2019
MEKONG RESEARCH SYMPOSIUM

"Collaborating and Innovating for the Mekong"
Hanoi, Vietnam, December 16-18

UNIVERSITY *of* **VIRGINIA**

LOWER MEKONG INITIATIVE

SUSTAINABLE INFRASTRUCTURE PARTNERSHIP

"*Collaborating and Innovating for the Mekong*"

CONTENTS

THE GOAL OF THE 2019 MEKONG RESEARCH SYMPOSIUM

The goal of the 2019 Mekong Research Symposium was to build communities of collaboration and innovation by discussing high-impact, data-driven projects and identifying opportunities for partnership and integration.

Organized on the theme of leveraging the Mekong's water resources for the benefit of all, the three-day symposium convened research partners and implementers to:

1. Prioritize activities for strengthening collaboration among actors within the Mekong region and their global partners; and

2. Identify actions that Mekong stakeholders can take to improve science-based decision making and management in the region.

The three-day Symposium was a highly participatory meeting, with ten different participatory and facilitated sessions. The Symposium included demonstrations and opportunities to explore innovative research and data tools, interactive panel discussions, and breakout activities. Participants also presented exhibition materials, posters, and other ideas that would build partnerships and collaboration.

> **"No single country alone can care for and conserve the integrity of the Mekong."**

Key Takeaways

The 2019 Mekong Research Symposium hosted 160 participants from the Mekong region and around the world, including from Australia, China, Singapore and the United States (US), representing governments, development partners, academia, international organizations, NGOs, and companies. More than 35% of participants were women.

The three-day symposium reiterated that the Mekong is a transboundary river basin with diverse ecosystems, landscapes, populations and culture. The river basin has been supporting the lives of millions. No single country alone can care for and conserve the integrity of the Mekong. Engagement of local populations will be key to this endeavor. The peoples of the Mekong have shown the world how nature's wealth can support different types of living conditions, livelihoods and employments.

The Symposium featured MekongWater.org, which is the Lower Mekong Initiative's (LMI) Mekong Water Data Platform and part of a landmark effort to encourage water-related data sharing and transparency in the region. As part of the Secretary's Mekong Water Data Initiative, MekongWater.org seeks to lower barriers to accessing data. The Symposium encouraged data producers and users to subscribe and build an ecosystem of peer-to-peer data exchange and sharing through MekongWater.org. Some key monitoring tools for satellite-based wetness monitoring and web-based cumulative impact assess-ment are expected to become available through MekongWater.org in the near future. These tools can continue to be used to monitor and assess transboundary flow situations and the cumulative impacts of upstream developments on the Mekong downstream region.

Cumulative impacts from cascade hydropower projects in the Lower Mekong are already evident, especially with regard to water quality and water levels. To assess cumulative impacts and build understanding of how the use of water resources can be optimized is challenging. Sufficient data and the use of practical models can help stakeholders understand different types of likelihood impact scenarios.

Participants agreed that there is a gap in accessing Mekong water-related socio-economic data. Such data, together with genuine stakeholder engagement, can help build better understanding of the factors contributing to people's well-being, beyond a few limited options for infrastructure. In collaboration with the MRC, related Lower Mekong agencies and the LMI, national-level water-related socio-economic field data are being surveyed, collected and compiled.

> " The peoples of the Mekong have shown the world how nature's wealth can support different types of living conditions"

A climate study from the Thailand Meteorological Department shows that, over the past 68 years, tropical typhoon tracks across Southeast Asia have been moving northwards, affecting different parts of the Mekong region. A Mekong wetness index study conducted by Eyes On Earth also shows that some regions within the Lower Mekong have been facing the worst drought event in almost 30 years. This should alert the Lower Mekong countries to consider probable future scenarios of extreme regional flood and drought phenomena.

Over 50% of marine plastic waste comes from five countries around the world: according to the Ocean Conservancy, three of which are countries in the Mekong region. The existing waste management infrastructure is insufficient for the needs of the growing population. A new infrastructure investment model that takes into account the financial and social risks in this regard needs to be explored. The MRC will develop a water quality monitoring program that takes plastic pollution into account in the year 2020.

The Stimson Center launched their Mekong Infrastructure Tracker, a tracking tool and open platform for information on Mekong water, energy, and transport infrastructure. Details of more than 1,500 projects are already available through the platform.

6

A number of mathematical model applications were introduced to forecast flood and drought scenarios of the Mekong Basin - every one of which has both potential benefits and limitations. There is a need to promote understanding of how these applications can meet various needs. Obtaining data to feed into these models is still a challenge. Participants discussed whether satellite data could fill this gap.

The post-event assessment survey stated that 92 percent of participants agreed that the symposium had met its objectives. Of the total respondents, 96 percent agreed that they gained knowledge and good experiences from the symposium, while 82 percent agreed that the knowledge that gained from the symposium would help advance their work. Climate forecasting and modeling, flood and drought prediction, cumulative impact assessment, and socio-economic data were topics that received the most interest from participants. All respondents indicated they would like to stay engaged with LMI through relevant events and activities in the future. High appreciation was also expressed for the overall facilitation by moderators, the quality of presentations, the events facilities, and logistic arrangements.

Some key comments and ideas offered for future improvement included: allowing more time for panel and plenary discussions, considering a 'deep dive' session on the environmental situation in each Lower Mekong country; tackling database accuracy issues; discussing how to develop engagement plans with local communities; discussing how different bodies and initiatives such as the LMI, MRC and Lancang-Mekong Cooperation (LMC) could collaborate, and considering the behavioral component of policy making, not only collecting data that may not be taken account of when making decisions about policy.

Session Summaries

SESSION 1:
MekongWater.org - Moving from Pilot to Platform

Background: As part of the US Secretary of State's Mekong Water Data Initiative, the Mekong Water Data Platform (MekongWater.org), was announced at the August 2019 LMI Ministerial Meeting. MekongWater.org is an information clearing house, virtual collaboration space, and secure data-sharing mechanism. This session included a demonstration of MekongWater.org and a discussion on how it could continue evolving to meet regional data-sharing needs. Participants were guided through how to create accounts, use the platform, and upload data on their personal devices.

Speakers: Dr. Tho Nguyen, Computer Scientist and Program Manager, Office of Vice President for Information Technology, University of Virginia; Dr. Jenna Shinen, Water Program Manager, Office of Conservation and Water, Bureau of Oceans and International Environmental and Scientific Affairs U.S. Department of State; Dr. Rahul Salla, Technical Director, Decision Theater, Network of Decision Centers, Arizona State University.

Key messages: Stakeholders in the room were invited to describe the data tools needed for their work. They were also invited to share what they liked or disliked about MekongWater.org, in a process of co-design to enable all stakeholders to engage through the platform. MekongWater.org is a peer-to-peer Mekong water data sharing and exchange platform that aims to lower barrier to accessing data. It aims to support and facilitate individual stakeholders, national water agencies and regional organization as the MRC to communicate, monitor and share quality data directly with each other. It is understood that stakeholders desire to collaborate and want more data to be shared; however, while some data exists, the accessibility and willingness to share and exchange data varies among data producers and users.

It was noted that Mekong hydrological data from upstream and downstream should be freely shared. In the current situation, this has been a challenge. Certain industry groups, especially those involved in hydropower projects, and some government departments still do not share data. The session identified key objectives for Mekong data sharing to optimize the use of Mekong water resources for different purposes and in different countries. The use of such data will also help build understanding of regional flood and drought impacts. There is still a gap in the availability of socio-economic data at the local level, and in the agriculture, land use and fisheries sectors. Capacity building and technology transfer would help meet the needs for data collection and use.

