

# 19th Annual Meeting of the Greater Mekong Subregion (GMS) Working Group on Agriculture (WGA)

<b>Meeting notes</b>	<b>4</b>
<b>Opening remarks</b>	<b>4</b>
<b>SESSION 1 – National strategies to address climate change and manage trade-offs for water-food-energy nexus in the GMS – Remarks by WGA representatives</b>	<b>5</b>
Cambodia	5
China, People’s Republic Of (PRC)	6
Lao PDR	7
Myanmar	8
Thailand	8
Viet Nam	9
<b>SESSION 2 – Water Food Energy Nexus Challenges and Opportunities in the GMS Agri-food sector</b>	<b>10</b>
Keynote speaker: Dr. Alex Smajgl, WFE Nexus Specialist, TA 9916 - <i>“Water, Food, and Energy Nexus Trade-Offs in the GMS”</i>	10
Ms. Mayvong Sayatham, Technical Advisor, Water Resource Management, GIZ, Lao PDR	11
Mr. Ha Thanh Lan, Head of Department, Institute for Water Resources Planning, MARDC, Viet Nam - <i>“Water-Food-Energy Nexus Challenges and Opportunities in the GMS Agri-food sector: The case of Vietnam”</i>	11
Mr. Jelle Beeka, Senior Water Resources Specialist, ADB, Philippines	12
<b>SESSION 3 – Sustainable Soil and Water Management for Climate Resilience and Food Security in the GMS</b>	<b>12</b>
Keynote speaker: Mr. Nicholas Richards, Climate Change Adaptation Specialist, TA 9916 - <i>“Climate Smart Soils against Climate Change in the GMS”</i>	12
Dr. Sinxay Vongphachanh, Agriculture and Irrigation Specialist, Planning Division, Mekong River Commission Secretariat, Lao PDR	13
Dr. Natthapol Chittamart, Associate Professor / Deputy Head of Research and Innovation, Department of Soil Science, Faculty of Agriculture, Kasetsart University, Thailand	13
Dr. Van Pham Dang Tri, Director of the Research Institute for Climate Change, Can Tho University, Viet Nam	13
Mr. Marc Eberle, Executive Director, Smart Agro, Cambodia	14
Dr. Florent Tivet, Agronomist, CIRAD France	14
Q&A session	14
<b>SESSION 4 – Impacts of Supply Chain Disruptions due to Conflict, COVID-19, and Climate Change on Food Security in the GMS: Challenges and Responses</b>	<b>15</b>
Keynote speaker: Mr. Stefan Vogel, General Manager, RaboResearch, Australia and New Zealand - <i>“Supply Chain Disruptions in the GMS: Assessment and Outlook”</i>	15
Dr. Nguyen Ahn Phong, IPSARD, Ministry of Agriculture and Rural Development, Viet Nam	16
Dr. QingFeng Zhang, Chief, Rural Development and Food Security Thematic Group, ADB	17
<b>SESSION 5 – Youth and Agriculture in the GMS</b>	<b>18</b>
Keynote speaker: Mr. Andrew Bartlett, Team Leader and Policy Adviser, Lao Upland Rural Advisory Service, Vientiane, Lao PDR	18

Mr. Lyhour Heang, Incubation Program Manager, Impact Hub Phnom Penh 18

Mr. Dang Duong Minh Hoang, young farmer, entrepreneur, CEO of Thien Nong farm, and Director of Binh Phuoc Agricultural Cooperative and digital transformation service 19

Mr. Don Tan, Corporate Affairs Director, Pinduoduo 19

## **SESSION 6 – TA 9916 Activities and Next Steps 19**

Mr. Pramod Pandeya, International Agribusiness Financing Specialist –*Presentation on demonstration TA 9916 output 1.2 “enhancing smallholder farmers and small agribusinesses access to finance through digital agriculture finance program”* 19

Ms. Vichelle Roaring-Arunsuwannakorn, Food Safety and Quality Specialist, TA 9916 - *Presentation on demonstration TA 9916 output 2.1: “Two Pilot Demonstrations in Thailand, Viet Nam and China on Promoting International Standards in the Cross-Border Traceability of Fruits”* 20

Mr. Nicholas Richards, Climate Change Adaptation Specialist, TA 9916 - *Presentation on demonstration TA 9916 output 3.1: “Climate Smart Soil and Water Management”* 21

Mr. Le Truong Son, Capacity Building Specialist, TA 9916 - *“Capacity Building and Study Tours”* 21

Mr. Stewart Pittaway, Team Leader, TA 9916 – *“Next steps”* 22

## **SESSION 7 – Promoting Regional Investments and Regional Cooperation 22**

*“The Proposed New GMS Regional Investment Framework 2025 – Implications for the Agriculture Sector, GMS Strategy 2030 Results Framework and Deepening Development Partner Engagement”* 23

Dr. Albert Salamanca, Stockholm Environment Institute, Bangkok - *“Transboundary Adaptation of GMS Agriculture and Water Resources: Prospects for Regional Cooperation”* 24

Discussion 25

Dr. Beau Damen, Natural Resources and Climate Change Officer, FAO Regional Office for Asia and the Pacific, Thailand 26

Dr. Frederic Asseline, Head, Program Team, Multilateral Cooperation Center for Development Finance (MCDF), PRC 26

## **SESSION 8: Adoption of Draft WGA AM-19 Summary 26**

### **Concluding remarks 27**

Dr. Jiangfeng Zhang, Director, Environment, Natural Resources & Agriculture Division (SEER), Southeast Asia Department (SERD), ADB 27

Dr. Nguyen Do Anh Tuan, Director General, International Cooperation Department (ICD) and WGA Coordinator, Ministry of Agriculture and Rural Development (MARD), Viet Nam 27

### **Field trip notes 28**

Mr. Vo Kim Thuan, Head of Division for Rural Development and Irrigation, Department of Agriculture and Rural Development, Long An province – *“Climate change adaptation agriculture sector strategies in Long An”* 28

Testimony from Mr. Nguyễn Văn Thủy, dragon fruit farmer 28

Testimony from Mr. Lê Minh Mẫn, dragon fruit farmer 29

## **Concept note and programme 30**

Background 30

Objectives 31

Target participants 31

Expected Output 31

Agenda 32

## **Facilitators, Keynote Speakers and Panellists 35**

Opening Session 35

Session 2: Water Food Energy Nexus Challenges and Opportunities in the GMS Agri-food sector 35

Session 3: Sustainable Soil and Water Management for Climate Resilience and Food Security in the GMS 36



Greater Mekong  
Subregion  
Sustainable  
Agriculture & Food  
Security Program



Session 4: Impacts of Supply Chain Disruptions due to Conflict, COVID-19, and Climate Change on Food Security in the GMS: Challenges and Responses	38
Session 5: Youth and Agriculture in the GMS	39
Session 7: Promoting Regional Investments and Regional Cooperation	40

# 19<sup>th</sup> Annual Meeting of the Greater Mekong Subregion (GMS) Working Group on Agriculture (WGA)

21-23 June 2022 (in-person and online)  
Renaissance Riverside Hotel  
Ho Chi Minh City, Viet Nam

## Meeting notes Day 1: Tuesday, 21 June 2022

### Opening remarks

**Dr. Nguyen Do Anh Tuan**, Director General, International Cooperation Department, Ministry of Agriculture and Rural Development (MARD) and WGA Coordinator for Viet Nam

- Agriculture cooperation should achieve practical results in terms of implementing the Siem Reap Strategy in promoting Safe and Environment-Friendly Agriculture Products (SEAP) and to integrate small and medium-sized enterprises (SMEs) into global value chains.
- Public-private partnerships are needed along with investment policies to support industrial investment zones, logistics, system.
- Many challenges remain (i.e. external challenges, climate change, scarcity of water resources), along with competition for scarce resources.
- A holistic approach is needed along with careful utilization of resources for sustainable energy.
- The Vietnamese government is committed to sustainable, greener climate-smart agriculture development.
- Other notable initiatives include the UN Food System Summit, National Water Security program.
- Looks forward to the active participation of the GMS member countries in implementing the GMS Agriculture Strategy to bring SEAP to the World.

**Dr. Jiangfeng Zhang**, Director, Environment, Natural Resource & Agriculture Division (SEER), Southeast Asia Department (SERD), ADB

- Warmly welcomed participants in the 19<sup>th</sup> GMS WGA Annual meeting.
- Expressed sincere appreciation to the Ministry of Agriculture and Rural Development, Viet Nam, for hosting the meeting.
- Important issues to consider:
  - Adaptation of GMS agriculture in the context of climate change – this is a critical backbone of GMS economies.
  - It is important to address the expected supply chain disruptions due to the COVID-19 pandemic, due to the conflict in Ukraine, and climate change issues (3cs: COVID-19, conflict disruption, climate change).
  - GMS has great potential for safe and environment-friendly agriculture products that are also of high quality.
  - In terms of implementing measures to address climate change, trade-offs have to be taken into consideration also.
    - Food demand in the GMS is expected to rise, and energy demand is expected to grow.

- Water for agriculture uses 70% of freshwater and irrigation by specific water management systems remains inefficient resulting in substantial losses threatening the region's development ambitions.
- 25-30% of food produced is wasted in the value chains due to poor post-production practices.
- Energy use needs further improvements, but low-carbon growth targets are hard to meet, and alternative low-carbon sources consume more water.
- Water-Food-Energy (WFE) nexus is one of the priorities in the environment sustainability discourse but there is limited understanding on the complex relationships on handling the assessments. The WFE nexus trade-offs need to be well managed.
- Wished the 19<sup>th</sup> WGA Annual Meeting (AM) would help clarify these relationships, to clearly identify the trade-offs, and to be able to discuss the important issues.
- Participants were encouraged to proactively discuss and deliberate on priorities on agriculture investments, and critical water and food security issues.

## SESSION 1 – National strategies to address climate change and manage trade-offs for water-food-energy nexus in the GMS – Remarks by WGA representatives

### Cambodia

**H.E Dr. Prum Somany**, Advisor to the Ministry, Director of the Department of International Cooperation and GMS-WGA National Coordinator, Ministry of Agriculture, Forestry and Fisheries (MAFF), Cambodia was delighted to attend the 19<sup>th</sup> GMS WGA AM and shared his remarks as follows:

- ADB TA 9916-SAFSP supports the implementation of the Siem Reap Strategy and action plan with the expected outcome that the GMS investments in and capacity for climate-friendly, safe, and sustainable agri-food value chains are increased.
- The 19<sup>th</sup> GMS WGA AM, as part of the TA 9916-SAFSP is key to discuss the ways to apply the WFE nexus approach. Cambodia national strategies and priority actions to address climate change and manage trade-offs for WFE nexus would be shared to regionally cooperate in improving the adaptation of agriculture to climate change and manage trade-offs in the WFE nexus.
- Acknowledged population growth and increasing food demand, driving up the demand for water and energy. These challenges are also due to increasing climate variability and land degradation, leading to low agriculture productivity.
- The demand for growth in food production needs agricultural land expansion. Pressure on land use in different sectors, such as agriculture, industrial and urban development has exceeded available land resources. Demand for energy, emissions from construction, and increased consumption are some of the measurable climate pressures, and with a large part of the population directly or indirectly dependent on climate-vulnerable agriculture, transitions to climate sensitive land and soil management, resilient infrastructure and land use planning, livelihood diversification, and other measures will be needed.
- Cambodia is known for its abundant surface and groundwater resource, however, many catchments and communities are being constrained by extreme seasonal fluctuation of water resources and a lack of capacity for effectively storing, regulating, and draining extra water resources. Natural resources which support agricultural production, continue to deteriorate due

to land degradation, forest loss, and unsustainable agricultural intensification, pollution, and urbanization.

- As the challenges mentioned above, Cambodia prepared a national strategies and priority actions to address climate change and manage trade-offs for WFE nexus.
- Cambodia has also developed and endorsed the National Action Program to Combat Land Degradation (NAP), aiming to contribute to preventing and solving land degradation problems, conserving agro-ecology, improving land productivity, eliminate peoples' poverty to comply with the obligations under the United Nations Convention to Combat Desertification with five objectives: (1) expansion of technical practices for sustainable and efficient land management, especially agricultural land; (2) facilitate relevant stakeholders to contribute to restoring watershed and forest ecological system services; (3) to develop relevant policies and a regulatory norm for sustainable management land use; (4) strengthen human resource capacity for planning and implementing sustainable land and watershed management, and (5) to develop and implement strategic policies for watershed management with effective financial mobilization to support the implementation of priority activities.
- MAFF has been updating the *Climate Change Priorities Action Plan for Agriculture, Forestry and Fisheries Sector* with a goal to contribute to reducing any negative impacts of climate change and the vulnerability of the agricultural sectors including animal production, forestry and fisheries, and to counteract damages and losses, while being able to respond and recover in case of unavoidable disaster.
- Regarding the water resources management, the Ministry of Water Resources and Meteorology is mandated to manage water resources and irrigation system in a large scale, while MAFF is responsible for on-farm irrigation, mobilizing the resources to work on principles or guideline on smart water solutions and operations and maintenance of drip irrigation system, taking into account of the access to water sources, water abstraction and application.
- Wished this 19<sup>th</sup> AM would be concluded with fruitful outcomes with agreed priority actions for cooperation to improve adaptation of the GMS agriculture to climate change and manage trade-offs for WFE nexus and to reinforce sub-regional and regional cooperation.

### China, People's Republic Of (PRC)

**Ms. Liu Jiang**, Head of Asian and African Affairs Division, Department of International Cooperation, Ministry of Agriculture and Rural Affairs, expressed her pleasure to attend the meeting and shared her remarks as follows:

- PRC has attached high importance to ecological progress and sustainability and has adopted various forms of climate-friendly agriculture such as water-saving agriculture. This year the government has issued action plans to reach the goals of emission reduction, peak carbon dioxide emissions and carbon neutrality. There are four guiding principles: adhere to the concept of systematic development and overall planning; promote food security resilience and sustainability together; adopt the way of soft management to give play to the role of the market; and enhance innovation and policy incentives.
- Ms. Liu Jiang introduced 10 actions and invited Dr. Ruan Zhiyong from the Chinese Academy of Agricultural Sciences to present in more details the relevant actions, particularly in the area of land quality protection.

