry Officer
FAO



BIO

Dominique Reeb is Team Leader of the Social Forestry Team of the FAO Forestry Department, Rome, Italy. He holds an M. Sc. in Forestry from the University of British Columbia, Canada, and has over 30 years' work experience, mostly in developing countries and countries in transition.

He has been working with FAO since 2000. During his various assignments and responsibilities in Africa, Central Asia, Asia and Europe, he gained diversified experience in forest and natural resources management and more specifically, in community-based forestry, forest tenure, forest policy and institutional development.

Prof Nick Schofield

Director
Global Water Institute, University of NSW Australia



BIO

Nick is the inaugural Director of the new Global Water Institute at the University of New South Wales Australia. Nick has over 30 years of experience in the water and natural resource management sector, holding senior positions in government, industry, consulting, academia and the not-for-profit sectors. He has been CEO of the Western Australian Ministerial Water Resources Council and more recently the International River Foundation. Nick has led 14 major research programs (over 500 projects) across Australia at the intersections of water, agriculture, forestry, mining, urbanisation, biodiversity and climate change. Nick has developed national policies and pioneered methods in research prioritisation, evaluation and futures analysis.

Hermanto Siregar

Vice- Rector

Bogor Agricultural University



BIO

Dr Hermanto Siregar was born in Medan, Indonesia. He obtained his bachelor degree from Faculty of Agriculture, Bogor Agricultural University, Indonesia in 1986, master in economics from the University of New England, Australia in 1991, and PhD in economics from Lincoln University, New Zealand in 2001. He served as professor of economics at Faculty of Economics and Management, Bogor Agricultural University since 2007 until now.

At the same university he has been appointed as vice president for resources and strategic studies since 2008. Dr. Siregar had been a member of the National Economic Council, serving as an economic adviser to President of Republic of Indonesia during 2011-2014. Along his professional career, he has been a resource person and/or consultant to a number of international organizations including the FAO, and to many government institutions as well as enterprises in Indonesia. Dr. Siregar served as secretary general of the Asia Pacific Agricultural Policy Forum (2007-2009), and is now vice president of Indonesian Agricultural Economists Association.

Solongo Tsevegmid

National Program Officer

FAO Mongolia



BIO

Ms. Solongo Tsevegmid (born in 1974) works at FAO/GEF project on Sustainable Forest Management in charge of coordination and implementation at the national level. She has Master degrees from the University of Melbourne, Australia and Mongolian University of Science and Technology.

Since 2001 she is working in environmental sector and contributed to the implementation of more than 15 projects mainly on community based natural resource management and sustainable forest management. She is member of Emerging water professionals committee since 2015, which focuses on enhancing emerging leaders in water sector. Her interested area of investigation includes forest and water management and involvement of local communities in natural resource management.

TUNGALAG Majig

Director of Forest Policy and Coordination Department
Ministry of Environment, Green Development and Tourism



BIO

I was born in Dundgovi province, Mongolia in 1965. I completed the National University of Mongolia as a mathematician in 1989. I participated in democratic revolution in Mongolia starting from 1990.

From that time, I led the Women Council of the Democratic Party.

I have been working for government service since 2006. I worked as a Vice Director of the Cabinet Secretariat of Government of Mongolia from 2006 to 2008. After the election of 2008, I worked as Director of the Forest Agency of Mongolia from 2009 to 2012.

Since 2015, I have been chairing the Forest Policy and Coordination Department of the Ministry of Environment, Green Development and Tourism of Mongolia.

Katarina Veem

Director
Swedish Water House



BIO

Broad experience working with environmental policy from local, national and international level. Having implemented Agenda 21 for a local government Katarina went on to developing an Agenda 21 programme for the Baltic Sea Region at the Ministry of Environment. Marine and fisheries conventions gradually became the focus and Katarina was Head of delegation to HELCOM and OSPAR, becoming a national expert in marine and fisheries policy and management.

Katarina thereafter designed and negotiated the WWF Baltic Sea Programme and took on a position as Head of the Marine Programme at WWF in Sweden. Before joining SIWI, Katarina was CEO and Programme Director of a private foundation Baltic Sea 2020. MA Harvard University, Fellow of Royal Swedish Academy of Agricultural Sciences.

Yang Youlin

Asia-Pacific Regional Coordinator
*United Nations Convention to Combat Desertification
(UNCCD)*



BIO

Areas of Specializations :

Desertification Combating
Land Degradation Rehabilitation; Drought Effect Mitigation
Disaster Management Policy and Programs development
Institutional Capacity Building

Byoung Il Yoo

Senior Researcher
National Institute of Forest Science(NIFoS), Rep. of Korea



BIO

Byoung Il Yoo is a senior researcher of National Institute of Forest Science (NIFoS), Korea Forest Service from 1979. He received his PhD in Seoul National University in 1991. He served as a visiting scientist at Forest & Forestry Products Research Institute (FFPRI) in Japan, Center for International Forest Research (CIFOR) in Indonesia and worked for Ministry of Forestry, Indonesia as KOICA watershed expert.

His interest fields are forest management, economic, policy, and ODA. Recently he charged the several forest ODA projects in Indonesia, Philippines, El Salvador, Tunisia, and others. His main publications are KSP (Knowledge Sharing Program) Modularization of Korea's Development Experience: Forest Resource Development in Korea (2014, Ministry of Strategy and Finance), Development of Mountain Villages and Agroforestry in Rep. of Korea (2006, International Agroforestry Conference), In Depth Country Study in the Republic of Korea, - Status, Trends and Prospects to 2010 (1997, FAO), South Korea -Reforestation for Timber and Conservation- (1997, J. of Forestry).

Gao Zhanyi

Chief Engineer
China Institute of Water Resources and Hydropower Research



BIO

Dr. Zhanyi Gao was born in 1962. Now as engineer in Chief he works with China Institute of Water Resources and Hydropower Research (IWHR). From Oct. 2011 to Sept. 2014 he served as the President of International Commission on Irrigation and Drainage (ICID) and member of Board of Governors of WWC. Since 2003 he has served as a member of Board of Directors, Chinese Hydraulic Engineering Society.

He has served in various capacities in more than 45 international and national projects of global nature. His interested research areas include water and food security, water-saving technology, irrigation water management, groundwater management, reuse of wastewater, the effect of climate change on irrigated agriculture.