8

The scope and objectives of data sharing were questioned. Besides its purpose of promoting and building capacity for academic research, MekongWater.org was also proposed to facilitate and promote the use of satellite-based wetness monitoring and web-based cumulative impact assessment tools that will demand a wide range of different types of data with quality assurance from data producers across the region. The development of these tools is expected to create twofold benefits: (i) promote multi-stakeholder collaboration in data sharing with clear scopes and objectives, and (ii) promote data transparency. Increased collaboration and data sharing will enable monitoring updates of flows and wetness between upstream and downstream regions of the Mekong, and build cumulative impact assessment capacity for a wider group of interested stakeholders.

SESSION 2:
Cumulative Impacts and Cascade Hydropower Management

Background: This session explored the challenges and opportunities of cascade hydropower projects. Case studies of cumulative impact management were presented. A panel discussion with water and energy practitioners and agencies, and an audience conversation on key water-energy issues in the Mekong took place.

Speakers: Dr. Boalem Hadjerioua, Team Lead, Water-Power-Energy Oak Ridge National Laboratory, US Department of Energy; Dr. Reepal Shah, Assistant Research Scientist, Arizona State University; Mr. Panthong Phetmurntham, Nam Ngum River Basin Coordinator, Nam Ngum River Basin Secretariat; Dr. Scott Vanderkooi, Chief, US Geological Survey Grand Canyon Monitoring and Research Center

Key messages: A case study of Nam Ngum River in Laos was presented. The river has hosted more than five large hydropower projects and been experiencing severe water quality problems. Extremely low levels of dissolved oxygen are suspected to be a result of cascade hydropower operations. Another case study of cumulative impacts from hydropower projects in the Colorado River confirmed that a load of sedimentation has been trapped and has resulted in changing the colors of the river.

The tools needed to assess cumulative impacts include monitoring and data storage systems, and forecasting tools. Cascade hydropower management involves multi-agency collaboration. The requirement is energy maximization, while preserving river health under operational constraints. Technology can mitigate the impacts of poor water quality, but would require high investment to install a suite of oxygen diffuser systems.

SESSION 3:
Socioeconomics and Stakeholder Engagement

Background: The availability of socio-economic data and engagement with local groups affected by infrastructure development are important for adequate water resources plan-ning and impact assessments.This session complemented regional and national initiatives by the MRC Member States and project developers to better gather and integrate wa-ter-related and socio-economic data.

Speakers: Dr. Nina Burkardt, Research Social Scientist, U.S. Geological Survey; Mr. Suparerk Janprasart, Program Director, LMI-SIP; Mrs. Nguyen Thi Ngoc Minh, Senior Socio-economist, MRC Secretariat; Ms. Hataichanok Puckcharern Inspector, National Statistical Office of Thailand (NSO); Dr. John Ward, Mekong Region Futures Institute (MeRFI)

Key messages: Not only are there gaps in the availability of water-related socio-eco-nomic data, but also in regional capacity in sampling, collecting and analyzing field data. The priorities and key objectives of collecting Mekong socio-economic data should be to enable cumulative impact assessment and build understanding of local natural resource-based livelihoods across the basin. Concerned national institutions and agencies have been surveying and collecting socio-economic data but efforts are mostly still at the national level and non-water related. The MRC has been implementing and is expanding scales of Social Impact Monitoring and Vulnerability Assessment (SIM &VA) project.

Findings and analyses from many Mekong socio-economic studies indicate that an increase in household income does not necessarily equate to an increase in subjective wellbeing. If wellbeing is the main objective, then basic infrastructure such as roads and water supply are likely to have greatest impact. It was proposed that infrastructure devel-opment options should be prioritized based on their contribution to desired livelihood outcomes. Participants noted that data, information and knowledge is not shared with local communities, and expressed concerns on how local communities can engage in decision making processes and the daily operation of hydropower projects that affect them.

2019 Mekong Research Symposium

SESSION 4:
Climate Models, Weather Forecasting, and Disaster Risk Reduction

Background: Climate patterns in the Lower Mekong region have shifted in the last decade, a phenomenon most evident during the wet season this year. The discussion focused on how climate patterns have changed in the Lower Mekong region, the magnitude and effects of these changes, and how actors in the region should prepare themselves to respond to these new challenges.

Speakers: Mr. Matthew Andersen, Senior Scientist for Biology, US Geological Survey's Office of International Programs; Dr. Alan Basist, Founder, Eyes on Earth (EoE), USA; Dr. Kamol Sakolnakhon, Director of Radar and Satellite Data Analysis Sub-Division, Weather Forecast Division, Thai Meteorological Department, Ministry of Digital Economy and Society, Thailand

Key messages: A climate study from the Thailand Meteorological Department shows that, over the past 68 years, tropical typhoon tracks across Southeast Asia have been moving northwards, affecting different parts of the Mekong region. There is evidence confirming that typhoon frequency and severity is increasing by 2-12%, and that there is a 20% increase in rainfall as a result of global warming.

A data tool developed by Eyes on Earth under the Mekong Water Data Initiative analyzed the historically low water levels in the Lower Mekong Basin. The Special Sensor Microwave Imager (SSMI), which uses satellite data and is operated by the US Air Force Defense Meteorological Satellite Program, is a tool that can identify natural surface wetness, and thus river flows, with 89% accuracy. Using the SSMI data and established wetness index methodology, a wetness index study showed that, in 2019, most areas within the Lower Mekong Basin experienced the worst drought even in almost 30 years. Within the space of a week, the region then suffered extreme floods. Such sudden transitions should alert the governments of Lower Mekong countries to consider scenario planning to prepare for increased levels of disaster risk and new patterns of extreme flood and drought. This satellite data could serve as an early warning for impending flood or drought, as well as the available water resources downstream of the headwater.

The wetness index study also compared expected water levels (based on rainfall) and observed water levels (based on river gauge data from a gauge at Chiang Saen in Northern Thailand) from the past 30 years. In the past 10 years, observed water levels in the Lower Mekong were frequently lower than the model predicted, indicating a significant departure from the natural flow. Moreover, excess flows were observed to be present in the dry season and restricted in the wet season. Figure 1 below illustrates the difference (green line) in expected (red line) and observed (black line) stream flow. The SSMI satellite data provides an independent measure of the amount of water flowing downstream; significant deviation from the satellite measurements indicates water is being blocked or removed upstream from the river gauge. These studies underscore the importance of water-related data sharing and cooperative, transparent management of the Mekong River and development in the basin.

Mekong River Flow

Period of Record- Mar 1992 to Mar 2019
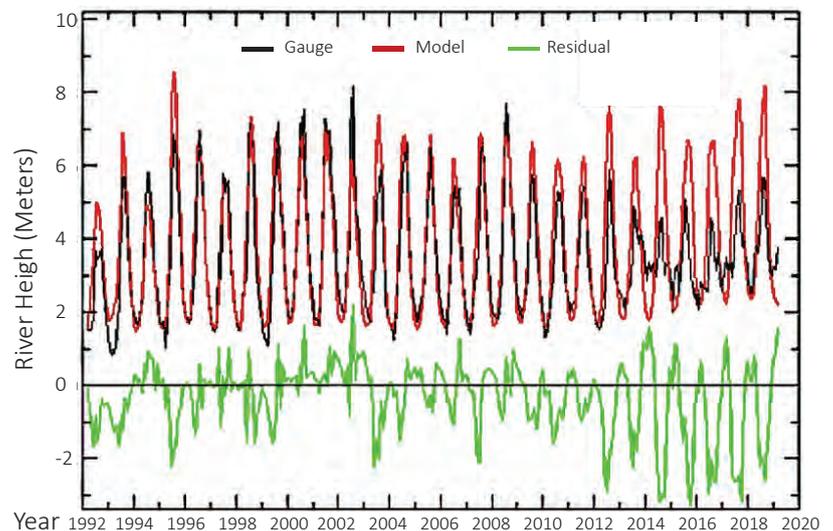
Time series of gauge and model predicted measurements at Chiang Saen from Jan 1992-March 2019. The green is the difference field. If the values are negative, the gauge is missing water, and if they are positive there is excess water at the gauge, according to the gauge.