A short presentation by **Dr. Ruan Zhiyong**, Associate Professor, Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences (CAAS), PRC, followed:

- With a focus on sustainable and climate-resilient soil management for farming in Guangxi and Yunnan, PRC, the results from recent surveys about local cultivated land quality, cultivated land quality monitoring network and areas of farmland were presented. These indicate that cultivated land quality in both Yunnan and Guangxi has been improving during the last decade due to advanced technologies in quality improvement, rules and regulations as well as international cooperation for land protection.
- Starting from this year, PRC has launched the third national soil survey (2022-2025), which is a comprehensive physical examination of cultivated land, a basic survey of national conditions and strength, and an important decision-making arrangement for the Chinese government to ensure national food security.
- The prospect of soil and land management in Yunnan and Guangxi were presented, highlighting the following: government strategies to develop sustainable land management through climate-smart agriculture to improve soil quality and strengthen resilience to climate change; the roles of agricultural science and technology including biofertilizer and microbiome; expected improvement of the level of modernization through large-scale operation; actions to strengthen education and training to raise innovation awareness.
- Lastly, Dr. Ruan made three recommendations about soil and land management to the GMS sub-region: strengthen the construction and protection of cultivated land quality; improve the ability to respond to climate change; and ensure national food and ecological security of GMS.

## Lao PDR

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**Dr. Phommy Inthichack**, Deputy Director General, Department of Planning and Cooperation, Ministry of Agriculture and Forestry (MAF), expressed his pleasure to attend the meeting and shared his remarks as follows:

- Emphasized the increasing food and agriproduct impact to the Lao PDR economy. Agri-food plays a significant role in promoting local economic growth of smallholder farmers (income from growing crops, livestock, fisheries). The agri-food sector in Lao PDR has become commercialized for around 80%.
- The proposed Lao PDR-China railway connects the belt which creates / enhances market opportunities in the region. A World Bank (WB) study shows the significant impact of this railway for Lao PDR, but underlined the need for policy reforms. The railway corridor success depends on the increase flow of trade between Lao PDR-China and China-ASEAN.
- Climate change still impacts the growth and development of the agriculture sector, livelihoods and the living conditions of people in Lao PDR (especially rural poor groups). The annual expected losses are between 2.8-3.6% of the GDP.
- Extreme climate events include floods and droughts that badly impact on the vulnerable groups. This phenomena are predicted to increase year after year.
- The 2025-2030 national water strategy and water management plan prioritized irrigation development to support wet and dry season crops, livestock and also fisheries. The main focuses are:
  - Intervention in agriculture and rural development sectors by improving agrometeorological information and coverage and try to reach the target users.
  - Increasing the forest and vegetative land cover.
  - Development of water infrastructure (flood, control of irrigation).
  - Modernization of irrigation practice.
- Its implementation is planned in 3 central provinces: Poly Camsai, Cam Muan, Vientiane. This project will reduce flood risk and prolong the water usage in country.

- The effective use of water, storage of flood water for using in the dry season and an increase in investments in high value crops are key actions.
- The WFE nexus in Lao PDR is mainly linked to hydropower. Hydropower plants generate electricity which plays an important role as the key source to generate incomes for domestic and export production.
- To ensure water availability (e.g. ground and river), the government is trying to build the capacity and increase-awareness among farmers.

## Myanmar

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**Dr. Thanda Kyi**, Deputy Director General, Department of Planning, Ministry of Agriculture, Livestock and Irrigation (MoALI):

- Dr. Kyi presented the policies and strategies Myanmar is implementing to address climate change and food safety.
- Dr. Kyi began with an overview of agriculture in Myanmar, with rice being the main crop at about 40% and beans and pulses being the second largest cultivated crop. In terms of export revenue, the majority is coming from pulses, then rice and rice products, followed by maize.
- She continued to present the objectives and outputs of the TA-9916 and emphasised the relevance of output 3 for Myanmar.
- Dr. Kyi presented the status of TA-9916 sub-activities in Myanmar and noted progress with ADB support on certain aspects of output 1 and output 2 but reported no activities conducted yet related to output 3.
- Dr. Kyi noted that there is considerable investment in irrigation and flood control. Improving water management is a priority.
- Myanmar policies and strategies for resilience of climate change and food safety include the *Climate-Smart Agricultural Strategy*, *National Climate Change Policy*, *Myanmar Climate Change Master Plan (2018-2030)*, *Agricultural Development Strategy*, *National Food Safety Policy*, *Policy Road Map for Safety and Hygiene of Agri-Food Products*. These are related to the WFE nexus and climate-smart agriculture.
- Dr. Kyi continued to provide a more in-depth presentation of each of these policies and strategies and their alignment with GMS-wide objectives and priorities. Finally, Dr. Kyi presented how Myanmar is implementing GAP in line with ASEAN guidelines.
- In conclusion, Dr. Kyi stated that Myanmar has many policies and strategies for climate change resilience and adaptation but is facing technical and financial constraints. Myanmar is willing to cooperate with GMS member countries to achieve improvement of WFE security, and finally Myanmar would like to call upon investors and donor agencies to participate in the development of its agriculture sector through investment.

## Thailand

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**Dr. Vanida Khumnirdpetch** Director, Bureau of Foreign Agricultural Affairs, Office of the Permanent Secretary, Ministry of Agriculture and Cooperatives (MoAC), and WGA Focal Point expressed her pleasure to attend the meeting and shared her remarks as follows:

- The Royal Thai Government has placed importance on the WEF nexus that can be seen in the national strategy, covering 20 years (The First Level National Plan), in *Strategy 5 Improving Quality of Life Based on Green Growth*.
- The indicators of Strategy 5 relate to water, energy and food, such as creating eco-friendly water, energy and agricultural security by developing the entire river basin management system to



ensure national water security, creating national energy security and promoting eco-friendly energy usage, developing agricultural and food security in terms of quantity, quality and pricing, etc.

- For *The Second Level National Plan*, the 12<sup>th</sup> *National Socio-Economic Development Plan (2017-2021)* has given the importance to water infrastructure and climate change impacts and adaptation by setting the indicator to increase the irrigation area and the *Strategic Plan for Water Resources Management 2015-2026* has identified six strategies, which are water for domestic use management, water for production, flood mitigation, water quality management, forestation management and management control.

These remarks were followed by a presentation by **Mr. Pornmongkol Chitchob**, Director of Project Planning Division I, Royal Irrigation Department, MoAC, Thailand:

- The food security proposal is to secure food access and utilization by focusing on water and energy productivity, which helps to reduce income gap; especially in rural area by decreasing costs and increasing production values (via e.g., precision agricultural technology, and lower energy consumption), but also increase in production income, targeting poor farmers or farmers in rural areas. But one of the limitations and obstacles is climate change.
- For energy security, Thailand needs more energy for economic and social development. However, the lack of energy security in terms of self-sufficiency is a concern. Alternative energy is one option. Approximately 60% of alternative energy plan comes from biomass and hydropower.
- Water, agriculture, and energy strategies have their own characteristics. The design of strategy or national development plans are all about the inevitable use of natural resources and the interrelatedness between sectors.
- There are attempts to create a database to identify gaps and this pointed to policy gaps and gap in analytical tools. This, in the future might be extended to cover more than one country, such as countries in the Mekong River Basin.

## Viet Nam

**Dr. Pham Quoc Hung**, Deputy Director, Water Resources Department, Water Resources Directorate, Ministry of Agriculture and Rural Development (MARD) expressed her pleasure to attend the meeting and shared remarks as follows:

- On energy development in Vietnam, hydropower only accounted for 9% in 2010, but, in 2019, it accounted for more than 37%. This means many hydropower plants were built.
- The Ministry of Industry and Trade (MOIT) issued the *National Energy Strategy to 2030*, and there are many debates amongst ministries and government agencies on how to develop hydropower.
- Noted that during the Cop 26 meeting, Vietnam committed to achieve zero CO2 emission by 2050.
- The National Assembly had a supervision mission to evaluate the dam safety and water security for production and sustainable development. The Government of Vietnam is requested to develop a national water security program. The rationale for this is that Vietnam's water security is much dependent on the neighboring countries, as Vietnam only generates about 37% of water needs while 63% of the water is coming from those countries. Water pollution is also becoming more serious within the water security discourse.
- Dam safety is also a problem as most of dams are more than 40 year old. 1,100/7,808 reservoirs are unsafe.

- All the eastern provinces of Vietnam are bordering the sea, so the risk of climate change and sea level rise is quite high. Vietnam has experienced the most serious droughts in 2016. Some serious floods also.
- Too many ministries are involved in the management of water resources. There is a lack of regulation on water security and weak cooperation among agencies.
- The country has therefore set out the following directions:
  - (i) Water is the national resource, the decisive factor for the rapid and sustainable development of the country.
  - (ii) Actively deal with water-related issues from source, exploitation, protection, prevention of pollution; adaption and proactive prevention of water-related disasters.
  - (iii) Respect natural laws, consider water resources as core factor to formulate national socio-economic development master plans, plans, and strategies.
  - (iv) Raise awareness among institutions, policies and governance of water towards integrated management, demand management and water as commodity.
  - (v) Arrange, mobilize long-term investment, follow roadmaps, and create focal points.
  - (vi) International cooperation on the basis of benefit-sharing, fairness and reasonableness in the exploitation, use, protection and development of inter-country water resources.
- By 2025, the country should achieve that 95% of the urban population, 60% of the rural population have access to clean water, 100% of the reservoir is guaranteed to be safe; 30% of urban wastewater is treated. By 2030, the country should achieve that 100% of the urban population, 65% of rural population have access to clean water, 45% of the urban wastewater is treated.
- Viet Nam will continue to seek important support from ADB, the WB and other donors to implement its water security program.

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## SESSION 2 – Water Food Energy Nexus Challenges and Opportunities in the GMS Agri-food sector

**FACILITATOR:** *Dr. Lam Vu Thanh Noi, Vice Manager, Training & International Cooperation, Southern Institute of Water Resources Research (SIWRR), HCMC, Viet Nam*

**Keynote speaker:** *Dr. Alex Smajgl, WFE Nexus Specialist, TA 9916 - “Water, Food, and Energy Nexus Trade-Offs in the GMS”*

- The concept of WFE trade-offs consists of three components: water management, food production and distribution, and energy generation and distribution. The relationship of these three components helps achieve the Sustainable Development Goals (SDG) 1, 3, 4, 5, 8, 9, 10, 11, 12, 13, 15, 16, and 17. It is important to understand that general investment in this area brings benefits to one component, but maybe not necessarily to the other component(s). This is called side effects. We cannot invest in achieving these SDGs if we do not understand well the side effects of the investment.
- Although this is a concern, not much has been researched on WFE nexus in the Mekong region. It is important to look at the three components at the same time to minimize nexus trade-offs. For instance, there are trade-offs when we build hydropower dams, establish solar water pumps, or expand irrigated areas.
- Climate change (e.g. hot/cold spells, droughts), has resulted in water and food insecurities that might fail to meet the needs of increasing populations. This brings about the need for improved nexus solutions. Some main solutions are improved nexus assessment tools used to inform

planning process, improved monitoring of nexus specific trade-offs through water accounting, improved cross-sector coordination, investments in nature-based or technical solutions to mitigate nexus trade-offs.

- There needs to be rapid nexus assessments to inform policy for better implementation strategies. The three-order impact diagram for dragon fruit production is example of a good nexus assessment tool in identifying pros and cons of replacing paddy rice with dragon fruit farming in terms of production and environmental aspects (1<sup>st</sup> order), impacts of these aspects to each of the water-food-energy securities (2<sup>nd</sup> order), and interlinked impacts among these nexus components.
- It is important to understand all possible trade-offs in the nexus to arrive with suitable solutions. Based on these solutions, good adaptation and resilience strategies and plans can be derived. In implementation, it's necessary to have a list of monitoring indicators to measure the effectiveness of proposed solutions so suitable changes can be made upon necessity. There have been nexus assessment tools available that allow integration of data, policy and strategies for derivation of best bet nexus solutions, e.g. MerSim model.

### *Panel discussion*

#### **Ms. Mayvong Sayatham, Technical Advisor, Water Resource Management, GIZ, Lao PDR**

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- Development of hydropower dams block the sediment transport downstream and fish migration. It resulted in dramatic changes in ecosystems of both the upstream and downstream areas. These together lead to changes in production measures and commodities to adapt with the ecological and environmental changes. There are 150 existing and planned hydropower projects in the LMB, including the 11 mainstream dams, which affect at least 1,100 fish species in the Mekong. This is an obvious trade-off between energy need and fisheries.
- Measures need to be taken to compromise trade-offs: FLDM and FADM need to be technically monitored; surveys of fish migration; impact assessment of dam development; new fish passages need to be created. Up until now, Lao PDR has made some achievements, such as food fish species monitoring, 3 established conservation areas, 8 fish habitats improved, fish markets are better controlled, and 9 fish passages improved. Besides, new laws and regulations have been established for conservation.
- However, some challenges have arisen. Besides the rapid establishment of new dams, climate change (e.g. heat stress, droughts, etc.) has significant impacts on fish population. The increasing population imposes more need for fish as food. There is a lack of monitoring and data sharing mechanism among relevant actors.
- The WFE Nexus can open up good opportunities to improve the situation through improved sectoral policies; regional and international cooperation; better balance between energy needs and fisheries; improved data sharing and monitoring; capacity building for monitoring, processing and market management; and better financial management in implementation.

#### **Mr. Ha Thanh Lan, Head of Department, Institute for Water Resources Planning, MARD, Viet Nam - "Water-Food-Energy Nexus Challenges and Opportunities in the GMS Agri-food sector: The case of Vietnam"**

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- 95% of fresh water in Viet Nam comes from upstream areas. This makes the country very much dependent on activities of upstream countries. In the past, the country was more focused on infrastructure development for water storage, irrigation, hydropower, and more on water supply

rather than demand management, without paying enough attention to improving coordination among managing institutions and environmental and social impacts.

- Climate change impacts have been unfolding more risks to having a sustainable WFE nexus, such as the rising sea level in the Mekong Delta widens the saline affected area and results in changes in farming systems.
- Main drivers to water sharing and allocation are: increased demand for water usage; lack of suitable infrastructural constructions for water supply; full or over-allocation of water resources for increased demand and needs for economic development involving new water users; water deterioration due to decreased upstream ecosystem services; and climate change impacts affecting water quantity and quality.
- Modern technology can help precisely control water through water accounting and information advisory tools. Many of these tools are now available that can help provide accurate information to irrigation water (storage, quantity, quality) on the daily basis. Viet Nam is open to regional and international cooperation in water accounting as well as WFE nexus for more sustainable agri-food systems.

#### Mr. Jelle Beeka, Senior Water Resources Specialist, ADB, Philippines

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- The presentation illustrated the use of nexus metrics to understand and evaluate individual interventions proposed to improve WFE nexus performances and interactions within the nexus in order to select interventions that are most suitable.
- Artificial intelligence (AI) search can help identify best available trade-offs with higher resilience and lower cost. This technique helps derive different efficient interventions in different objectives based on performance metrics developed on different data inputs. These interventions are developed into various scenarios for decision-making.

### SESSION 3 – Sustainable Soil and Water Management for Climate Resilience and Food Security in the GMS

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**FACILITATOR:** *Mr. Suriyan Vichitlekarn, Executive Director, Mekong Institute, Thailand*

**Keynote speaker:** *Mr. Nicholas Richards, Climate Change Adaptation Specialist, TA 9916 - "Climate Smart Soils against Climate Change in the GMS"*

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- The presentation underlined the following points:
  - Climate-smart soils are a GMS insurance investment against climate change
  - Healthy soils should be business as usual
  - Fertilizer and nutrients must be accounted for
  - There is a chance to make money from carbon and save the GMS
  - Water must be used productively to increase food production while generating income
  - On-farm water management should be actively promoted
  - Innovative extension systems now for the climate-resilient farming systems we need are essential.
- There are ways to address climate-smart soils against climate change:
  - Maintain /increase soil organic matter and carbon
  - Increased usage of green manures/cover crops for soil incorporation
  - Reduced traffic and minimum tillage

- Reduced exposure to and increased protection of soils against wind and water erosion
- Reduced land subsidence due to groundwater overextraction
- Reduced salinisation of soils through erosion and subsidence control
- Reduced acidification of soils and no drainage of acid sulphate soils
- There are also ways to address Integrated Nutrient Management that can reduce food security risks and improve nutrient efficiency:
  - Support healthy soils through rational fertilizer usage, based on nutrient accounting and budgeting principles across the soil, plant, animal, water phases
  - Reduce greenhouse gas emissions by reducing synthetic fertilizers applied
  - Nutrients applied from multiple sources: synthetics, cover crops, mulches, green manures, organic fertilizers, compost
  - Measurement and monitoring of plant and soil levels to make application adjustments.

### **Panel discussion**

#### **Dr. Sinxay Vongphachanh, Agriculture and Irrigation Specialist, Planning Division, Mekong River Commission Secretariat, Lao PDR**

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- Need to pay explicit attention to the three climate-smart agriculture pillars: productivity, adaptation and mitigation
- The challenges for climate-smart agriculture adoption by farmers in the Lower Mekong River Basin include: low irrigation efficiency, aged irrigation facilities, low quality construction, limited knowledge and understanding on climate-smart agriculture, poor extension services, inadequate funding, lack of clear policies to support the climate-smart agriculture insufficient climate information.
- There are two solutions to the challenges mentioned above: the asset management, an irrigation technique, and the Alternate Wetting and Drying (AWD) and the Midseason Drainage Followed by Intermittent Irrigation (MiDi) irrigation technologies.
- Possible consequences of their implementation include: salinity intrusion, low irrigation efficiency, decrease in household income, lower agriculture labor opportunities, increase in food prices and higher food demand.

#### **Dr. Natthapol Chittamart, Associate Professor / Deputy Head of Research and Innovation, Department of Soil Science, Faculty of Agriculture, Kasetsart University, Thailand**

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- High fertilizer prices contribute to rising global food prices and food security concerns.
- Integrated Nutrient Management improves soil quality by increasing soil organic carbon and nitrogen.
- Recycling of organic resources (animal and human wastes, crop residues, and green manure) have been essential in maintaining soil quality and sustaining food production in GMS.
- Integrated Nutrient Management practices resulted in increased productivity with a reduction in total fertilizer cost and an increase in total income with minimum additional expenditures.

#### **Dr. Van Pham Dang Tri, Director of the Research Institute for Climate Change, Can Tho University, Viet Nam**

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- The compounding risks of climate change and socio-economic development pose grave challenges for the lives, livelihoods, land and water resources of the Mekong Delta.

- Improved knowledge on both physical and social components, their inter-linkages within the delta system, and the basin as a whole are essential.
- A strong and growing call for increased data sharing among government agencies, funding organizations, and scientists was detected.
- Continued dialogue and collaborations with international experts, regional stakeholders and policy-makers, as well as with affected communities was emphasized.
- Knowledge-based solutions and technological advances should be introduced and appropriately implemented.

### Mr. Marc Eberle, Executive Director, Smart Agro, Cambodia

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- Cambodia-based start-up Smart Agro implements agroecological practices to add long-term value to people, smallholder communities and the ecosystem in the farming industry and reward regenerative practices for a transition towards a nature-positive agriculture.
- He raised the benefits of conservation agriculture including increased profits, enhanced resilience, reduced emissions, climate change mitigation and adaptation, soil improvement (reduced erosion, increased fertility, increased water retention & infiltration) and increased biodiversity and natural resource conservation.

### Dr. Florent Tivet, Agronomist, CIRAD France

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- Agricultural intensification in Southeast Asia led to more than 50% medium to strong degradation due to a transition from a subsistence-based to a commodity-based agriculture.
- Risk for increasing social impact, indebtedness, low return from farming, and migration.
- Solutions include: reduce mineral fertilizer, enhance ecosystem services (soil carbon, water retention), reduce fuel consumption, promote industrial farm.
- Need to move from conventional tillage farming towards a more sustainable regenerative agriculture practice.
- There are issues from agricultural intensification: positive economic impacts but not for all and not in the long run, negative environmental impacts (biodiversity, watershed management), livelihoods improvement at the beginning but risks of increasing social impacts (indebtedness, low return from farming, migration, etc.).

### Q&A session

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#### Questions:

- What is the meaning of the new terminologies: Regenerated/co-benefit agro-ecology? How is the best practice of agro-ecology in the ground?
- What are the priority actions that government of the GMS countries should consider to improve soil movement management?
- What are the key lessons of soil movement management that we can learn from and for future collaboration?

#### Answers:

- Mr. Marc Eberle: Agro-ecology has been addressed since 1920-1930. It has been revised in a few years to combine the words – nexus of agriculture, ecology, economic, and environment concepts. It is addressing a combination of a new system such as the inclusion of history, social,

and environmental dimensions to be a resilient society. Conservation agriculture and climate-smart agriculture look at the specific practices and concepts for application.

- Dr. Florent Tivet: different approaches, conservation agriculture move to participation and techniques beneficial to economic and social dimensions.
- Dr. Ruan: Chinese' scientists and farmers are working on these concepts to find the best way in the future.
- Mr. Nicholas Richards: integrated nutrient management is benefit-able, scalable, and visible.
- Dr. Sinxay Vongphachanh: in term of collaboration in the future, looking in the GMS region, MRC should be part of this activity. Hopefully, MRC will work more with ADB projects related to this program.
- Dr. Natthapol Chittamart: For nutrient management – get outputs from research and propose as a model to share with the community. It will be more effective. Also, to change the practice, we need to create incentives for farmers to adopt the nutrient management and increase carbon management.
- Dr. Van Pham Dang Tri: the main important thing is to know the current natural resources and future movement – to restore the natural resources in the Mekong Delta. Knowledge sharing is very important to solve the problems as well as future collaboration.

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## SESSION 4 – Impacts of Supply Chain Disruptions due to Conflict, COVID-19, and Climate Change on Food Security in the GMS: Challenges and Responses

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**FACILITATOR:** *Dr. David Roland-Holst, Professor of Economics, University of California Berkeley / Post-Pandemic Agriculture Response and Recovery Specialist, TA 9916*

**Keynote speaker:** *Mr. Stefan Vogel, General Manager, Raboresearch, Australia and New Zealand - "Supply Chain Disruptions in the GMS: Assessment and Outlook"*

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- Global agri-food markets are being hit by an Unholy Trinity of threats:
  1. Supply chain chaos – beginning with COVID-19 and compounded by armed conflict.
  2. Behavioral responses to the threat of food scarcity
    - hoarding on both sides of the market (withholding supply and accelerating demand)
    - It may seem rational for individual households and nations, but it creates a perfect storm for the price system.
  3. Energy price escalation, where there are three salient impacts:
    - farming - through mechanization and agrochemicals
    - food processing/preservation – quite energy-intensive today
    - transport/logistics – global food trade has grown at twice the rate of output over the last generation, in significant part because of low energy prices.
- Identified serious forward imbalances emerging from the Russia-Ukraine conflict, with likely sharp and sustained adverse impacts on food prices and availability. Of special relevance were the risk to inventories already depleted by decadal drought conditions, as well as the likelihood of protective measures by net exporters. Vogel noted that tradable inventories were already at the second lowest level in history, threatening sharp price escalation and acute deprivation in low-income populations. Production statistics understate the risks because both Ukraine and Russia are facing serious constraints on shipments of existing inventories and expected harvests.

- Moreover, the policy environment is currently not conducive to facilitating these exports, with Russia tying the issue to recent sanctions against it. There is also evidence Russia considers food and fertilizer exports to be another weapon in the current conflict, inflicting critical uncertainty on these markets. Meanwhile, logistical mismatches, delays, and energy price hikes have sharply increased container and transit costs, a growing share of traded food prices.
- Countries with stronger grain and other agri-food inventories enjoy that status because of prudential public policies that are unlikely to be reversed by escalating global prices. Vogel expressed some optimism that private supply could be expected to respond, and some evidence has already emerged of crop substitution. This supply response will take time, however, meaning higher food prices will threaten lower income importers for some time.

### Panel discussion

#### Dr. Nguyen Ahn Phong, IPSARD, Ministry of Agriculture and Rural Development, Viet Nam

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- The Russia-Ukraine conflict is having an impact for some countries in the world, particularly when it comes to specific commodities exported by Russia and Ukraine. Viet Nam, however, is only marginally affected, receiving only a small share of Russia's and Ukraine's exports. Most imports from Russia are pork, corn and fertilizer, whereas from Ukraine are wheat and maize.
- In return, Viet Nam export to Russia have decreased by around 13.5% as opposed to the previous year.
- During the conflict, Vietnam's enterprises have shown the ability to enforce various coping solutions. When it comes to wheat, for instance, Viet Nam has started to import more from Australia and the EU.
- The fertiliser market, instead, is being more relevantly affected, 10 million tonnes being imported annually, mostly potassium. In 2021, Viet Nam imported from Russia 320,000 tonnes (6.27% of the total imported fertilizer), of which potassium was over 195,000 tonnes (15%).
- A broken supply chain, including flight operations and the exclusion of Russian businesses from the SWIFT system, is affecting the Vietnamese business.
- The impact on Viet Nam is still marginal, but at the same time there seem to be limited opportunities as Vietnamese produce is not an alternative to Russian and Ukrainian exports.
- The Russia-Ukraine conflict increased crude oil prices and broke several supply chains, which indirectly affected Vietnamese exports particular to distant markets such as EU and the USA. The container freight rate for exports to the East Coast of the USA used to be 3,500-4,000 USD/container, but it increased to 18,000 USD/container by the end of 2021 and 20,000 USD/container in the early 2022.
- Due to the broken supply chain, input prices increased and farmers lost in absolute terms. The cost of fertilisers increased by 60%, but the price of produce (i.e. rice) did not increase proportionally / accordingly. The price even decreased considering inflation.
- There is a concern of countries closing to rice exports, such as India lead to an increase in export volumes from other counties in the region (e.g. Cambodia exports to the EU was 50% higher in 2022 as opposed to the same period in 2021). Food security might be affected.
- Viet Nam is increasing export to the EU, not necessarily due to the mentioned conflict, but the Vietnamese strategy to diversify export markets and the trade agreement with the EU.



### Dr. QingFeng Zhang, Chief, Rural Development and Food Security Thematic Group, ADB

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- Since beginning its pathbreaking Core Agricultural Support Program (CASP) for the GMS two decades ago, ADB has become a prominent and innovative global partner in promoting food security, rural livelihoods improvement, and sustainable agriculture.
  - Dr. Zhang offered a high-level review of ADB's ongoing and new programs to protect regional food security and vulnerable populations against the combined threats of COVID-19, conflict, and climate change.
  - Dr. Zhang concurred with other panellists about the primary drivers of food risk, and described significant and diverse adverse impacts already present in the Asian region, especially including spillovers in Central Asia and Afghanistan.
  - He outlined ADB's demand-driven approach to national and subregional policy support, indicating widespread interest in solutions (like those advocated by Dr. Torero) combining technical innovation, better information, and policy multilateral coherence. Short-term emphasis is direct support to mitigate acute scarcity and price escalation, while medium term strategies allow for consideration and investment in institutional reform, digitization and other innovation, and human resource development.
  - Leading agri-food priorities for ADB going forward will be climate-smart policies, digital technology diffusion, and more nature-based solutions to infrastructure needs and adaptation challenges.
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## Meeting notes

### Day 2: Wednesday, 22 June 2022

#### SESSION 5 – Youth and Agriculture in the GMS

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**FACILITATOR:** *Ms. Linh Tran, ADB TA 9916 Youth Coordinator, ADB, Bangkok, Thailand*

*Topic: Youth engagement in GMS agriculture, challenges, opportunities, and potential solutions.*

- For the first time in history, youth are given the opportunity to lead and speak at a GMS WGA AM.
- Among 73 million youth or so in the GMS, very few are interested in working in the agriculture sector. The average age of farmers in Thailand is 51 years old and that of China is 50. Ageing farming population across Cambodia, Lao PDR, Myanmar, Thailand, and Viet Nam impedes efforts to increase agricultural productivity.
- Young people, with their energy, creativity, and flexibility; must play a pivotal role in the region's sustainable agriculture and food systems. Technologies have widened opportunities for the young generations in various ways.
- Youth play a key role in achieving the SDG 1 (No Poverty) and 2 (Zero Hunger).

**Keynote speaker:** *Mr. Andrew Bartlett, Team Leader and Policy Adviser, Lao Upland Rural Advisory Service, Vientiane, Lao PDR*

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- 7 key priorities were identified in the field: the youth exodus, demographic dividend, meaningful youth engagement, skills training and advisory services including smart curriculum and peer-to-peer learning through social media, micro-finance, land use — establishment of agribusiness zones for rural young small producers, and decent work — while promoting youth leadership and empowerment through entrepreneurship and technologies is important.
- It is worth noting that millions of youth are involved in 3D jobs: dirty, dangerous and demeaning that made them leave the sector. Therefore, decent work and better protection for young labourers are needed to make agricultural jobs more attractive to young people.