SESSION 5:
Drought and Flood Prediction, Resilience, and Mitigation

Background: In this session, tools and models used for predicting and mitigating drought and flooding were explored. Engaging with a panel of experts, participants identified appropriate tool use, determined where tools currently fall short, and discussed model integration and methods to address these challenges.

Speakers: Ms. Karnjana Saengprapai, Data Analyst, Hydro-Informatics Institute (HII), Thailand; Dr. Sothea Khem, River Flood Forecasting Specialist, MRC Secretariat; Dr. Jennifer Olsazewski, Water Resources Engineer, Institute for Water Resources, US Army Corps of Engineers; Dr. Sachin Shah, Hydrologic Science Lead, US Geological Survey, Geospatial Science and Cyber Innovation Branch; Dr. Reepal Shah, Assistant Research Scientist, Arizona State University; Dr. Pinida Leelapanang Kamphaengthong, Senior Program Officer, LMI-SIP

Key messages: Lower Mekong government agencies, the MRC, and US government agencies and US universities presented different tools and models for flood and drought forecasting and groundwater assessment, namely WRF-ROMS, URBS, HEC-HMS, HEC-resSIM, HEC-RAS, HEC-RTS/HEC-WAT, RTS, WAT, MODFLOW, and VIC-CropSyst. A key challenge is that there is still no comparison study and analysis of the various uses and shortcomings of each of these tools and models, which could provide a comprehensive view and practical expectations on the part of experts, decision makers and stakeholders. There is still a limitation in accessing some of the applications, and the training that is needed to make use of them. Availability of data is also a classic challenge. Satellite data that can be plugged into models and calibrated with short timelines could be valuable for some applications, such as MODFLOW and VIC-CropSyst. Modeling experts should advise users as to whether their models are suitable for long or short-term planning, if they require daily or weekly operation, and if models only assess certain types of impacts.

SESSION 6:
Mekong Governance and Stewardship - Fisheries and Marine Debris

Background: Illegal, unregulated, and unreported (IUU) fishing practices in the Mekong River threaten livelihoods, biodiversity and regional food supplies. Plastics pollution in the Mekong is also a major source of marine debris and a threat to riverine health. This session featured discussions on these intersecting challenges and explored pathways to a Mekong free of activities that would compromise its food security, biodiversity, and water quality.

Speakers: Dr. Sudeep Chandra, Leads, the Aquatic Ecosystems Laboratory at University of Nevada-Reno and USAID Wonders of the Mekong Project; Mrs. Kulthida Techasarin, Regional Project Coordinator, Smart Infrastructure of the Mekong (SIM), US Department of Interior; Ms. Chever Voltmer, Director for Plastics Initiatives, Ocean Conservancy, USA; Ms. Jennie Mathis, Ph.D. candidate, Marine Debris Tracker Project, University of Georgia; Dr. So Nam, Chief Environment Management Officer and Mekong Regional Fisheries Expert, MRC Secretariat

Key messages: The Mekong is still the world's largest inland fishery basin, producing 2.6 million tons of freshwater fish annually with estimated $11 billion value. Lower Mekong fishers are catching endangered fish intermittently but not reporting catches. USAID has led IUU fishing training, aiming to identify habitats of endangered fish species and provide education to local people.

Over 50% of marine plastic pollution in the world comes from five countries - China, Indonesia, Philippines, Thailand, and Vietnam - three of which are in the Mekong region. Fishing gear accounts for 20% of ocean debris. The impacts of plastic debris on human health are unknown but there is great concern about it. As mentioned above, the existing waste management infrastructure is insufficient for the needs of the growing population, and a new infrastructure investment model is needed to take into account the financial and social risks. The MRC will develop a water quality monitoring program that takes plastic pollution into account in year 2020. whether their models are suitable for long or short-term planning, if they require daily or weekly operation, and if models only assess certain types of impacts.

SESSION 7:
Tracking Energy Development: Impacts and Alternatives

Background: The Stimson Center's Mekong Infrastructure Tracker platform (a product of USAID's 2018-2023 Mekong Safeguards Project) aspires to be the premier resource for researchers and planners to track, monitor, and quantify the development of energy, transportation, and water infrastructure assets and the social, economic, and ecological changes they bring to Southeast Asia. Participants had the chance to add data or suggest edits to the platform's database, which is supported by an online submission and internal verification process.

Speakers: Mrs. Courtney Weatherby, Research Analyst, The Stimson Center Southeast Asia and Energy, Water & Sustainability Programs, USA; Dr. Nicholas Souter, Mekong Case Study Manager, Conservation International, Australia; Mr. Jakes Brunner, Head, Indo-Burma Group, IUCN Vietnam Country Program; Mr. John Litchefeld, Vice President, The Asia Group

Key messages: Stimson Center's Mekong Infrastructure Tracker, a tracking tool and open platform of Mekong water, energy, and transport infrastructure was launched. Details of more than 1,500 projects are already available through the platform. It may be possible to cross the data in the Tracker with other kinds of data to better understand the changes that will come to the region.

Conservation International presented the Freshwater Health Index, highlighting applications in Cambodia's Tonle Sap river basin and the transboundary Sesan, Srepok and Sekong River (the 3 'S') area. The index assesses river basins as social-ecological systems and measures indicators under the three headings of Ecosystem Vitality, Ecosystem Services, and Governance & Stakeholders.

SESSION 8 & 9:
Integrating priorities for informed Decision Support

Background: The session reviewed the important data and model needs that were identified in the previous sessions. Increased observations generating more data can be useful to people and governments if certain criteria are met. Data must be of standard quality and be acquired from repeatable processes. Ideally, data are reported in units that allow for comparison with data from other resources. For data to be most useful they are integrated across multiple disciplines, so that impacts of one on the others may be assessed and, potentially, modeled to support future decision making. If the impacts of infrastructure development on people and governments are to be assessed, then socio-economic data must be considered and integrated.

Speakers: Mr. Matthew Andersen, Senior Scientist for Biology, US Geological Survey's Office of International Programs; Dr. Sachin Shah, Hydrologic Science Lead, US Geological Survey, Geospatial Science and Cyber Innovation Branch; Dr. Reepal Shah, Assistant Research Scientist, Arizona State University; Dr. Nicholas Souter, Mekong Case Study Manager, Conservation International, Australia; Dr. Nguyen Vo Chau Ngan, Lecturer, Department of Environmental Engineering, Can Tho University; Mr. Lee Angelelli, Executive Client Architect, IBM's Software Group Federal Analytics Solution Center, USA; Dr. Nguyen Thi Minh Ngoc, Program Officer of Enhancing Climate Services for Infrastructure Investment (CSI), German Development Agency (GIZ); Mrs. Nguyen Thi Ngoc Minh, Senior Socio-economist, MRC, Secretariat; Dr. Guillermo Mendoza, International Program Manager and Team Lead, US Army Corps Institute for Water Resources (IWR); Dr. Rahul Salla, Technical Director, Decision Theater, Network of Decision Centers, Arizona State University

Key messages: What are the benefits of data for people and society? Using data in models, forecasts and assessment applications requires collaboration and open access, which implies unrestricted public access to data. "Open source" refers exclusively to software that is openly and freely available, and that allows for code modifications. This concept has benefited a number of agencies, academic institutions and institutions in the Lower Mekong region. Open source applications such as SWAT, MODFLOW, VIC CropSyst and HEC series, to name but a few, have been transferred to the region for many decades and have been developed further by local experts.