#### *Panel discussion*

**Mr. Lyhour Heang, Incubation Program Manager, Impact Hub Phnom Penh**

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- Key factors that made DakDam Incubation Program successful include inclusive recruitment process, in-depth diagnosis, one-on-one and continuous mentoring, peer-to-peer support, financial support, storytelling videos and exposure trips.
- Recommendations for youth involvement in agriculture include investing in programs that bring back youth to rural areas and infrastructure, promoting sustainable entrepreneurial farming and agriculture cooperatives, and establishing a social media channel where farmers can find up-to-date data on the market needs.

**Mr. Dang Duong Minh Hoang, young farmer, entrepreneur, CEO of Thien Nong farm, and Director of Binh Phuoc Agricultural Cooperative and digital transformation service**

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- Technologies Hoang applied to his farm include digital diary, digital marketing, automatic irrigation system using IoT, solar system, drones and camera CCTV and a circular economy approach and capital sharing.
- Strategies to engage with young farmers include working closely with the Youth Union and organizing social events and talk shows on science and technology transfer.
- Difficulties and challenges of agriculture in Viet Nam include small production model, ineffective model, and lack of value chain, investment transparency and accurate property evaluation.
- Recommendations include capital investment to expand/replicate youth-led model/maintenance and upgrading software, capital investment in machinery and equipment for food processing, and training for youth union/young government officers to transfer the digital diary technology to young people

**Mr. Don Tan, Corporate Affairs Director, Pinduoduo**

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- Pinduoduo is China's leading agriculture platform. 98% of farmers in China are smallholders. The platform allows smallholder farmers to earn more and consumers to enjoy fresher food at better prices and less food loss and waste. Mobile internet enabled digitalized agriculture.
- Engaging with youth in China through leveraging technologies at every link of the agri-food value chain is part of the model: downstream: digital tools + campaigns, midstream: smart route planning + cold-chain, upstream: upskilling + agri-tech adoption.
- Part of their operations include providing training and competitions for young farmers and smallholder farmers, with a focus on new technologies.
- Having many partners, a conducive environment, and well-developed infrastructure in China is key to the success of Pinduoduo.

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**SESSION 6 – TA 9916 Activities and Next Steps**

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**FACILITATOR: Mr. Stewart Pittaway, Team Leader, TA 9916**

**Mr. Pramod Pandeya, International Agribusiness Financing Specialist –Presentation on demonstration TA 9916 output 1.2 “enhancing smallholder farmers and small agribusinesses access to finance through digital agriculture finance program”**

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- The primary objective of the proposed demonstration is to illustrate use of digital technologies to improve smallholder farmers and small agribusinesses access to agri-finance.
- There are some specific objectives to achieve from the demonstration (a) timely credit which is one of the constraints faced by the stallholders and agribusiness (b) enhancing financial preparedness to make these actors bankable from mainstream financial institutions (c) ensure market linkage with the help of WC loan to vegetable traders and (d) demonstrate a viable smallholder financing business model to mainstream banks addressing the issues of perceive risks and high transaction cost.
- The expected results are (a) improved finance access (b) improved digital and financial literacy and (c) improved financial preparedness. The idea is to make smallholder farmers and small agribusiness a “bankable” client for mainstream financial institutions.

- Digital ecosystem of the stakeholders is proposed to be created to provide digital loan. Entire process from loan organization to post disbursement activities will be seamless and digitally driven. ADB TA 9916 will contribute the seed fund on the Pool fund and Rabo Foundation will provide loan to Agribee to contribute to the Pool Fund. Other stakeholder will also contribute for other activities such as capital grant to adopt climate-smart farming practices.
- To ensure the smooth demonstration implementation, MAFF / WGA Cambodia is proposed with the supervisory responsibilities. To oversee the demonstration progress, Technical Coordination Meeting is proposed on quarterly basis represented by stakeholders. Agribee, a Cambodian fin tech start up is proposed a main implementing partner with day-to-day operational responsibilities.
- The proposed pilot will be demonstrated in three districts of Kandal Province of Cambodia.
- The concept note has already been submitted to the ADB for approval after rounds of deliberations with stakeholders.

**Ms. Vichelle Roaring-Arunsuwannakorn, Food Safety and Quality Specialist, TA 9916 - Presentation on demonstration TA 9916 output 2.1: “Two Pilot Demonstrations in Thailand, Viet Nam and China on Promoting International Standards in the Cross-Border Traceability of Fruits”**

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- Background and objectives: The pilots are on:
  - Traceability of GAP certified Durian Exports from Thailand to PRC
  - Traceability of GAP certified Dragon Fruit Exports from Viet Nam to PRC.
- They will be undertaken through a harmonized approach in close collaboration with key government agencies from the three participating countries.
- The demo pilots address two main drivers for fresh fruit and vegetable traceability— need for greater transparency and the need to meet regulatory requirements in order: (i) To demonstrate how global traceability standards can reduce the risk of counterfeiting and unsafe food by enabling product authentication, to allow us to trace product origins and movement, (ii) to enable the application of sustainable, green, pro-poor and commercially viable digital solutions and innovations for supply chain efficiency, cross-border verification, and improvement of risk management processes in cross-border trade, (iii) to promote multilateral equivalence of GAP and other food safety standards, and promote long-term cooperation mechanisms for broader inter-agency, multi-country engagement — considered an important enabler for food security in the region in light of the 3 Cs.
- Collaboration and cooperation framework. Agriculture supply chains require collaboration across sectors, and across agencies, and value chain actors to thrive. Robust data standards are needed to achieve interoperability among supply chain stakeholders from the farmer, to processor, to warehouse, to regulators, and across national boundaries for cross-border trade. And to do so, a multitude of cross-border issues and complexities needs to be addressed.
- The usual “siloed approaches” are no longer sufficient for building consumer confidence and for providing compliance evidence to regulators and trading partners. There has to be a way to simplify working with government agencies and regulators, and a way for automating and streamlining some of the processes for verifying credentials, and (if possible) use e-certificates for conformity assessments and automate processes through global digital exchange protocols.
- Data-sharing through the Electronic Product Code Information Service/System (EPCIS) would enable interoperability in data exchange and convergence between data, trust and speed between implementation partners, and even between countries. EPCIS is flexible, extensible – allows addition of new capabilities and functionalities, would allow querying of info and more importantly it is globally recognized and secure.

- Cooperation and management mechanisms. To effectively and efficiently work with multiple implementing partners and demonstration activities that are spread across Viet Nam, Thailand, and PRC, the following inter-country management arrangements are proposed. For efficiency and effectiveness, the management team will comprise of: TA 9916 consultants, WGA national focal points, and Technical leads. The pilot is proposed to be implemented through a Management Service Agreement (MSA).
- Why NSTDA? Why STAMEQ and why GS1? Based on extensive consultations, are the best partners to implement traceability and support the agriculture ministries — because of their respective national mandates for traceability implementation in Thailand and Viet Nam. GS1 sets the ISO standard in traceability.
- Progress to date: There have been worthwhile virtual dialogues since last year and strong partnerships have been fostered, and opportunities had been tapped to rally additional support from partners. 2 capacity building events were also delivered. Public-private mechanisms are being actively explored and we are also introducing potential pathways for multi-sectoral collaboration, especially between the agriculture ministries and other ministries such as ministry of science and ministry of commerce. If successful, the pilot will be extended to other GMS countries in the subsequent phases.

**Mr. Nicholas Richards, Climate Change Adaptation Specialist, TA 9916 - *Presentation on demonstration TA 9916 output 3.1: “Climate Smart Soil and Water Management”***

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- The proposed demonstration is “Climate Smart Irrigation and Soils for Sustainable Crop Production”. Two main activities will be implemented: sub-activity 1: improved soil health; and sub-activity 2: improved water productivity for rice and vegetables.
- The expected benefits and outcomes of the demo include increased soil health and soil organic carbon capture, reduced water usage and increased water productivity for irrigated rice and vegetable production, more efficient and effective fertilizer usage and reduced synthetic fertilizer usage, climate data capture and usage for farm management, decision support and early warning systems and digital agriculture ecosystem is explored, evaluated for digital agriculture applications for soil and water management.

**Mr. Le Truong Son, Capacity Building Specialist, TA 9916 - *“Capacity Building and Study Tours”***

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- Capacity building is one of key groups of activities within SAFSP. All the capacity building is regionally-focused, no country-specific activities. Including study tours, workshops and seminars, training programs.
- Target groups are GMS government staffs, the private (agribusiness) sector, the communities and NGOs – with focus on women and youth participation.
- SAFSP will organize 5 study tours, including 1 study tours to India on learning best experience from digital transformation for SCM/VCM (M8), 2 study tours to both India and PRC on GAP and food safety Code of Conduct (M9), 1 PRC tour to learn experience of development and operating modern laboratory systems on food safety (M13), and 1 PRC tour will also provide best experience on trans-boundary animal disease control and surveillance facilities.
- Each tour should be delivered in 5-7 days.
- For 2022, the priority will be the M8 on digital application in green supply chain management to India – planned for August or September 2022, and the M9 – good agricultural practice and food safety and quality to India – tentatively in September or October.
- Trips to PRC will temporarily be on hold, subject to the situation of pandemic in the country.

- TA will develop concept note for each tour, with more specific objectives, methodology, program, time schedule, target participants. Call for nomination will be in July.
- Beside the study tours, SAFSP will explore the cooperation for joint capacity building training with FECC (MARA), Lancang Mekong program (LMC) and Mekong Institute and ADB TA-9916 (date TBC).
- After the first WFE Nexus Webinar (M 11), the second WFE workshop may be in-person in August 2022. Other events may include the Soil Doctors Study: review and policy workshop –August 2022, the Green VC management and agribusiness financing for women entrepreneurs (M7) – December 2022.

### Mr. Stewart Pittaway, Team Leader, TA 9916 – “Next steps”

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#### **Demos**

- Two batches of demos. The first includes 1.1, related to green tea value chains, on hold because of COVID-19 restrictions in PRC, 1.2, presented by Pramod, and 2.1, presented by Vichelle. The concept notes for demos 3.1 and 3.2 are being finalised.
- For the next 5 demos, there will be a GMS-wide call for proposal, targeting various stakeholders, from universities, CSOs, to agri-techs.
- The TA team will oversee and provide *ad hoc* support to proposal preparation. WGA will need to approve the proposals before they are passed on to ADB.
- Several criteria for selection will be adopted, including regional cooperation, technical innovation and outreach.

#### **COVID-19 response**

- A knowledge product was compiled in October 2021 and a WS to discuss a pilot response and recovery workshop was organised in February 2022.
- The TA will continue working with target countries for the production of knowledge products in the next couple of months.

#### **Workshops and knowledge products**

- Value chain studies shall be completed by November 2022. Digital surveys in the past were not very successful, so alternative models will be explored.
- These are to be finalised in November 2022 and will underpin the production of knowledge products and workshops, among others.

#### **Events**

- GMS WGA Annual Meeting is to be organised in June 2023 very likely, in Cambodia. The idea is to gather ideas to be discussed, addressed and incorporated into development partners (DPs)’ strategies.
- This event could be aligned to others, including the GMS Agriculture Minister’s Meeting.

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## SESSION 7 – Promoting Regional Investments and Regional Cooperation

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**FACILITATOR:** *Dr. Srinivasan Ancha, Principal Climate Change Specialist, Southeast Asia Regional Department (SERD), ADB*

## “The Proposed New GMS Regional Investment Framework 2025 – Implications for the Agriculture Sector, GMS Strategy 2030 Results Framework and Deepening Development Partner Engagement”

**Mr Asadullah Sumbal**, Principal Regional Cooperation Specialist, ADB, Introduced the following session and its objectives.

**Ms. Pinsuda Alexander**, Economist, Regional Coordination Specialist, SERD, ADB:

- The regional investment framework (RIF) is the project pipeline of the GMS program in existence since 2012. It is now in its 4<sup>th</sup> generation with around 200 projects totalling 77.6 billion USD. 63% of the projects have been completed or commenced. 75 projects have not even started, those were mostly aspirational projects. The framework is expected to better guide project prioritisation and address existing issues. 2 projects have been completed in the agricultural sector.
  - The new pipeline of projects is expected to support the strategic framework at the regional level.
  - The new RIF has criteria for projects to be included in the list, including a set of aspirational criteria on top of minimum criteria. Criteria need to show projects meet minimum standards of project readiness.
  - The new RIF is more focussed on programming and financing aligned with the GMS results framework. Support to the RIF process is to be provided via capacity building. In terms of processual aspects, project origination is coming from the sectoral working groups. Projects not meeting the mentioned criteria are not included in the RIF. The validation and prioritization of the projects is done by the GMS Secretariat. The final RIF is consolidated and needs to be endorsed by the GMS WGs and ministers.
  - The official kick-off for the new process is foreseen for July 1<sup>st</sup>. By the end of August, the RIF 3-year rolling pipeline should be consolidated.

**Ms. Alely Bernardo**, Senior Financing Partnerships Specialist, SERD, ADB:

- ADB is exploring new approaches for deeper engagement of DPs in the GMS programme. In March, secretariats and specific WGs (e.g. transport) were consulted to this end. These WGs should be involved to include their ideas for the GMS meeting next year.
- There exist three levels of engagement. The engagement at DP1 is at the project level. DP2 is at the sector / thematic level and DP3 is at the institutional level and somehow cross-cutting.
- DPs will be interacting. DPs should be given a specific role. Several questions should be addressed: Shall they be engaged, financing only or included in decision-making at the WG level? What can be done to be more attractive to them and have their engagement? Multilateral agencies might not be interested in sectoral programme. Where is engagement more productive and / or having the highest returns?

**Mr. Antonio Ressano**, Principal Regional Coordination Specialist, SERD, ADB:

- A results framework at the programme level is now priority as indicated in the GMS 2030 strategy approved in 2021.
- A 3-levelled approach is being proposed. This was shared in March 2022 and endorsed. Level 1 is at the macro-level and linked to national development regional and / or sub-regional development programmes. Second level indicators are sectoral and thematic. Main sectors and themes of the GMS program include agriculture. The 3<sup>rd</sup> of level of indicators looks at the

RIF performance in terms of financial mobilization, institutional arrangements of the programme and knowledge products, among others.

- So far, the team reached out to ADB sectoral divisions for the definition of indicators at the 3 levels. The key aspect is to have a limited number of indicators per sector (i.e. each sector should have 3 or 4 max, 1 outcome indicator and 3 output indicators). Consultations with GMS governments are the next step to refined and agree on indicators.
- Virtual sessions to consult individually with GMS countries on the circulated documents (organised through the GMS national secretariats) are foreseen in July to have everything officially endorsed in December 2022.

## Comments

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- **Dr. Prum Somany – Cambodia** – Cambodia already commented on the RIF. Though timeline due to MAFF having several sub-sectors involved. Consultations with various departments are required. 2 months is not enough and 1-month extension might be required. The criteria are OK. The template should be shared so that it can be filled in.
- The engagement of DPs can create synergies but they have different financial requirements that can make their involvement more difficult. This creates issues at the project implementation stage. Cambodia has one “challenging” experience with multi-donor involvement.
- **Dr. Phommy Inthichack – Lao PDR** – There is an agreement with the criteria and procedures proposed. Time limitations are a challenge. Clearer template is needed. DPs engagement should be clarified following the template.
- **Dr. Vanida Khumnirdetch – Thailand** – Mentioned time is an issue. Internally it takes time to consult all departments. Thailand is chairing ministerial meetings under APEC in August which adds a strain on availability. In November, Thailand is the leader of the summit, so it might be difficult to follow the timeline.
- **Mr. Nguyen Thanh Dam – Viet Nam** - Echoing others, regarding the timeline. For the RIF, no comments about the agricultural sector.
- **Dr. Thanda Kyi - Myanmar** – Proposed to extend the duration of the process.

## **Dr. Albert Salamanca, Stockholm Environment Institute, Bangkok - “Transboundary Adaptation of GMS Agriculture and Water Resources: Prospects for Regional Cooperation”**

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- Temperatures in the region are changing from 1.1. to 1.4 degrees under the medium scenario and 1.1 and 1.7 in the worst-case scenario.
- Riskscape analysis in South-East Asia shows that drought and flood are the main challenges. Combined they account for 8% of average annual losses in GDP in countries in the GMS. This creates challenges.
- There exist several indirect impacts linked to climate changes, related to, among others, reduced food exports, labour availability, conflicts. This seems to affect the whole region.
- A framework to analyse such transboundary complexities is needed. SEI proposed a framework embracing 4 pathways – flow of commodities (trade), biophysical effects on infrastructure development and ecosystems, people’s flows, finance and remittances.



- Transboundary climate risks are teleconnected (i.e. they span across distant countries). The trade pathway also channels risks across countries. Ukraine is for instance having impacts on poultry and maize availability in distance countries.
- Climate risks can be exported. Top exporters of climate risks are in the region due to the volume of traded rice.
- There exist different types of triggers, through shocks, slow onsets or adaptations. The spread of climate risks can follow different processes. Translational climate risks can in fact be transmitted directly, cascading or via contagion (e.g. Ukraine conflict).
- Transboundary climate risks can be managed at source, along the way or at the point of impact. This is something requiring common responses. From a regional perspective, especially in the GMS, visibility, evidence, influence and convening are four elements that can help respond to transnational climate risks. In relation to evidence, plans and data need to be shared across countries to prevent negative externalities of one country's actions on its neighbours.

## Discussion

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**Mr. Suriyan Vichilekarn**, Executive Director, Mekong Institute, Thailand:

- Underlined the need to tap into opportunities and look at what is happening in region. In this regard, three key points that were raised:
  - In GMS there is an increasing number of climate action-related frameworks. Around 14 addressing similar topics across countries that should be aligned. Synergies across cooperation frameworks should be explored and fora to agree on the way forward should be identified.
  - Adaptation in agriculture should go beyond sectoral initiatives. Knowledge platforms in other sectors exist and should be tapped into for climate interventions in the agricultural sector too.
  - Much more narrative so that climate adaptation is not perceived as a burden but rather something that can yield benefits at the farmer level too. Adaptation is of benefit to several stakeholders and this should be further underlined.

**Dr. SVRK Prabhakar**, Institute for Global Environmental Strategies, Japan:

- GMS countries should look at evidence from beyond the region, particularly related to the WEF nexus. Food price volatility is a good indicator to start an analysis revealing the underlying factors of any crisis, but requiring a “global approach”. Looking at factors only within any given region might yield inaccurate results.
- Four tangible measures being proposed for forecasting food crises include:
  - Data sharing is key to take timely measures across countries.
  - Supply chains resilience needs to be strengthened also via capacity building, simulation exercises, etc.
  - Local supply chains should be strengthened.
  - Food stocks should be smarter.
- Adaptation plans should factor in transboundary risks. Regional adaptation plans covering items that cannot be addressed by one country alone. Data sharing frameworks can be core elements.

**Dr. Beau Damen, Natural Resources and Climate Change Officer, FAO Regional Office for Asia and the Pacific, Thailand**

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- Significant reduction in food insecurity in the region in the past few decades. Investments were key, along with interventions at the policy level. Still, no improvements have been reported in addressing undernourishment and nutritional deficiencies persist. This is also linked to different diet costs.
- Policies often focus on productivity to face the mentioned issues, but they can cause unintended outcomes, such as water stress and scarcity, environmental degradation, pollution, increased vulnerability to climate change.
- Sustainable models are needed – policy and investment decisions should be guided by principles and approaches such as the nexus, agroecology, etc.
- FAO can facilitate the emergence of specific policies or measures, as detailed in the related PPT. Such measures include policy dialogue, resource mobilisation strategies, development of financing facilities seeing blended finance models.
- There are 4 programmes of works at the regional level:
  - Enhancing climate action and partnerships
  - Strengthening climate services for agriculture and decision-making support
  - Promoting anticipatory actions for disaster risk management
  - Scaling up access to environment and climate finance.

**Dr. Frederic Asseline, Head, Program Team, Multilateral Cooperation Center for Development Finance (MCDF), PRC**

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- MCDF, active at the regional level, was set up last year and is similar to the Global Infrastructure Facility of the WB. Working with IFIs to promote connectivity in infrastructure, high quality standards in project preparation, promotion of partnerships for project implementation. Climate change response is a key dimension of their operations.
- In the region, MCDF has a collaboration platform including various IFIs, such as ADB.
- Programmes also foresee capacity building, project preparation grants, with a focus on transport and infrastructure, energy, ICT and water. If IFIs target any of the listed sectors, MCDF supports project preparation via various actions, including climate risk vulnerability assessments, (pre-)feasibility studies, etc.
- Projects being implemented include some in Cambodia, Lao, PCR, as well as regional programmes on environmental and social safeguards.

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**SESSION 8: Adoption of Draft WGA AM-19 Summary**

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**FACILITATOR: Dr. Jiangfeng Zhang, Director, SEER, ADB**

All WGAs delegates agreed on the Summary of the discussion of the 19<sup>th</sup> GMS WGA AM. All WGAs delegates confirmed five priorities for action to be pursued and sustained beyond the implementation period of technical assistance on GMS Sustainable Agriculture and Food Security:

- (i) build institutional and technical capacities for assessing, monitoring, and managing the WFE trade-offs and for mobilizing investments in nature-based solutions to address water, food and energy insecurities in a changing climate.

- (ii) enhance investments on climate smart agriculture to improve soil health and water productivity in cropping systems.
- (iii) contribute to 3C recovery efforts by supporting measures to develop and adapt supply chains to improve the access of agribusinesses and farmers to higher value markets, and alternative options to lower the cost of inputs and to improve resource use efficiency.
- (iv) enhance the participation of youth in GMS agriculture.
- (v) engage with other development partners and the private sector on transboundary adaptation of agriculture and water resources.

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### Concluding remarks

#### **Dr. Jiangfeng Zhang, Director, Environment, Natural Resources & Agriculture Division (SEER), Southeast Asia Department (SERD), ADB**

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- Mr. Jiangfeng Zhang concluded acknowledging the very successful 19<sup>th</sup> GMS WGA AM.
- Mr. Jiangfeng Zhang thanked all WGA national coordinators, focal points and all delegates for attending and contributing to the success of this meeting.
- He also thanked the whole team of the TA 9916 led by Stewart Pittaway as the Team Leader for the hard work to make the meeting very successful.
- He also expressed gratitude to Dr. Srinivasan Ancha for leading the discussion and to Cris, Jam for their hard work to contribute to the success of the meeting and coordination along the process of the TA 9916 implementation.
- Last, Mr. Jiangfeng Zhang conveyed his appreciation to the Vietnamese delegation, in particular Dr. Nguyen Do Anh Tuan and Mr. Nguyen Thanh Dam for the hard work in coordinating and facilitating the meeting to be very successful.

#### **Dr. Nguyen Do Anh Tuan, Director General, International Cooperation Department (ICD) and WGA Coordinator, Ministry of Agriculture and Rural Development (MARD), Viet Nam**

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- Expressed appreciation for the two-day meeting that was described as very informative and with comprehensive presentations focusing on many aspects including climate change, WFE nexus trade-off, climate-smart soil management for sustainable food system, supply chain disrupting food security in the GMS and youth engagement.
- Strongly supported Dr. Jiangfeng Zhang's observations that there is still a lot to do to achieve the Siem Reap Strategy and action plan that was adopted in the 2017, as we face over two-year period of the COVID-19 pandemic and the current situation of the conflict in Ukraine. More concerted efforts are needed to discuss and find solutions to cope with the emerging challenges.
- Required to continue conducting feasibility studies, improve databases, exchange policy solutions, and to apply innovative policy solutions for sustainability and the harmonization of the WFE nexus practice.
- Thanked all for the great effort to make the meeting successful and continue collaboration and cooperation.
- Declared the 19<sup>th</sup> GMS WGA AM successfully completed.

## Field trip notes

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### Day 3: Thursday, 23 June 2022

#### Mr. Vo Kim Thuan, Head of Division for Rural Development and Irrigation, Department of Agriculture and Rural Development, Long An province – “Climate change adaptation agriculture sector strategies in Long An”

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- Illustrated the main climate risks affecting dragon fruit production in Long An province:
  - Climate change impacts dragon fruit in Long An. There used to be 11,600 ha of dragon fruit cultivation in Long An. But now this is reduced to 10,200 ha due to weather and export market situation (due to COVID-19 lock-down etc.).
  - Climate change impacts water resources, causing salt intrusion.
  - Decreases in labor have been recorded due to shifting to other sectors.
- Long An province strategy and plans for climate change adaptation include the following measures:
  - Non-engineering: weather forecast and meteorological information dissemination.
  - Engineering: smart watering, water-saving irrigation techniques (315 models, equivalent to 300 ha), agriculture sector to work with other districts on sowing calendar advisory services, prevent salt intrusion by storing water and increasing investment in irrigation systems including reservoirs and canals.
- WFE nexus is an interrelated issue. No water, no electricity. Farmers need energy and water for food production. Hydropower is necessary but it impacts water availability downstream in the Mekong delta. If operating properly it helps to regulate flooding in the rainy season and wash out salinity in the dry season. If not, it exacerbates salt intrusion.
- Expectations for the TA-9916 in terms of improving the WEF nexus in dragon fruit farming to enhancing climate adaptation include:
  - Help to promote international cooperation
  - Share data
  - Help upper stream water management of the Mekong River
  - Help find stable markets for fruits
  - Apply modern technologies
  - Involve the private sector and other sectors to help reduce the cost of water-saving irrigation systems.

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#### Testimony from Mr. Nguyễn Văn Thùy, dragon fruit farmer

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- 1500 dragon fruit trees – 1 ha, 40 tonnes of harvest/year, 300 million VND/year of profit.
- His location used to be a rice production area, but due to the increasing salinity in the soil (sea level rise up), the farmer changed from rice to dragon fruit plantation. The dragon fruit cultivation shows more tolerance to the soil salinity and can remain in the flood period longer than other crops.
- Decided to apply water-saving technologies due to water shortages, and it helped to save water by 50% and technologies (water sprinkle) helped to reduce crop diseases. He also applied remote control system and bio fertilizers.

- The farmer uses digital auto moisture sensor to measure soil moisture. When the soil moisture decreases the sensor automatically regulate to the water pump to run to irrigate at each dragon fruit stem. The whole water generation system is running by electricity power, but the system is an energy-saving system - it consumes above 100 KWh each month for 1ha of the dragon fruit plantation.
- The plantation has Global GAP certification and it is renewed biannually.
- Harvest is every 10 days on season and every 2.5 months off season. Fruits are transported to cooperatives for storage in the cold storage (up to 30 days) after harvest. At the cooperative, there is a cleaning, packaging and labelling chain, then the dragon fruit packages are exported based on the market demands, mainly PRC.
- The dragon fruit packages are transported in the cold chain to the border and across the border to PRC. Due to the COVID-19 pandemic lock-down, the export market was affected and farmers started to process dried dragon fruit and dragon fruit wine products.
- The Division of Agriculture of Long An provided training and capacity building to the farmers on plantation, soil, water management, facilitation on digital technology for soil and water management, linking to cooperative, local and export markets, etc.
- Suggestions for start-ups include the application of technologies to reduce the cost of production (labor, electricity and fertilizers).

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#### Testimony from Mr. Lê Minh Mẫn, dragon fruit farmer

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- The initial investment was around 100,000 VND/stem.
- After 2 years, including labor, the cost was 250,000 VND/stem. Labor costs 10 million VND/ha, for 3 people, all year round.
- Had no income in the last 2 years due to COVID-19. Prior to COVID-19, profit was 1 billion VND/ha.

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# 19<sup>th</sup> Annual Meeting of the Greater Mekong Subregion (GMS) Working Group on Agriculture (WGA)

21-23 June 2022 (in-person and online)  
Renaissance Riverside Hotel  
Ho Chi Minh City, Viet Nam

## Concept note and programme

**Theme: Adaptation of GMS Agriculture in the context of Climate Change and the Water-Food-Energy (WFE) Nexus**

### Co-Chairs

- **Dr. Nguyen Do Anh Tuan** Director General, International Cooperation Department / WGA Coordinator, Ministry of Agriculture and Rural Development, Viet Nam
- **Dr. Jiangfeng Zhang**, Director, Environment, Natural Resources & Agriculture Division, Southeast Asia Department, ADB

### Background

To support the implementation of the **Strategy for Promoting Safe and Environment-Friendly Agro-Based Value Chains in the GMS**, ADB approved the Technical Assistance (TA) entitled **GMS Sustainable Agriculture and Food Security Program (SAFSP)** to be implemented over 5 years from April 2020 to March 2025. The expected **outcome** is: 'GMS investments in and capacity for climate-friendly, safe, and sustainable agri-food value chains increased'. The TA has three **outputs**: (i) Climate-friendly, inclusive, and gender-responsive agri-food value chains and agribusinesses strengthened; (ii) Harmonized crop and livestock safety and quality systems adopted; and (iii) Climate-adaptive agriculture in the context of the water-energy-food security nexus enhanced.