Publicly available data includes: the Freshwater Heath Index (FHI) Assessment in 3S Basin, compiled by the Nature Conservancy; Mekong socio-economic data used in an MRC Council Study; Mekong hydrological data and Decision Support Framework (DSF); and the US Army Corps of Engineers and MRC Shared Vision Planning tool.

SESSION 10:
Leveraging Technology: Water Hackathon & Citizen Science

Background: This session addressed the core question: what are the challenges in the Mekong region that can potentially be addressed by leveraging a citizen science program and/or a hackathon? This session focused on using data as an anchor to foster engagement and collaboration among technology experts, scientists, economists, and decision makers. For transboundary collaboration to be successful, engagement with graduate students and early career professionals with access to new frontiers in technology could show how data provides insights into new solutions.

Speakers: Dr. Sachin Shah, Hydrologic Science Lead, US Geological Survey, Geospatial Science and Cyber Innovation Branch; Dr. Tho Nguyen, Computer Scientist and Program Manager, Office of Vice President for Information technology, University of Virginia; Dr. Rahul Salla, Technical Director, Decision Theater, Network of Decision Centers, Arizona State University

Key messages: MekongWater.org will require collaboration among diverse groups of stakeholders to build a Mekong data exchange and sharing ecosystem that creates benefits for the Mekong community in the long term. The platform could unfold communication science and apply different strategies to engaging with different stakeholder groups. Translation into local languages is also an important consideration. Participants noted the potential of citizen science to promote local knowledge and wisdom, as, for example, in Tai Bann Research (local knowledge-based research by local communities) that is supported by modern technologies. The Mekong Natural History Museum project in Viet Nam can be an important point of stakeholder cooperation to integrate data, knowledge, and learning.

Annex I   Symposuim Agenda

Day 1: Research Priorities
December 16, 2019

8:30 AM   Registration

9-10 AM   Welcome remarks and keynote
• Michael Greene, USAID Mission Director for Vietnam: Mr. Michael Greene has served as Mission Director of USAID/Vietnam since 2016; he has previously served as Mission Director for the Kyrgyz Republic and Azerbaijan.
•James Grall, Pact: Mr. James Grall is the Asia/Eurasia Regional Director, overseeing all activities within the regional Pact in Eurasia and Asia country offices. He holds more than 20 years of progressively responsible experience international development, including more than 10 years in Southeast Asia.
•Tho Nguyen, University of Virginia: Dr. Tho Nguyen is a Senior Computer Scientist and Research Program Manager at the University of Virginia; he also advises the U.S. Department of State on transboundary data collaborations in the Lower Mekong.
•Duong Van Ni, Can Tho University: Dr. Duong Van Ni is a professor at Can Tho University's Department of Environmental and Natural Resources Management. His research focus is riverine salinity and irrigation.

10-10:30 AM   Break
During coffee breaks, demonstration of the Decision Support Theatre is available in the foyer.

10:30-12 PM   Session 1: MekongWater.org – Moving from Pilot to Platform
Speakers:
•Tho Nguyen, University of Virginia: Dr. Tho Nguyen is a Senior Computer Scientist and Research Program Manager at the University of Virginia; he also advises the U.S. Department of State on transboundary data collaborations in the Lower Mekong.
•Jenna Shinen, US Department of State: Dr. Jenna Shinen is the Senior Water Advisor at the Office of Conservation and Water at the Bureau of Oceans, Environment, and International Scientific Affairs.
•Rahul Salla, Arizona State University: Dr. Rahul Salla is the Technical Director at Decision Theater, a network of Decision Centers across the globe.

12 PM   Group Photo

12-1:30 PM	Lunch
1:30-3 PM	Session 2: Cumulative Impacts and Cascade Hydropower Management

Session 2: Cumulative Impacts and Cascade Hydropower Management
- •Boalem Hadjerioua, U.S. Department of Energy Oak Ridge National Laboratory: Dr. Boalem Hadjerioua leads the ORNL team dealing with energy—water power, water resource, and integrated river systems analyses.
- •Panthong Phetmurntham, Nam Ngum River Basin Secretariat: Mr. Panthong Phetmurntham is the Coordinator for Nam Ngum River Basin Secretariat in Lao PDR.
- •Reepal Shah, Arizona State University: Dr. Reepal Shah is an assistant research scientist at Arizona State University, where he models hydrology and climate change impacts.
- •Scott Vanderkooi, U.S. Geological Survey: Mr. Scott Vanderkooi is the Chief of the Grand Canyon Monitoring and Research Center.

3-3:30 PM	Break
3:30-5 PM	Session 3: Socio-economics and Stakeholder Engagement

Session 3: Socio-economics and Stakeholder Engagement
Speakers:
- •Nina Burkardt, U.S. Geological Survey: Ms. Nina Burkardt is a Research Social Scientist at the Fort Collins Science Center. Her research interests include climate change adaptation, negotiation and conflict resolution in the context of public land management, and the use of science in decision-making.
- •Suparerk Janprasart (Sup), Sustainable Infrastructure Partnership (SIP): Mr. Suparerk Janprasart is the Program Director SIP, a key coordinating program of the LMI Water-Energy-Food-Environment pillar.
- •Hataichanok Puckcharern, National Statistical Office of Thailand (NSO), Ministry of Information and Communication Technology, Thailand: Ms. Hataichanok Puck-charern is the Senior Inspector of the Thailand NSO. She is a statistician and sam-pling survey expert in many fields including migrant survey, national census, and others.
- •Nguyen Thi Ngoc Minh, Mekong River Commission Secretariat (MRCS): Mrs. Nguyen Thi Ngoc Minh is the Socio-economic Specialist of the MRCS.
- •John Ward, Mekong Region Futures Institute: Dr. John Ward works for the Mekong Regional Futures Institute and specializes in integrated natural resource management, with a focus on participatory processes, science-policy interactions and trans-disciplinary research.

5-7 PM	Poster Session and Cocktail Reception

Day 2: Integrating Approaches
December 17, 2019

8:30-10 AM Session 4: Climate Models, Weather Forecasting, and Disaster Risk Reduction

Speakers:
- Kamol Promasakha Na Sakolnakhon, Thailand Ministry of Digital Economy and Society: Dr. Kamol Sakolnakhon is the Director of Radar and Satellite Data Analysis Sub-Division, Weather Forecast Division at the Thai Meteorological Department, Ministry of Digital Economy and Society.
- Alan Basist, Eyes on Earth: Mr. Alan Basist, founder of Eyes on Earth (EOE), is a climatologist from both the US government and private sector.
- Matthew Andersen, U.S. Geological Survey: Mr. Matthew Andersen is the Senior Scientist for Biology at the U.S. Geological Survey's Office of International Programs.

10-10:30 AM Break

10:30-12 PM Session 5: Drought and Flood Prediction, Resilience, and Mitigation
In this session, we will explore tools and models used for predicting and mitigating drought and flooding. By engaging a panel of experts, we will identify appropriate tool use, determine where tools currently fall short, discuss model integration and methods to address these challenges.