In support of realizing Output 3, the 19<sup>th</sup> Annual Meeting of the GMS Working Group on Agriculture will feature the theme of: **Adaptation of Greater Mekong Subregion Agriculture in the context of Climate Change and the Water-Food-Energy (WFE) Nexus**. There is increasing evidence of substantial trade-offs among water, food, and energy sectors in the GMS and climate change is exacerbating such trade-offs. Examples of trade-offs include: (i) the impact of hydropower on fish stocks (and thereby food insecurity); (ii) the impact of expanding irrigation and aquaculture infrastructure on water security; (iii) the impact of energy price changes on decision to replace food crops with energy crops; (iv) the energy intensity of desalinization creating trade-offs between energy and water security, and (v) the competition for water from agriculture sectors. Based solely on population growth, food demand in the GMS will rise by at least 25% by 2050; if considering increasing income, this surge will be much higher. Concurrently, energy demand in the GMS is projected to grow by 2040 by 50% over 2015 levels. This will create substantial challenges as water availability is likely to drop substantially due to increasing climate variability. These projections emphasize the urgent need to manage the WFE Nexus effectively.

Food security is crucially dependent upon ensuring soil and water security. Across the GMS, natural resources which underwrite agricultural production, continue to deteriorate due to land degradation, forest loss, and unsustainable agricultural intensification, pollution, and urbanization. For example, as per the

### Joining virtually?

Click [here](#) to register in advance for the Zoom meeting:

<https://us02web.zoom.us/j/9128930882?pwd=Z0ludU9pQmRlTG99LQv5yHNRQ5Y3Aq9ALKdfG0>

After registering, you will receive a confirmation email containing information about joining the meeting.

FAO GLADIS assessment framework (2017), the area classified with medium to strong land degradation ranges from 62% in Lao PDR to 42% in Cambodia. As per the Harmonized World Soils Database of FAO (2009), soils in the GMS can be very broadly described as suffering from widespread problems such as acidity, reduced levels of carbon, coarse texture, low water availability, and low to moderate fertility levels. Large areas of the GMS have soils that are already stressed while their vulnerability to climate change is intensifying. Healthy soils rely on sustainable agriculture systems and climate smart practices and are essential to mitigate and adapt to climate change and thus preserve food security.

Water resources in the Mekong Region suffer from increasing hydropower development, intensive agricultural production, vulnerability to climate change, and poor co-ordination among governments. Irrigation is the major consumer using about 70% of the available water supply. Water insecurity is now a major threat for food security in the GMS. The Water Security Indices for Cambodia, Lao PDR, Thailand and Viet Nam, are described as engaged, but not capable and effective (ADB 2020 Asian Water Security Outlook). For example, in Viet Nam, the growing threats from sea level rise, saline intrusion, soil erosion, flooding, droughts, pollution, subsidence, wetland degradation and exposure of acid sulphate soils could reduce GDP by 6 percent by 2035 (World Bank 2019). Climate change is expected to worsen these hazards.

The 19th GMS WGA meeting will discuss ways to apply the WFE nexus approach, its benefits and showcase climate smart agriculture solutions as a foundational improvement for necessary change. It is anticipated that the approach will lead to effectively managing nexus trade-offs and realizing nexus synergies, while directing development investments on a pathway towards achieving the Sustainable Development Goals.

## Objectives

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- To share national priorities of GMS countries to address climate change and manage trade-offs for water-food-energy nexus
- To examine trade-offs in the water-food-energy nexus in the GMS and present solutions to improve the nexus management
- To present solutions to adapt to climate change in the GMS through climate smart soil and water management in support of food and water security
- To discuss implications of supply chain disruptions from Ukraine-Russia conflict, COVID-19, and climate change on food security in the GMS
- To agree upon priority actions for regional cooperation to improve adaptation of GMS agriculture to climate change and manage trade-offs for water-food-energy nexus.

## Target participants

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- GMS WGA representatives
- Technical department representatives from GMS Ministries of Agriculture
- Representatives from GMS agencies for water, energy, planning and finance
- Private sector (agribusiness representatives)
- Development partners
- ADB staff
- TA 9916 Consultant team

## Expected Output

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- Annual Meeting Summary Statement with follow-up actions

## Agenda

DAY 1: Tuesday, 21 June 2022	
07:30 – 08:30	<b>Registration – outside the meeting room (1<sup>st</sup> floor)</b>
08:30 – 09:00	<b>Opening</b> <ul style="list-style-type: none"> <li>• <b>Dr. Nguyen Do Anh Tuan</b>, Director General, International Cooperation Department (ICD) and WGA Coordinator, Ministry of Agriculture and Rural Development (MARD), Viet Nam</li> <li>• <b>Dr. Jiangfeng Zhang</b>, Director, Environment, Natural Resources &amp; Agriculture Division (SEER), Southeast Asia Department (SERD), ADB</li> </ul>
09:00 – 10:00	<b>SESSION 1: National strategies to address climate change and manage trade-offs for water-food-energy nexus in the GMS</b> <b>Facilitator: Dr. Jiangfeng Zhang</b> , Director, Environment, Natural Resources & Agriculture Division (SEER), Southeast Asia Department (SERD), ADB
	<b>Presentations by GMS WGA Representatives:</b> <ul style="list-style-type: none"> <li>• <b>Cambodia – Dr. Prum Somany</b>, Advisor to the Minister, Ministry of Agriculture, Forestry and Fisheries (MAFF) / Director of the Department of International Cooperation (MAFF) and WGA Coordinator</li> <li>• <b>China, People’s Republic of – Ms. Liu Jiang</b>, Head of Asian and African Affairs Division, Department of International Cooperation, Ministry of Agriculture and Rural Affairs (MARA)</li> <li>• <b>China, People’s Republic of – Dr. Ruan Zhiyong</b>, Associate Professor, Innovation Team of Soil Health Care, Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences (CAAS)</li> <li>• <b>Lao People’s Democratic Republic – Dr. Phommy Inthichack</b>, Deputy Director General, Department of Planning and Cooperation, Ministry of Agriculture and Forestry (MAF)</li> <li>• <b>Myanmar – Dr. Thanda Kyi</b>, Deputy Director General, Department of Planning, Ministry of Agriculture, Livestock and Irrigation (MoALI)</li> <li>• <b>Thailand – Dr. Vanida Khumnirdpetch</b>, Director, Bureau of Foreign Agricultural Affairs, Office of the Permanent Secretary, Ministry of Agriculture and Cooperatives (MoAC), and WGA Focal Point</li> <li>• <b>Thailand – Mr. Pronmongkol Chidchob</b>, Director, Project Planning Division, Royal Irrigation Department (RID)</li> <li>• <b>Viet Nam – Dr. Pham Quoc Hung</b>, Deputy Director, Water Resources Department, Water Resources Directorate, Ministry of Agriculture and Rural Development (MARD)</li> </ul>
10:00 – 12:00	<b>SESSION 2: Water Food Energy Nexus Challenges and Opportunities in the GMS Agri-food sector</b> <b>Facilitator: Dr. Lam Vu Thanh Noi</b> , Vice Manager, Training & International Cooperation, Southern Institute of Water Resources Research (SIWRR), HCMC, Viet Nam
10:00 – 10:30	<b>Keynote: Water, Food, and Energy Nexus Trade-Offs in the GMS</b> <b>Dr. Alex Smajgl</b> , Water-Energy-Food Nexus Security Specialist, TA 9916
10:30 – 10:45	<b>Tea and Coffee Break and photo</b>
10:45 – 11:30	<b>Panel discussion</b> <ul style="list-style-type: none"> <li>• <b>Ms. Mayvong Sayatham</b>, Technical Advisor, Water Resource Management, GIZ, Lao PDR</li> <li>• <b>Mr. Radasiri Wachirapunyanont</b>, Regional Innovation Hub Manager, Water and Energy for Food (WE4F), Bangkok, Thailand</li> <li>• <b>Mr. Ha Thanh Lan</b>, Head of Department, Institute for Water Resources Planning, MARD, Viet Nam</li> <li>• <b>Mr. Jelle Beekma</b>, Senior Water Resources Specialist, ADB</li> <li>• <b>Dr. Sagar Prasai</b>, The Asia Foundation, Bangkok, Thailand</li> <li>• <b>Mr. Chheang Hong</b>, National Coordinator, Cambodia National Mekong Committee, Cambodia</li> </ul>
11:30 – 12:00	<b>Question &amp; Answer Session</b>
12:00 – 13:00	<b>Lunch Break – Viet Kitchen (ground floor)</b>
13:00 – 14:50	<b>SESSION 3: Sustainable Soil and Water Management for Climate Resilience and Food Security in the GMS</b> <b>Facilitator: Mr. Suriyan Vichitlekarn</b> , Executive Director, Mekong Institute, Thailand
13:00 – 13:30	<b>Keynote: Climate Smart Soil and Water Management for Sustainable Food Systems in the GMS</b> <b>Mr. Nicholas Richards</b> , Climate Change Adaptation Specialist, TA 9916
13:30 – 14:20	<b>Panel discussion</b> <ul style="list-style-type: none"> <li>• <b>Dr. Sinxay Vongphachanh</b>, Agriculture and Irrigation Specialist, Planning Division, Mekong River Commission Secretariat, Lao PDR</li> <li>• <b>Dr. Natthapol Chittamart</b>, Associate Professor / Deputy Head of Research and Innovation, Department of Soil Science, Faculty of Agriculture, Kasetsart University, Thailand</li> </ul>



	<ul style="list-style-type: none"> <li>• <b>Dr. Van Pham Dang Tri</b>, Director, Research Institute for Climate Change (DRAGON-Mekong), Can Tho University, Viet Nam</li> <li>• <b>Mr. Marc Eberle</b>, Executive Director, SmartAgro, Cambodia</li> <li>• <b>Dr. Florent Tivet</b>, Agronomist, CIRAD, France</li> </ul>
14:20 – 14:50	<b>Question &amp; Answer Session</b>
14:50 – 15:05	<b>Tea and Coffee Break</b>
15:05 – 17:15	<p><b>SESSION 4: Impacts of Supply Chain Disruptions due to Conflict, COVID-19, and Climate Change on Food Security in the GMS: Challenges and Responses</b></p> <p><b>Facilitator:</b> <i>Dr. David Roland-Holst</i>, Professor of Economics, University of California Berkeley / Post-Pandemic Agriculture Response and Recovery Specialist, TA 9916</p>
15:05 – 15:35	<p><b>Keynote: Supply Chain Disruptions in the GMS: Assessment and Outlook</b></p> <p><b>Mr. Stefan Vogel</b>, General Manager, RaboResearch, Australia and New Zealand</p>
15:35 – 16:40	<p><b>Panel Discussion</b></p> <ul style="list-style-type: none"> <li>• <b>Mr. Thavisith Bounyasouk</b>, Director, Clean Agriculture Standard Center, Department of Agriculture, Ministry of Agriculture and Forests (MAF), Lao PDR</li> <li>• <b>Dr. Nguyen Anh Phong</b>, Director, Institute for Policy and Strategy for Agriculture and Rural Development (IPSARD), Ministry of Agriculture and Rural Development (MARD), Viet Nam</li> <li>• <b>Dr. Maximo Torero-Cullen</b>, Chief Economist, Food and Agriculture Organisation (FAO), Italy</li> <li>• <b>Ms. Anthea Webb</b>, Deputy Regional Director, World Food Programme (WFP), Thailand</li> <li>• <b>Dr. Qingfeng Zhang</b>, Chief, Rural Development and Food Security Thematic Group, ADB</li> </ul>
16:40 – 17:15	<b>Question &amp; Answer Session</b>
17:15 – 17:30	<b>Day 1 Conclusion</b>
19:00	<b>Dinner – Atrium Lounge (5<sup>th</sup> floor)</b>
<b>DAY 2: Wednesday, 22 June 2022</b>	
08:00 – 08:30	<b>Registration – outside the meeting room (1<sup>st</sup> floor)</b>
08:30 – 10:30	<p><b>SESSION 5: Youth and Agriculture in the GMS</b></p> <p><b>Facilitator:</b> <i>Ms. Linh Tran</i>, TA 9916, Youth Coordinator, ADB, Thailand</p>
08:30 – 09:00	<p><b>Keynote: Youth engagement in GMS agriculture, challenges, opportunities and potential solutions</b></p> <p><b>Mr. Andrew Bartlett</b>, Team Leader and Policy Advisor, Helvetas, Lao PDR</p>
09:00 – 10:00	<p><b>Panel Discussion</b></p> <ul style="list-style-type: none"> <li>• <b>Mr. Lyhour Heang</b>, Incubation Program Manager, Impact Hub Phnom Penh, Cambodia</li> <li>• <b>Mr. Dang Duong Minh Hoang</b>, Youth Contestant Representative, CEO of Thien Nong farm, Viet Nam</li> <li>• <b>Ms. Mayuree Boonyasenekul</b>, Chief of Farm Youth Development Group, Farmer Development Division, Department of Agricultural Extension, Thailand</li> <li>• <b>Ms. Christamol Sutawong</b>, Young Farmer, Young Smart Farmers Thailand, Thailand</li> <li>• <b>Mr. Don Tan</b>, Director, Corporate Affairs, Pinduoduo, People's Republic of China</li> </ul>
10:00 – 10:30	<b>Question &amp; Answer Session</b>
10:30 – 10:45	<b>Tea and Coffee Break</b>
10:45 – 12:00	<p><b>SESSION 6: TA 9916 Activities and Next Steps</b></p> <p><b>Facilitator:</b> <i>Mr. Stewart Pittaway</i>, Team Leader</p>
10:45 – 11:15	<p><b>Update on Demonstrations</b></p> <ul style="list-style-type: none"> <li>• <b>Output 2.1: Agri-food Traceability – Ms. Vichelle Roaring-Arunsuwannakorn</b>, Food Safety and Quality Specialist, TA 9916</li> <li>• <b>Output 1.2: Agri-finance – Mr. Pramod Pandya</b>, Agri-finance Specialist, TA 9916</li> <li>• <b>Output 3.1: Climate Smart Soil and Water Management – Mr. Nicholas Richards</b>, Climate Change Adaptation Specialist, TA 9916</li> </ul>
11:15 – 11:25	<b>Capacity Building and Study Tours: Mr. Le Truong Son</b> , National Knowledge Management and Capacity Building Specialist, TA 9916
11:25 – 11:45	<b>Next Steps: Mr. Stewart Pittaway</b> , Team Leader, TA 9916
11:45 – 12:00	<b>Question &amp; Answer Session</b>
12:00 – 13:00	<b>Lunch Break – Viet Kitchen (ground floor)</b>

13:00 – 14:45	<b>SESSION 7: Promoting Regional Investments and Regional Cooperation</b> <b>Facilitator:</b> <i>Dr. Srinivasan Ancha, Principal Climate Change Specialist, Southeast Asia Regional Department (SERD), ADB</i>
13:00 – 13:45	<b>The Proposed New GMS Regional Investment Framework 2025 – Implications for the Agriculture Sector, GMS Strategy 2030 Results Framework and Deepening Development Partner Engagement</b> <ul style="list-style-type: none"> <li>• <i>Mr. Asadullah Sumbal, Principal Regional Cooperation Specialist, SERD, ADB</i></li> <li>• <i>Ms. Pinsuda Alexander, Economist, Regional Coordination Specialist, SERD, ADB</i></li> <li>• <i>Ms. Alely Bernardo, Senior Financing Partnerships Specialist, SERD, ADB</i></li> <li>• <i>Mr. Antonio Ressano, Principal Regional Coordination Specialist, SERD, ADB</i></li> </ul>
13:45 – 14:15	<b>Transboundary Adaptation of GMS Agriculture and Water Resources: Prospects for Regional Cooperation</b> <b>Presenter:</b> <i>Dr. Albert Salamanca, Senior Research Fellow, Asia Centre, Stockholm Environment Institute, Thailand</i> Discussants: <ul style="list-style-type: none"> <li>• <i>Mr. Suriyan Vichitlekarn, Executive Director, Mekong Institute, Thailand</i></li> <li>• <i>Dr. SVRK Prabhakar, Principal Policy Researcher, Institute for Global Environmental Strategies, Japan</i></li> </ul>
14:15 – 14:45	<b>Development Partner Perspectives</b> <ul style="list-style-type: none"> <li>• <i>Dr. Beau Damen, Natural Resources and Climate Change Officer, FAO Regional Office for Asia and the Pacific, Thailand</i></li> <li>• <i>Dr. Frederic Asseline, Head, Program Team, Multilateral Cooperation Center for Development Finance (MCDF), People's Republic of China</i></li> </ul>
14:45 – 15:00	<b>Coffee and Tea Break</b>
15:00 – 17:00	<b>SESSION 8: Adoption of Draft WGA AM-19 Summary</b> <b>Facilitator:</b> <i>Dr. Jiangfeng Zhang, Director, SEER, ADB</i>
15:00 – 16:45	<b>Discussion and Adoption of Draft Summary by WGA delegates</b>
16:45 – 17:00	<b>Concluding Remarks</b> <ul style="list-style-type: none"> <li>• <i>Dr. Jiangfeng Zhang, Director, Environment, Natural Resources &amp; Agriculture Division (SEER), Southeast Asia Department (SERD), ADB</i></li> <li>• <i>Dr. Nguyen Do Anh Tuan, Director General, International Cooperation Department (ICD) and WGA Coordinator, Ministry of Agriculture and Rural Development (MARD), Viet Nam</i></li> </ul>
19.00	<b>Dinner – Atrium Lounge (5<sup>th</sup> floor)</b>
<b>DAY 3: Thursday, 23 June 2022 – Field visit</b>	
06:30 – 06:50	<b>Registration – Hotel lobby (ground floor)</b>
07:00	<b>Departure</b> from HCMC hotel to An Luc Long commune, Chau Thanh district, Long An province
09:00 – 09:45	<b>Introduction: Climate change adaptation agriculture sector strategies in Long An</b> <b>Presenter:</b> <i>Mr. Võ Kim Thuân, Head of Division for Rural Development and Irrigation, Department of Agriculture and Rural Development (DARD), Long An province</i> Meeting venue: An Luc Long commune meeting hall Topics of the presentation: <ul style="list-style-type: none"> <li>• Main climate risks affecting dragon fruit production in Long An province</li> <li>• Long An province strategy and plans for climate change adaptation</li> <li>• What are the water-energy-food nexus related issues in Long An's dragon fruit production?</li> <li>• What solutions are being implemented and what needs to be improved/introduced?</li> <li>• What are the expectations for the TA-9916 in terms of improving the water-energy-food nexus in dragon fruit farming to enhancing climate adaptation?</li> </ul>
10:00 – 11:00	<b>Farm Visit 1: Traditional dragon fruit production system</b> <i>Mr. Nguyễn Văn Thủy, farmer, and Mr. Lê Minh Mẫn, Chau Thanh DARD</i> <ul style="list-style-type: none"> <li>• 30 minutes presentation on the production model</li> <li>• 30 minutes Q&amp;A session and discussions about how the project can contribute to dragon fruit farming in Long An in terms of climate adaptation through enhanced water-energy-food nexus should also be addressed</li> </ul>
11:00 – 12:00	<b>Farm Visit 2: High technology dragon fruit production system</b> <i>Mr. Nguyễn Văn Thủy, farmer, and Mr. Lê Minh Mẫn, Chau Thanh DARD</i> <ul style="list-style-type: none"> <li>• 30 minutes presentation on the production model</li> <li>• 30 minutes Q&amp;A session and discussions about how the project can contribute to dragon fruit farming in Long An in terms of climate adaptation through enhanced water-energy-food nexus should also be addressed</li> </ul>
12:30 – 13:00	<b>Lunch: Local restaurant in Long An City</b>
15:00	<b>Arrival in HCMC</b>

## 19<sup>th</sup> Annual Meeting of the Greater Mekong Subregion (GMS) Working Group on Agriculture (WGA)

### Facilitators, Keynote Speakers and Panellists

#### Opening Session

**Dr. Nguyen Do Anh Tuan, Director General, MARD and WGA Coordinator, Viet Nam** has nearly 10 years of experience in policies and strategies for agriculture and rural development. He is author and co-author of numerous articles and scientific papers on the subject matter. His research interests include analysis of agricultural market, agricultural policy development, innovation in agriculture, economic restructuring, food security, land policy, etc. From 2007 to present, Dr. Tuan has participated in and hosted 38 major projects related to rural development policy, the value chain of agricultural products, land use and management, ecosystem and response to climate change, food security, agricultural market development, building models for agricultural development, among others. He has a master's degree in Development Economics in Vietnam. In 2007, he completed a PhD at the Institute of Social Sciences (The Hague, the Netherlands).

**Dr. Jiangfeng Zhang, Director, SEER / Co-Chair, Environment Thematic Group, ADB** has from 2002 to date been leading and supporting the development, design, and implementation of agriculture, natural resources, and rural development sector projects covering countries in Southeast Asia, South Asia, and Central and West Asia. His current focus is on policy, institutional, financing, and technological support to inclusive, climate-resilient, and environmentally sustainable agriculture and rural development for enhanced agriculture competitiveness and food security in Southeast Asian countries. He holds a PhD in Agricultural and Resource Economics and a Master's degree in Statistics from the University of California, Berkeley, USA.

#### Session 2: Water Food Energy Nexus Challenges and Opportunities in the GMS Agri-food sector

**Dr. Lam Vu Thanh Noi, Vice Manager, Training & International Cooperation, Southern Institute of Water Resources Research (SIWRR), HCMC, Viet Nam** received her PhD degree in Urban Environmental Management from Asian Institute of Technology (AIT), Bangkok, Thailand. She has 20 years of experience and worked on climate change risk and vulnerability assessment for infrastructure in Southeast Asia, urban water supply planning, water policy and governance for water security, water resource management. Currently, Dr. Lam is a Principal Investigator for a Stockholm Environmental Institute-funded project with the study area in Lao PDR, Thailand and Vietnam. She is also Team Leader of several projects funded by international donors and organizations including SIDA, BMUB, World Bank, ADB, and GIZ.

**Dr. Alex Smajgl, TA-9916 Consultant / Managing Director, Mekong Futures Research Institute**, has a background in environmental economics with a focus on trans-disciplinary modelling in the context of natural resource management, development, urbanisation and climate change systems. Dr. Alex Smajgl also designs and implements participatory processes with various Governments across the Asia-Pacific region to establish effective science-policy interfaces for development policy. In his most recent work Dr. Smajgl coordinated assessments of water-food-energy decisions in the wider Mekong region, their likely trade-offs and transboundary dynamics.



**Ms. Mayvong Sayatham, Water Resource Management, Technical Advisor, GIZ, Lao PDR** was a Senior Project Coordinator for the Research Program on Water Land and Ecosystems (WLE) Greater Mekong. The program worked to improve the governance and management of water resources in the region by generating and sharing knowledge. She is now a Technical Advisor at the Mekong River Commission-GIZ Cooperation Programme, working on the *Mekong Mainstream dams Joint Environmental Monitoring* project. Mayvong earned a Bachelor of Environmental Economics in Jamia Millia Islamia, New Delhi, India, followed by a master's degree in Natural Resources Management from Asian Institute and Technology, Bangkok, Thailand.

**Mr. Radtasiri Wachirapunyanont, Regional Innovation Hub Manager, Water and Energy for Food (WE4F), Bangkok Thailand** has over ten years of experience in climate finance, water-energy-food nexus technologies, clean energy, sustainable agriculture, monitoring and evaluation, program management and partnership development in South and Southeast Asia. He has supported over ten ventures working in the clean energy-agriculture nexus. Prior to WE4F, he served as Thailand Program Manager for New Energy Nexus where he led the creation of Thailand's first energy startup ecosystem, including leading bootcamps, mentoring start-ups that work in clean energy, energy efficiency, electric vehicles, social inclusion and Internet of Things, and coordinating with government, investors, and international organizations. He also previously worked at USAID's Green Invest Asia, the Asian Development Bank, USAID's Low Emissions Asian Development (LEAD) program on climate resilience development, indicator development, knowledge management and capacity building. Radtasiri holds a Master of Public Policy (Urban, Environmental and Sustainable Policy) from Lee Kuan Yew School of Public Policy, National University of Singapore, and a Bachelor of Arts in Economics from Chulalongkorn University.

**Mr. Ha Thanh Lan, Institute for Water Resource Planning, MARD, Viet Nam** is currently a researcher and Head of Department at Vietnam Ministry of Agriculture and Rural Development – Institute of Water Resources Planning, where his work covers water resources (water, climate, ecosystem) and disaster prevention. He has an master's degree in Hydro-informatics and Water Management from the University of Nice-Sophia Antipolis, France, and he is currently a part-time doctoral researcher at the Water Management Department at Delft University of Technology, the Netherlands, where his focus is in the use of satellite technologies to evaluate and quantify water-related ecosystem services.

**Mr. Jelle Beekma, Senior Water Resources Specialist, ADB, Manila, Philippines** has more than 30 years of experience in irrigation, drainage, water supply and sanitation, and transboundary river basin management and related policy and institutional issues. He has experience in Africa, Asia, Europe, the Middle East, and North and South America as a government employee, researcher, consultant, and presently as a senior water resources specialist for ADB.

**Dr. Sagar Prasai, The Asia Foundation, Bangkok, Thailand** is treasurer of the Nepal Transition to Peace (NTTP) Institute. He has worked for The Asia Foundation for more than 12 years including four-and-half years in the capacity of country representative in India. He has worked for UNDP as District Development Adviser for two years before studying for a master's degree in Urban Planning from the University of Hawaii in the USA and obtaining a PhD Degree in Regional Planning from the University of Illinois in USA.

### Session 3: Sustainable Soil and Water Management for Climate Resilience and Food Security in the GMS

**Mr. Suriyan Vichitlekarn, Executive Director, Mekong Institute, Thailand** is a dedicated professional in sustainable development through regional cooperation and integration. He has over 20 years of



experience in development cooperation partnership, particularly in agriculture & rural development, public-private partnership and trade facilitation. Prior to joining the Mekong Institute, Mr. Suriyan worked with GIZ Thailand, the UN FAO Regional Office for Asia and the Pacific, ADB Greater Mekong Subregion Agriculture Secretariat, the ASEAN Secretariat and the Southeast Asian Fisheries Development Center (SEAFDEC).

**Mr. Nicholas Richards, TA-9916 Consultant**, is a climate smart agriculture and value chains expert, with a strong record of achieving results across horticulture, agriculture, livestock, fisheries and aquaculture value chains. He has worked in Asia and the Pacific since 2002 for projects funded by USAID, USDA, DFAT, AFD and ADB. Prior to this, he worked in Papua New Guinea in the private sector and in Northern Australia in agricultural research, development and extension. He has worked in international development as Team Leader, Chief of Party and advisor in Cambodia, the Philippines, Timor Leste, Vietnam and Pacific Island countries. He has a master's degree in Agriculture, and post-graduate qualifications in Irrigation, Training and Assessment and Project Management.

**Dr. Sinxay Vongphachanh, Planning Division, Mekong River Commission Secretariat, Lao PDR** is a hydrologist working at the Mekong River Commission Secretariat (MRCS) as an Agriculture and Irrigation Specialist. He has over 15 years of working experience in water resources management and the impacts of climate change on agricultural and irrigation development. At the MRCS, he is mainly responsible for the activities of sustainable groundwater use and management for agriculture, and the irrigated agriculture development to adapt to climate change and improve food security in the Lower Mekong River Basins.

**Dr. Natthapol Chittamart, Associate Professor / Deputy Head of Research and Innovation, Department of Soil Science, Faculty of Agriculture, Kasetsart University, Thailand.** Dr. Natthapol has research and teaching expertise in soil genesis and classification, soil mineralogy, geomorphology, and soil biogeochemistry. His research focuses on sustainable, climate-smart soil and nutrient management to improve soil quality for economic field crop production in Thailand.

**Dr. Van Pham Dang Tri, Can Tho University, Viet Nam**, is currently the Director of the Research Institute for Climate Change (DRAGON-Mekong) at Can Tho University, Viet Nam. He focuses on comprehensive delta management research, especially the effects of climate change on the global delta system, with a focus on the Mekong Delta. He works on a variety of national and international projects as a project manager or technical adviser.