Speakers:
- Karnjana Saengprapai, Hydro-Informatics Institute Thailand: Ms. Karnjana Saengprapai is an experienced data analyst who works on meteorological and hydrological data quality control and assurance; and statistical records keeping of flood and drought.
- Kamol Promasakha Na Sakolnakhon, Thailand Ministry of Digital Economy and Society: Dr. Kamol Promasakha Na Sakolnakhon is the Director of Radar and Satellite Data Analysis Sub-Division, Weather Forecast Division at the Thai Meteorological Department, Ministry of Digital Economy and Society.
- Sothea Khem, Mekong River Commission Secretariat: Dr. Sothea Khem is a River Flood Forecasting Specialist at the Regional Flood and Drought Management Center.
- Jennifer Olszewski, U.S. Army Corps of Engineers: Dr. Jennifer Olszewski, is a Water Resources Engineer at the Institute for Water Resources within the US Army Corps of Engineers.
- Sachin Shah, U.S. Geological Survey: Sachin Shah serves as the hydrologic science lead as part of the USGS Geospatial Science and Cyber Innovation Branch.

10:30-12 PM	•Reepal Shah, Arizona State University: Dr. Reepal Shah is an assistant research scientist at Arizona State University, where he models hydrology and climate change impacts. •Pinida Leelapanang Kamphaengthong, Sustainable Infrastructure Partnership (SIP): Dr. Pinida L. Kamphaengthong is the Senior Program Officer of SIP, a key coordinating program of the LMI Water-Energy-Food-Environment pillar.
12-1:30 PM	Lunch
1:30 PM-3 PM	Session 6: Mekong Governance and Stewardship - Fisheries and Marine Debris Speakers: •Sudeep Chandra, University of Nevada, Reno: Dr. Sudeep Chandra leads the Aquatic Ecosystems Lab at University of Nevada-Reno and Wonders of the Mekong, a partnership between the University of Nevada Reno's Global Water Center and the Inland Fisheries Research and Development Institute of Cambodia (IFReDI). •Kulthida Techasarin, U.S. Department of Interior: Ms. Kulthida Techasarin assists with the management of technical assistance in the five Lower Mekong countries for the Department of Interior's International Technical Assistance Program (DOI-ITAP). •Chever Voltmer, Ocean Conservancy: Chever Voltmer is Ocean Conservancy's Director for Plastics Initiatives. •Jennie Mathis, University of Georgia: Ms. Jennie Mathis is a Ph.D. candidate at the University of Georgia, where she helps operate a Marine Debris Tracker. •So Nam, Mekong River Commission Secretariat: Dr. So Nam leads the Fisheries Programme at the MRCS and at national fisheries institutes. •Peng Bun Ngor, Wonders of the Mekong, IFReDI: Mr. Peng Bun Ngor currently works at Inland Fisheries Research and Development Institute, Fisheries Administration, Cambodia. His current project is 'Wonders of the Mekong.'
3-3:30 PM	Break
3:30-5 PM	Session 7: Tracking Sustainable Infrastructure: Trends, Tools, and Impacts Speakers: •Courtney Weatherby, Stimson Center: Ms. Courtney Weatherby is a research analyst with the Stimson Center's Southeast Asia and Energy, Water, & Sustainability programs. •Jake Brunner, IUCN: Since 2008, Mr. Jake Brunner works for IUCN, the International Union for Conservation of Nature, where he manages programs on water and wetlands conservation, business engagement, coastal and marine management, and policy analysis in Vietnam, Cambodia, and Myanmar. •Nicholas Souter, Conservation International: Dr. Nick Souter is the Mekong Case Study Manager at Conservational International.

20

Day 3: Collaboration and Innovation
December 18, 2019

8:30-10 AM Session 8: Integrating priorities for Informed Decision Support (I).
Panel: Tho Nguyen, Bo Hadjerioua, Nguyen Hong Thuy Phan, Apsiom Intral-awan, John Ward

Speakers:
- Sachin Shah, U.S. Geological Survey: Mr. Sachin Shah serves as the hydrologic science lead as part of the USGS Geospatial Science and Cyber Innovation Branch.
- Nguyen Vo Chau Ngan, Can Tho University: Dr. Nguyen Vo Chau Ngan is lecturer at Can Tho University's Department of Environmental Engineering, College of Environment and Natural Resources, where his research focuses on renewable energy from agricultural wastes.
- Reepal Shah, Arizona State University: Dr. Reepal Shah is an assistant research scientist at Arizona State University, where he models hydrology and climate change impacts.
- Nicholas Souter, Conservational International: Dr. Nick Souter is the Mekong Case Study Manager at Conservational International.
- Lee Angelelli, IBM: Mr. Lee Angelelli is an executive client architect at IBM's Software Group Federal Analytics Solution Center.
- Matthew Andersen, U.S. Geological Survey: Mr. Matthew Andersen is the Senior Scientist for Biology at the U.S. Geological Survey's Office of International Programs.

10-10:30 AM Break

10:30-12 PM Session 9: Integrating priorities for Informed Decision Support (II)
- Nguyen Thi Minh Ngoc, Deutsche Gelsellschaft fur Internationale Zusam-menarbeit (GIZ): Dr. Nguyen Thi Minh Ngoc is a Program Officer of Enhancing Climate Services for Infrastructure investments (CSI) at GIZ.
- Janejira Chuthong, Mekong River Commission Secretariat (MRCS): Dr. Janejira Chuthong is the Chief Hydrologist at the Mekong River Commission Secretariat.
- Nguyen Thi Ngoc Minh, Mekong River Commission Secretariat (MRCS): Mrs. Nguyen Thi Ngoc Minh is the Socio-economic Specialist of the MRCS.
- Guillermo Mendoza, US Army Corps of Engineers: Dr. Guillermo Mendoza is the International Program Manager and Team Lead at the US Army Corps of Engineers' Institute for Water Resources (IWR).
- Rahul Salla, Arizona State University: Dr. Rahul Salla is the Technical Director at Decision Theater, a network of Decision Centers across the globe.
- Matthew Andersen, U.S. Geological Survey: Mr. Matthew Andersen is the Senior Scientist for Biology at the U.S. Geological Survey's Office of International Programs.

12:30-2 PM	Lunch
2-3:30 PM	Session 10: Leveraging Technology: Water Hackathon & Citizen Science
3:30 PM	Speakers:

Speakers:
•Sachin Shah, U.S. Geological Survey: Mr. Sachin Shah serves as the hydrologic science lead as part of the USGS Geospatial Science and Cyber Innovation Branch.
•Tho Nguyen, University of Virginia: Dr. Tho Nguyen is a Senior Computer Scientist and Research Program Manager at the University of Virginia; he also advises the U.S. Department of State on transboundary data collaborations in the Lower Mekong.
•Rahul Salla, Arizona State University: Dr. Rahul Salla is the Technical Director at Decision Theater, a network of Decision Centers across the globe.

Remarks and Next Steps
•Venkataraman Lakshmi, University of Virginia: Dr. Venkataraman Lakshmi is a professor at the University of Virginia on catchment hydrology, satellite data validation and assimilation, field experiments, land-atmosphere interactions, satellite data downscaling, vadose zone and water resources.

Annex II

List of Participants

Delia Paul
SIP Senior Communication Officer
Pact Thailand
deliaruthpaul@yahoo.com

Nicholas John Souter
Mekong Case Study Manager
Conservation International
nsouter@conservation.org

Bora Ngeth
Chief of Office
Hydro-Electricity Department,
Ministry of Mines and Energy
bora.ngeth@gmail.com

Bunnath Khun
National Team Leader
ADB/MLMUPC/ Commune Land
Use Planning Project
kbunnath@gmail.com

Bunthang Touch
Acting Director
Inland Fisheries Research
and Development Institute
bunthangtouch@gmail.com

Davin Son
Chief
Hydroelectricity Operation
Oversight, Hydro-Electricity
Department,
Ministry of Mines and Energy
davinmime@gmail.com

DoungNimol Mun
Technical Officer
Department of Green Economy of
General Secretariat of National
Council for Sustainable Development,
Ministry of Environment
d.nimolmun@gmail.com

Heng Sokchhay
Faculty/Researcher
Institut de Technologie du Cambodge
heng_sokchhay@yahoo.com

Hong Chheang
Director, Information and Knowledge
Management Program Cambodia
National Mekong Committee
Secretariat (CNMCS)
hong@cnmc.gov.kh;
hongcnmc@hotmail.com

Long Saravuth
Deputy Secretary General
Cambodia National Mekong
Committee Secretariat (CNMCS)
lsaravuth2009@yahoo.com

Peng Bun Ngor
Wonders of the Mekong
pengbun.ngor@gmail.com

Sak Samol
Officer
Department of Planning and
International Cooperation, Cambodia
National Mekong Committee
Secretariat (CNMCS)
saksaomol@gmail.com

Samram Tuy
Project Coordinator
The World Bank IWRM Project;
Cambodia Fisheries Administration,
Ministry of Agriculture, Forestry
and Fisheries
tuy99samram@gmail.com

Thanit Hour
Deputy Chief
Bureau of Management of the Tonle
Sap Multiple Use Protected Area,
Fresh Water Wetlands Conversation
Department, Ministry of Environment
thanit0081hour@yahoo.com

E. Brooke Whitaker
Chief of Party, Mekong Safeguards
Project
The Asia Foundation, Beijing, China
e.brooke.whitaker@asiafoundation.org

Sam Geall
Executive Editor, China dialogue
Chatham House, China dialogue
samgeall@gmail.com

Benthilavanh Teso
Deputy Manager
EDL Training Cente, Electricite
Du Laos (EDL)
benthilavanh@yahoo.com

Janejira Chuthong
Chief Hydrologist
Mekong River Commission Secretariat
(MRCS)
janejira@mrcmekong.org

John Ward
Senior Scientist-Director
Mekong Region Futures Institute
(MERFI)
john.ward@merfi.org

Keomany Luanglith
Director of Governance and
Cooperation Division
Lao National Mekong Committee
Secretariat (LNMCS),
Ministry of Natural Resources and
Environment (MONRE)
bigpink2@gmail.com

Khaemeuy Chao
Forecaster
Division of Forecasting, Department
of Meteorology and Hydrology (DMH),
Ministry of Natural Resources and
Environment (MONRE)
khaemeuy@yahoo.com

Nguyen Thi Ngoc Minh
Planning Division, Mekong River
Commission Secretariat (MRCS)
Mekong River Commission Secretariat
(MRCS)
ngocminh@mrcmekong.org

Oulavanh Keovilignavong
Researcher
International Water Management
Institute (IWMI)
oulavanh.k@gmail.com

Panthong Phetmurntham
Researcher
Faculty of Water Resources,
National University of Laos (NUoL)
panthongppp@gmail.com

Phonesavath Khamvilay
Technical Officer
Department of Natural Resources
and Environment Policy,
Ministry of Natural Resources
and Environment
phonesavathk@yahoo.com

Sengthong Pormuangpieng
Technical Officer
Division of Electricity Generation
Planning, Department of Energy
Policy and Planning,
Ministry of Energy and Mines
sengthong76pmp@gmail.com

So Nam
Chief Environment Management
Officer and Mekong Regional
Fisheries Expert
Mekong River Commission Secretariat
(MRCS)
sonam@mrcmekong.org

Sothea Khem
Flood Forecasting Specialist
Mekong River Commission Secretariat
(MRCS)
khem@mrcmekong.org

Soukaseum Pichit
Information and Database Specialist
Mekong River Commission Secretariat
(MRCS)
soukaseum@mrcmekong.org

Soukphaphone Soodtharavong
Deputy Head
Water Resources Assessment
Division,Department of Water
Resources, Ministry of Natural
Resources and Environment
souk710@hotmail.com

Syvang Xayyavong
Head
Center for Research and Testing,
Research Institute for Energy and
Mines, Ministry of Energy and Mines
x_syvang@yahoo.com

Aung Aung
Staff Officer, Environmental Impact
Assessment Division
Environmental Conservation
Department, Ministry of Natural
Resources and Environmental
Conservation
aungaung1361986@gmail.com

Aung Naing Myo
National Environmental Scientist
World Bank - Ayeyarwady Integrated
River Basin Management Project
aung_ait@yahoo.com

Aung Ze Ya
Head of Renewable Energy
and Smart Grid Lab, Professor and
Deputy Head of Department
of Electrical Power Engineering
Yangon Technological University
(YTU), Ministry of Education
dr.aungzeya010@gmail.com

Kyaw Kyaw Lin
Deputy Director
Department of Meteorology and
Hydrology (DMH),
Ministry of Transport
and Communications
kyawkyawlin.dmh@gmail.com

Su Su Kyi
Deputy Superintendent
Department of Meteorology and
Hydrology (DMH),
Ministry of Transport
and Communications
susukyisu@gmail.com

Toe Aung Lin
Director
Directorate of Water Resources
and Improvement of River Systems
Research and Planning Department,
Ministry of Transport
and Communications
kotoegyi.dwir5@gmail.com

Wunna Htun
Deputy Director
Department of Hydropower
Implementation,
Ministry of Electricity & Energy
(MOEE)
whtun7@gmail.com

Ye Thu Aung
Junior Researcher
Hydro-Informatics Center (HIC),
Component (1), AIRBM Project
yta.hic.researcher@gmail.com

Tran Anh Thong
Researcher
Research Center for Rural Development,
National University of Singapore/
An Giang University
tathong.rcrd@gmail.com
thong.tran@nus.edu.sg

Amorndech Noulmanee
Lecturer
Faculty of Science and Engineering,
Kasetsart University
amorndech.n@ku.th

Apisom Intralawan
Lecturer and Researcher
School of Management,
Mae Fah Luang University
apisom.intralawan@gmail.com

Boonchoob Songtragoolsak
Policy and Plan Analyst, Professional
Level, Division of Infrastructure
Development Strategy
Office of the National Economics and
Social Development Council (NESDC),
Office of the Prime Minister
Boonchoob@nesdc.go.th

Bundarik Borisut
Geologist, Professional level,
Bureau of Groundwater Exploration
and Potential Assessment,
Department of Groundwater
Resources Ministry of Natural
Resources and Environment
b.bundarik@gmail.com

Chaiyuth Sukhsri
Senior Expert
Thailand National Mekong Committee
(TNMC)
csschaiyuth@yahoo.com

Charlie Navanugraha
Advisor
Faculty of Environment and Resources
Studies, Mahidol University
encnv2013@gmail.com

Cherid Kalayanamitr
Scientist level 11 under Assistance
Governor Power Plant Planning
Electricity Generating Authority
of Thailand (EGAT)
cherid.k@egat.co.th

David Wood
Resource Economist
Mae Fah Luang University
dwood114@aol.com

Ekarach Boonlomrug
Agricultural Extensionist,
Professional Level
Department of Agricultural Extension,
Ministry of Agriculture
and Cooperatives
lang_one@hotmail.com

Hataichanok Puckcharern
Inspector
National Statistical Office of Thailand
(NSO), Ministry of Information
and Communication Technology
hataichanok.methodology@gmail.com

James Grall
Asia Eurasia Regional Director
Pact
jgrall@pactworld.org

Jaruluck Sriyaphai
Logistics Coordinator
Pact Thailand
jsriyaphai@pactworld.org

John Choi
Regional Environment, Science,
Technology, and Health Officer,
East and Southeast Asia Hub
US Embassy Bangkok
ChoiJY@state.gov