**Mr. Marc Eberle, Executive Director, SmartAgro, Cambodia**, has been making documentaries for international broadcasters in Southeast Asia since 2000. In 2018 he founded SmartAgro Sustainable Innovations Co. Ltd. to create a driver for change. SmartAgro's mission is to re-design agricultural practices and change the paradigm of how we add long-term value to people, smallholder communities and the ecosystem in the farming sector.

**Dr. Florent Tivet, Agronomist, CIRAD** is expert in agroecology, conservation agriculture, soil fertility management, appropriate-scale mechanization, preservation of genetic banks, and seed production. He has been working for more than 15 years in South-East Asia. He is providing support to the Department of Agricultural Land Resources Management of the General Directorate of Agriculture. Along with other partners, he is contributing to the effort of institutionalization of Conservation Agriculture and Sustainable Intensification through different initiatives with (i) the Cambodia Conservation Agriculture and Sustainable Intensification Consortium (CASIC), (ii) the development of the Bos Khnor Research Station one of the Technology Park of CE SAIN as a national and regional training Center on CA/SI and Agroecology, (iii) the Metkasekor extension model based on public-private partnership aiming at opening the market for

the private sector, and (iv) a financial initiative called Dei Meas – Golden Soils to reward farmers for a change of practices.

#### Session 4: Impacts of Supply Chain Disruptions due to Conflict, COVID-19, and Climate Change on Food Security in the GMS: Challenges and Responses

**Dr. David Roland-Holst, Professor of Economics, University of California Berkeley / TA-9916 Consultant** is an Adjunct Professor affiliated with the Department of Agricultural & Resource Economics and the Department of Economics at University of California, Berkeley. He is the Managing Director and Principal of the Center for Economics, Resources, and Innovation. His research focuses on environmental economics and topics such as climate change, agriculture, and biofuels.

**Mr. Stefan Vogel, General Manager, RaboResearch, Australia and New Zealand** leads the research teams of Rabobank in Australia and New Zealand. He and his team cover research serving local and global clients with a focus on delivering market and strategic industry insights of key food and agri sectors to Rabobank's rural and wholesale clients. Stefan has a wealth of market research and corporate strategy experience. Before relocating to Sydney, Stefan was based in London and held double roles as Global Sector Strategist, Grains & Oilseeds as well as Head of Agri Commodities Markets Research. Prior to joining Rabobank Stefan worked in different agricultural market research and strategy leadership positions in the grain industry in Germany and the USA. Stefan also was Vice President of the European Grain Trading association and a member of the EU Commission's Expert Group on Agricultural Commodity Derivatives and Spot Markets.

**Dr. Nguyen Anh Phong, IPSARD, Ministry of Agriculture and Rural Development, Viet Nam** is a member of the network of Vietnam's Public Policy Research Institutes and the Asian Society of Agricultural Economics. With about 25-year experience in agricultural research, he has been taking a leadership as the project manager or team leader in various projects and researches funded by Vietnamese government and international organizations, such as WB, UNDP, FAO, ADB, AFD, IFAD, AusAID, ACIAR, IFFRI, among others. He has extensive experiences on research in agriculture and rural development policies in Vietnam and in the Greater Mekong Subregion. Dr. Nguyen Anh Phong holds a PhD in Agricultural Economics and a master's degree in Rural Development Management.

**Dr. Máximo Torero-Cullen, Chief Economist, FAO, Rome** joined the Organization in January 2019 as Assistant Director-General for the Economic and Social Development Department. Prior to joining FAO, he was the World Bank Group Executive Director for Argentina, Bolivia, Chile, Paraguay, Peru and Uruguay since November 2016 and before Dr. Torero led the Division of the Markets, Trade, and Institutions at the International Food Policy Research Institute (IFPRI). His major research work lies mostly in analyzing poverty, inequality, importance of geography and assets in explaining poverty, and in policies oriented towards poverty alleviation based on the role played by infrastructure, institutions, and on how technological breakthroughs (or discontinuities) can improve the welfare of households and small farmers. His experience encompasses Latin America, Sub-Saharan Africa, and Asia.

He is a professor on leave at the University of the Pacific (Peru) and an Alexander von Humboldt Fellow at University of Bonn, Germany and has also published in top journals. Dr. Torero received in 2000 the Georg Foster Research Fellowship of the Alexander von Humboldt Foundation, won the Award for Outstanding Research on Development given by The Global Development Network, twice, in 2000 and 2002, and received the Chevalier de l'Ordre du Mérite Agricole in 2014.

Dr. Torero holds a PhD and a Master's Degree in Economics from the University of California, Los Angeles, and a Bachelor's degree in Economics from the University of the Pacific, Lima, Peru.



**Ms. Anthea Webb, Deputy Regional Director, Asia and Pacific Region, World Food Programme (WFP), Bangkok, Thailand**, before her current position, acted as Representative of the WFP in Indonesia, focused on food security, nutrition and emergency preparedness. She worked with the Special Representative of the UN Secretary-General on hunger, nutrition and climate change from 2011 to 2014. In 2014, Anthea assisted the UN's special envoy on Ebola to shape its response to the outbreak in West Africa. From 2007 to 2011 she was Director of WFP in China. At WFP headquarters in Rome (1998 to 2007), Webb specialized in building relations with new partners, such as incoming members of the European Union. As a spokesperson, she wrote speeches and editorials for the UN Security Council, World Economic Forum (Davos) and European Parliament in addition to managing media training and advertising campaigns. Prior to joining WFP she worked for the Australian government's aid programme, the Jesuit Refugee Service and the Society of St Vincent de Paul.

**Dr. Qingfeng Zhang, Chief, Rural Development and Food Security Thematic Group, ADB** provides leadership to the formulation and implementation of ADB's strategy and knowledge in agriculture, natural resources and food, oversees the operationalization of the ADB vision on agriculture, natural resources and food in regional and country programs. Concurrently, Dr. Zhang is also serving as the Chair of Environment Committee of ADB, and also office-in-charge of the Environmental Thematic Group. He is now leading ADB initiatives in regional natural capital lab, ocean health action plan, air quality management, and East Asian Australasian Flyway. Prior to this, he was Director for Environment, Natural Resources and Agriculture in East Asia Department of the ADB (2014-2020). Earlier, he was Senior Environment Specialist at the World Bank in Washington; Director at the State Environmental Protection Administration in Beijing; and Research Fellow at the Hong Kong University of Science and Technology. Dr. Zhang holds a doctorate degree in environmental engineering from TsingHua University, and a master's degree in water resources management. He was also trained at the Harvard Business School through its Executive Development Program.

### Session 5: Youth and Agriculture in the GMS

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**Ms. Linh Tran, ADB TA-9916 Youth Coordinator, ADB, Bangkok, Thailand** holds a master's degree in Disaster Management from the University of Auckland, New Zealand, along with an Environmental Issues and Natural Resource Management certification from YSEALI (Young Southeast Asian Leaders Initiative), a highly-competitive international exchange program for Southeast Asian emerging leaders sponsored by the U.S. Bureau of Education and Cultural Affairs. Linh previously worked for IRRI and World Agroforestry Centre (ICRAF) as a research assistant.

**Mr. Andrew Bartlett, Team Leader and Policy Advisor, Helvetas, Vientiane, Lao PDR** has over 15 years of experience working in the UN system and a similar amount of time with NGOs. In addition he has carried out consulting assignments across Asia for International Financial Institutions and bilateral donors. Most of his career has been in the agriculture sector, with a focus on soft skills. This has included strategic planning and policy development, institutional development and Human Resource Development, project planning, management and evaluation. He is currently based in Vientiane as the Team Leader and Policy Adviser for the Lao Upland Rural Advisory Service. This is an SDC (Swiss Agency for Development and Cooperation)-funded programme implemented by Helvetas (a Swiss NGO) in cooperation with the Lao Ministry of Agriculture and Forestry.

**Mr. Lyhour Heang, Incubation Program Manager at Impact Hub Phnom Penh, Cambodia** is a changemaker from Cambodia passionate about social entrepreneurship and rural innovation. As an Incubation Program Manager at Impact Hub Phnom Penh, he supports aspiring entrepreneurs and startups in Cambodia to contribute to solving problems (social and environmental) through entrepreneurship and leadership. Before joining Impact Hub Phnom Penh, he conducted research in



peacebuilding and worked with youth for over 3 years. Recently, Lyhour successfully coordinated the DakDam Incubator Program season 2, a 9-months program supporting early-operational agro-entrepreneurs across Cambodia to strengthen their resilience, impact, and operations. Meanwhile, he is also coordinating two other programs supporting university students to launch their tech startup and a digital agriculture accelerator.

**Mr. Dang Duong Minh Hoang, Youth Contestant Representative, CEO of Thien Nong farm, Vietnam** is a young farmer, entrepreneur and multi-award-winner from Vietnam. He is CEO of Thien Nong farm, and Director of Binh Phuoc Agricultural Cooperative. Hoang holds a master's degree in automation engineering from Grenoble Institute of Technology-France; and he was trained in Agribusiness & Agritourism by JICA. Hoang's business was awarded as an outstanding start-up model for other young farmers to learn and follow.

**Ms. Mayuree Boonyasenekul, Chief of Farm Youth Development Group, Farmer Development Division, Department of Agricultural Extension, Thailand** is responsible for developing extension approach for Farm Youth and Young Smart Farmers, promoting Farm Youth and Young Smart Farmer Program, and conducting activities to improve agricultural skills for Farm Youth and Young Smart Farmers. Ms. Mayuree holds a Master of Science degree in Agricultural Extension from Kasetsart University.

**Ms. Christamol Sutawong, Young Smart Farmers, Thailand** is involved in agricultural activities including pineapple plantation, and processing low-fat pineapple jam and organic soap. Ms Christamol is also Knowledge Technology and Innovation transfer staff at Mae Fah Luang University.

**Mr. Don Tan, Director, Corporate Affairs, Pinduoduo, PRC** previously worked in international affairs in Singapore, and studied at Sciences Po, HEC Paris, and Oxford. Link to his LinkedIn profile: <https://www.linkedin.com/in/don-tan-598272a3/>

## Session 7: Promoting Regional Investments and Regional Cooperation

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**Dr. Srinivasan Ancha, Principal Climate Change Specialist, ADB.** As the Climate Change Focal Point for Southeast Asia, he formulates and oversees the implementation of several projects on climate change adaptation and mitigation of greenhouse gas emissions including those from agriculture, forestry and land use. Prior to joining the ADB, he was a Principal Researcher and Manager of the Climate Policy Project at the Institute for Global Environmental Strategies (IGES), Japan. He also worked at Japan International Research Center for Agricultural Sciences. He has contributed to several international initiatives including the Intergovernmental Panel on Climate Change (IPCC), Global Environmental Outlook-IV, Millennium Ecosystems Assessment, and the System for Analysis, Research and Training (START) as an author and/or reviewer. He has edited 8 books including "Handbook of Precision Agriculture" and "Climate Smart Development in Asia" and is an author of more than 90 peer-reviewed publications. He serves as a member of the editorial boards of several scientific journals. He received many awards and honors including a gold medal and letter of appreciation from the Prime Minister of India, and Eisaku Sato Memorial Foundation Prize of the United Nations University. He holds a PhD from the University of Cambridge, United Kingdom and has about 25 years of professional experience in interdisciplinary research and management including climate change science and policy.

**Mr. Asadullah Sumbal, Principal Regional Cooperation Specialist, ADB** joined ADB in 2008 as a public finance economist looking after public financial management issues in the Central and West Asia region. He moved to ADB Uzbekistan Resident Mission in October 2014, where he worked for four years on public financial management and a national project on affordable housing. In 2018, Mr. Sumbal joined the Southeast Asia Regional Department as a Principal Regional Cooperation Specialist working as





Team Leader in the secretariat of the Greater Mekong Subregion Economic Cooperation Program. Before joining ADB, Mr. Sumbal was a career public servant with the Government of Pakistan for 23 years, working on structural reforms, financial management, poverty-focused initiatives in health and education sectors, and governance. Mr. Sumbal holds a master's degree in Regional Planning from the University of North Carolina at Chapel Hill, USA, and a Masters of English from Government College University, Lahore, Pakistan.

**Mr. Antonio Ressano, Principal Regional Coordination Specialist, SERD, ADB** is currently Principal Urban Development Specialist for South East Asia. He holds postgraduate degrees in International Law and Legal Studies from The University of Edinburgh and in International Relations and Affairs from the University of Cambridge.

**Dr. Albert Salamanca, Stockholm Environment Institute, Bangkok** is a Senior Research Fellow at the Stockholm Environment Institute's Asia Centre where he leads its Climate Change, Disasters and Development cluster. Albert has over 15 years of experience working on climate change adaptation, natural resources management, conservation, development and sustainable livelihoods issues in several countries in Southeast Asia. His current research interests are on the themes of resilience, risk and vulnerabilities, traditional ecological knowledge, mobility and spatial linkages, disaster displacement, and sustainable livelihoods. He is a member of the UK GCRF Living Deltas Hub and the SEI Initiative on Integrated Climate and Development Planning. His recently co-edited volume entitled "Climate Change, Disasters, and Internal Displacement in Asia and the Pacific" was published by Routledge. He also had consulting assignments with the ASEAN Climate Resilience Network on climate smart land use.

**Dr. SVRK Prabhakar, Institute for Global Environmental Strategies, Japan** works on transboundary impacts of climate change, mainstreaming vulnerability assessments, climate change adaptation and disaster risk reduction into development plans and policies, risk insurance, adaptation metrics, adaptive policies and institutions, loss and damage, and capacity needs assessments using mixed methods approaches. He led projects in South and South-East Asian countries. After a PhD in Field Crop Management, he went on to work with a number of national and international research and development organizations for the past 20 years supported by a strong publication record.

**Dr. Beau Damen, Natural Resources and Climate Change Officer, FAO Regional Office for Asia and Pacific, Thailand** has worked over the past 17 years as a natural resource management specialist focused on promoting equitable, climate-resilient and low emissions development. Beau leads FAO's regional programmes on climate transparency in the AFOLU sectors, climate-smart and resilient agriculture, inclusive and sustainable rice landscapes and scaling-up climate finance for sustainable and resilient agri-food systems.

**Dr. Frederic Asseline, Head, Program Team, Multilateral Cooperation Center for Development Finance (MCDF), Beijing.** Prior to joining the MCDF, he was a Principal Climate Finance Specialist at ADB. Frederic also held staff positions as Program Director for Urbanization with GIZ International Services, and as Senior Energy Specialist with the World Bank.