Kamol Promasakha Na Sakolnakhon
Director of Radar and Satellite Data
Analysis Sub-Division,
Weather Forecast Division
Thai Meteorological Department TMD),
Ministry of Digital Economy and Society
promasakha123@hotmail.com

Karnjana Saengprapai
Data Analyst
Hydro-Informatics Institute (HII)
karnjana@hii.or.th

Kay Johnson
Bureau Chief for Thailand,
Laos and Cambodia
Thompson Reuters
Kay.johnson@tr.com

Kulthida Techasarin
Regional Coordinator Marine &
Fisheries/Smart Infrastructure
for the Mekong Program
U.S. Department of the Interior
annkulthida.doi.sim@gmail.com

Mongkol Lukmuang
Director, Water Crisis Prevention
Center
Department of Water Resources
(DWR), Ministry of Natural Resources
and Environment (MONRE)
lukmuang@gmail.com;
mongkol.l@dwr.mail.go.th

Nikom Kraitud
Engineer Level 7, Head of Hydropower
Project Feasibility Study Section,
Hydro Power Plant Planning and
Feasibility Study Department
Power Plant Development Planning
Division, Electricity Generating
Authority of Thailand (EGAT)
nikom.kr@egat.co.th

Nipon Mulmuangsean
President
Basin Development Sustainability
Promote Association
seedafarm@hotmail.co.th

Noppawee Chamnanpai
LMI-SIP Program Officer
Pact Thailand
nchamnanpai@pactworld.org

Oranuj Lorphensri
Deputy Director General
Department of Groundwater
Resources (DGR),
Ministry of Natural Resources and
Environment (MoNRE)
oranuj.l@dgr.mail.or.gh;
alinchintraruck@gmail.com

Panut Vanoonvoravong
Plan and Policy Analyst, Senior
Professional Level Office of National
Water Resources (ONWR),
Office of the Prime Minister,
mpanut@gmail.com

Patchara Jaturakomal
Lecturer
Kasetsart University
papaisud@hotmail.com

Pinida Leelapanang Kamphaengthong
LMI-SIP Senior Program Officer
Pact Thailand
plkamphaengthong@pactworld.org

Pruthipong Poonthrigobol
Minister Counsellor, Division of
Economic Relations
and Cooperation
Department of International
Economic Affairs,
Ministry of Foreign Affairs
pr.poonthrigobol@mfa.mail.go.th

Rachapat Ratanavaraha
Director
Water Resources Management
Centre: Kong Chi Mun River Basin,
Rajamangala University
of Technology Isan (RMUTI)
racha2503@hotmail.com

Sasiprapa Tanyong
Assistant Researcher
Hydro-Informatics Institute (HII)
sasiprapa@hii.or.th

Sukanya Utthiya
Administration and Logistics Manager
Pact Thailand
sutthiya@pactworld.org

Suparerk Janprasart
LIM-SIP Program Director
Pact Thailand
sjanprasart@pactworld.org

Sura Pattanakiat
Dean
Faculty of Environment and Resources
Studies, Mahidol University
sura44@gmail.com

Warangkana Larbkich
Plan and Policy Analyst,
Professional Level
Office of National Water Resources
(ONWR), Office of the Prime Minister
warangkana_la@onwr.go.th

Worawan Sukraroek
Mekong Campaign Coordinator
Earth Rights International
wora@earthrights.org

Yanyong Inmuong
Director, GMS Research Center
for Environment and Sustainability
Faculty of Environment and Resource
Studies, Mahasarakham University
yanyong.i@msu.ac.th

Alan Basist
Eyes on Earth
anbasist@gmail.com

Boualem Hadjerioua
Lead: Water Power Energy &
Sr. Research Engineer, Renewable
Energy Systems,
Environmental Science Division (ESD)
OAK RIDGE NATIONAL LABORATORY,
US Department of Energy
hadjeriouab@ornl.gov

Chever Voltmer
Ocean Conservancy
cvoltmer@oceanconservancy.org

Courtney Hill
UVA
clh023@gmail.com

Courtney Weatherby
Research Analyst, Southeast Asia Program,
Energy, Water, & Sustainability Program
The Stimson Center
cweatherby@stimson.org

Danielle Neighbour
US Department of State
NeighbourDG@state.gov

Guillermo Mendoza
US Army Corps of Engineers,
Institute for Water Resources (IWR)
Guillermo.F.Mendoza@ostp.eop.gov

Holly Thomas
ESTH Officer
U.S. Department of State, Hanoi
ThomasHL@state.gov

Ignacio Ortinez
estudioOCA
ignacio@estudiooca.com

Indalecio Vallejos
USDA
indalecio.Vallejos@fas.usda.gov

Jennifer Mathis Alexander
University of Georgia
jmathis5@uga.edu

Jennifer Olszewski
Water Resources Engineer / Hydrologist
US Army Corps of Engineers, Institute for
Water Resources (IWR)
Jennifer.M.Olszewski@usace.army.mil

Jennifer Shinen
Senior Water Advisor/Water
Program Manager
Office of Conservation and Water,
Bureau of Oceans and International
Environmental and Scientific Affairs,
US Department of State
ShinenJL@state.gov

Jon Miller
Major General, US Army (retired)
Arizona State University

Lee Angelleli
IBM
langelel@us.ibm.com

Matthew Andersen
Senior Scientist for Biology (International)
USGS
mandersen@usgs.gov

Nguyen Tho
Senior Research Program Officer
Office of the Vice President
for Information Technology,
University of Virginia
thn2c@virginia.edu

Nina Burkardt
Research Social Scientist
USGS
burkardtn@usgs.gov

Rahul Salla
Technical Director, Decision Theater,
Network of Decision Centers,
Arizona State University
rsalla@asu.edu

Reepal Shah
Arizona State University
reepal.shah@asu.edu

Sachin Shah
USGS
sdshah@usgs.gov

Scott Vanderkooi
Chief, Grand Canyon Monitoring
and Research Center
USGS
svanderkooi@usgs.gov

Sudeep Chandra
Global Water Center, University
of Nevada, Wonders of the Mekong
sudeep@unr.edu

Venkataraman Lakshmi
University of Virginia (UVA)
vlakshmi@virginia.edu

Yushiou Tsai
Associate Research Scientist
Arizona State University/Future H2O
yu-shiou.tsai@asu.edu

Bui Thuyet
Hanoi University of Natural Resource
and Environment
buidacthuyet@gmail.com

Cao Thi Hoai
Lecturer
Faculty of Agriculture – Forestry,
Tay Nguyen University
caohoai.tnu@gmail.com

Cassandra Bangay
Junior Professional Consultant,
Waste Management
United Nations Development
Programme Viet Nam
cassandra.bangay@undp.org

Chau Nguyen Xuan Quang
Vice Director
Department of Hydrology
and Water Resources, Institute
for Environment and Resources (IER),
Vietnam National University Ho Chi Minh
(VNU HCM)
cnxquang@hcmier.edu.vn

Dang Thi Thanh Thuy
Researcher
Capacity Development Center
for Environment and Natural Resources
(CEN)
thuydang@cen.org.vn

Dang Tung Hoa
Consultant/ Trainer
Capacity Development Center
for Environment and Natural Resources
(CEN)
hoadangtung@gmail.com

Dao Nguyen Khoi
Vice-dean
Faculty of Environment,
VNU-HCM University of Science
dnkhoi@hcmus.edu.vn

Do Quang Linh
Numerical Modeler and Environmental
Assessment, WACLIM Group
Faculty of Environment,
VNU-HCM University of Science
doqlinh@gmail.com

Duong Van Ni
Director of the Mekong Delta Research
and Conservation Assistance Foundation
Wetland University Network (WUN),
Cantho University, Cantho city, Vietnam
duongvani@gmail.com

Ha Thanh Lan
Head of Department
Training and International Cooperation,
Institute of Water Resources Planning
(IWRP), Ministry of Agriculture
and Rural Development
lanht.tl@mard.gov.vn

Henning Jensen
Intern
Mekong Delta Integrated Regional Plan
Organization
henning.jensen@rhdhv.com

Hoang Trang Thu
Researcher
Faculty of Environment,
VNU-HCM University of Science
thuhoang190496@gmail.com

Hoang Tuan Dung
Consultant/Researcher
ERE consulting Co., Ltd
tuandunghoang@gmail.com

Huynh Vuong Thu Minh
Researcher and Lecturer
Department of Water Resources,
College of Environment
and Natural Resources, Can Tho University
hvtminh@ctu.edu.vn

Jacob S. Brunner
Head, Indo-China Group
IUCN Vietnam Country Program, HCMC
Jake.BRUNNER@iucn.org

Jannik Riegel
Researcher
VNU-HCM University of Science
jannik.riegel@gmail.com

Lam Van Thinh
Researcher and Lecturer
Department of Water Resources,
College of Environment
and Natural Resources,
Can Tho University
lvthinh@ctu.edu.vn

Le Thi Tuyet Anh
PhD Student and Researcher
KU Leuven/VNU
– Hanoi University of Science
ltanh1111@gmail.com

Man Quang Huy
VNU University of Science
mqhuy@hus.edu.vn

Michael DiGregorio
Vietnam Country Representative
The Asia Foundation, Hanoi
michael.digregorio@asiafoundation.org

Nadege Giroux
IOM
ngiroux@iom.int

Nguyen Dinh Hoang Long
Researcher
Faculty of Environment,
VNU-HCM University of Science
nguyenlong121095@gmail.com

Nguyen Duc Minh
VNU – Institute of Vietnamese Studies
& Development Sciences
minhnd2806@gmail.com

Nguyen Giang
Lecturer
Vietnam National University of Agriculture
nthgiang.qlmt@vnua.edu.vn

Nguyen Hieu Trung
Faculty/Researcher
Can Tho University
nhtrung@ctu.edu.vn

Nguyen Hong Ninh
RIICE Project Manager
Remote-sensing based Information
and Insurance for Crops in Emerging
Economies (RIICE) Project
ninh.nguyen@eda.admin.ch

Nguyen Huu Tri
Dean
Faculty of Economics
and Business Administration,
An Giang University
nhtri@agu.edu.vn

Nguyen Khac Khang Duy
Vietnam Ministry of Foreign Affairs
nkkd1201@gmail.com

Nguyen Lan Anh
Hydro Scan

Nguyen Minh Quang
Lecturer
School of Education,
Can Tho University
Mekong Environment Forum (MEF)
nmquang@ctu.edu.vn

Nguyen My Hang
Deputy Director-General
Water Resources Institute,
Ministry of Natural Resources
and Environment, Hanoi
nguyenmyhang255@gmail.com

Nguyen Nhan Tuan
Official
Vietnam National Mekong
Committee Secretariat (VNMCS)
nguyennhantuan@gmail.com

30

Nguyen Phuong Le
Lecturer and Researcher
Department of Agricultural
Economics and Policy,
Vietnam National University of Agriculture,
Hanoi
nguyenphuongle@vnua.edu.vn

Nguyen Quoc Dinh
Head
Economic Geology and Geomatics
Department, Institute of Geosciences
and Mineral Resources (VIGMR)
dinhnq@gmail.com

Nguyen Thanh
Program specialist
The Asia Foundation, Hanoi
thanh.nguyen@asiafoundation.org

Nguyen Thi Diem Thuy
Master Student
Faculty of Environment,
VNU-HCM University of Science
nguyenthidiemthuyapag@gmail.com

Nguyen Thi Hanh Tien
Research Institute for Aquaculture No. 1
hanhtienait8@gmail.com

Nguyen Thi Minh Ngoc
Researcher
Department of Science-Technology
and International Cooperation,
Vietnam Institute of Geosciences
and Mineral Resources, Hanoi
ngoctmnguyen@gmail.com

Nguyen Thi Phuong Loan
Vice Director
Capacity Development Center
for Environment and Natural Resources
(CEN)
mwjloan@yahoo.com

Nguyen Thi Thanh Huong
Head of Department of
Natural resources and Environment
management
Faculty of Agriculture and Forestry,
Tay Nguyen University
huongthanh.frem@gmail.com

Nguyen Thi Thanh Thao
PhD Student and Researcher
Science and Environmental
Management Department,
Liege University
nguyenthithanhthao@doct.uliege.be

Nguyen Thuy
IUCN
thuyanh.NGUYEN@iucn.org

Nguyen Van Hieu
Researcher
Capacity Development Center
for Environment and Natural Resources
(CEN)
hieunguyen@cen.org.vn

Nguyen Van Hoang
Staff
Southern Institute for Water Resources
Planning
hoangnv95wre@gmail.com

Nguyen Vo Chau Ngan
Can Tho University
nvcngan@ctu.edu.vn

Nguyen Vo Minh Thuy
Volunteer
Mekong Environment Forum (MEF)
minhthuy20797@gmail.com

Pham Thi Loi
 Master Student
Faculty of Environment,
VNU-HCM University of Science
Phamthiloi1994@gmail.com

Pham Thi Mai Thy
Senior Researcher
Ho Chi Minh City Space Technology
Research Center (STAC), Vietnam National
Space Center (VNSC)
ptmaithy77@gmail.com

Pham Thi Thao Nhi
Researcher
Institute for Computational Science
and Technology, Department of Science
and Technology Ho Chi Minh City
nhi.ptt@icst.org.vn

Pham Thi Xuan Thu
Meeting Consultant
Pact Thailand
thupham.html@gmail.com

Phan Thi Hang
Lecturer
Faculty of Agriculture – Forestry,
Tay Nguyen University
phanhang84@gmail.com

Tran Lan Huong
Natural Science Coordinator
UNESCO
l.tran@unesco.org

Tran Ngoc Ca
Senior Fellow
Vietnam Institute for Science,
Technology and Innovation
tranngocca@gmail.com

Tran Van Truong
VNU University of Science, VNU Hanoi
tranvantruong@hus.edu.vn

Trinh Bao Son
Senior Lecturer,
Head of the Environmental Toxicology
Laboratory
Institute for Environment and Resources,
Vietnam National University
of Ho Chi Minh city
trinhbao_son@yahoo.com

Trinh Thi Bich Thuy
Institute for Agriculture,
Energy and Environment
ttbthuyht@gmail.com

Vo Thi Minh Hoang
Lecturer and Researcher
VNUHCM - University of Science
vo.thiminhhoang@wur.nl

Vu Kim Chi
Vice Director
Institute of Vietnamese Studies
and Development Science,
Vietnam National University, Hanoi
vukimchi@gmail.com

Vu Thi Bich Hop
Chairwoman of Board of Trustees
cum Director
The Center for Sustainable Rural
Development (SRD)
hop@srd.org.vn

Vu Van Manh
VNU University of Science
vuvanmanh@hus.edu.vn

32

Annex III

Post-Event Assessment

There were 160 participants at the Symposium, representing different sectors from Lower Mekong countries, the US and around the world. Of those that attended, 73 participants completed and submitted their evaluation forms at the end of the symposium on Day Three. Results of the evaluation are summarized by the following graphs and summary notes under each question of the evaluation below.
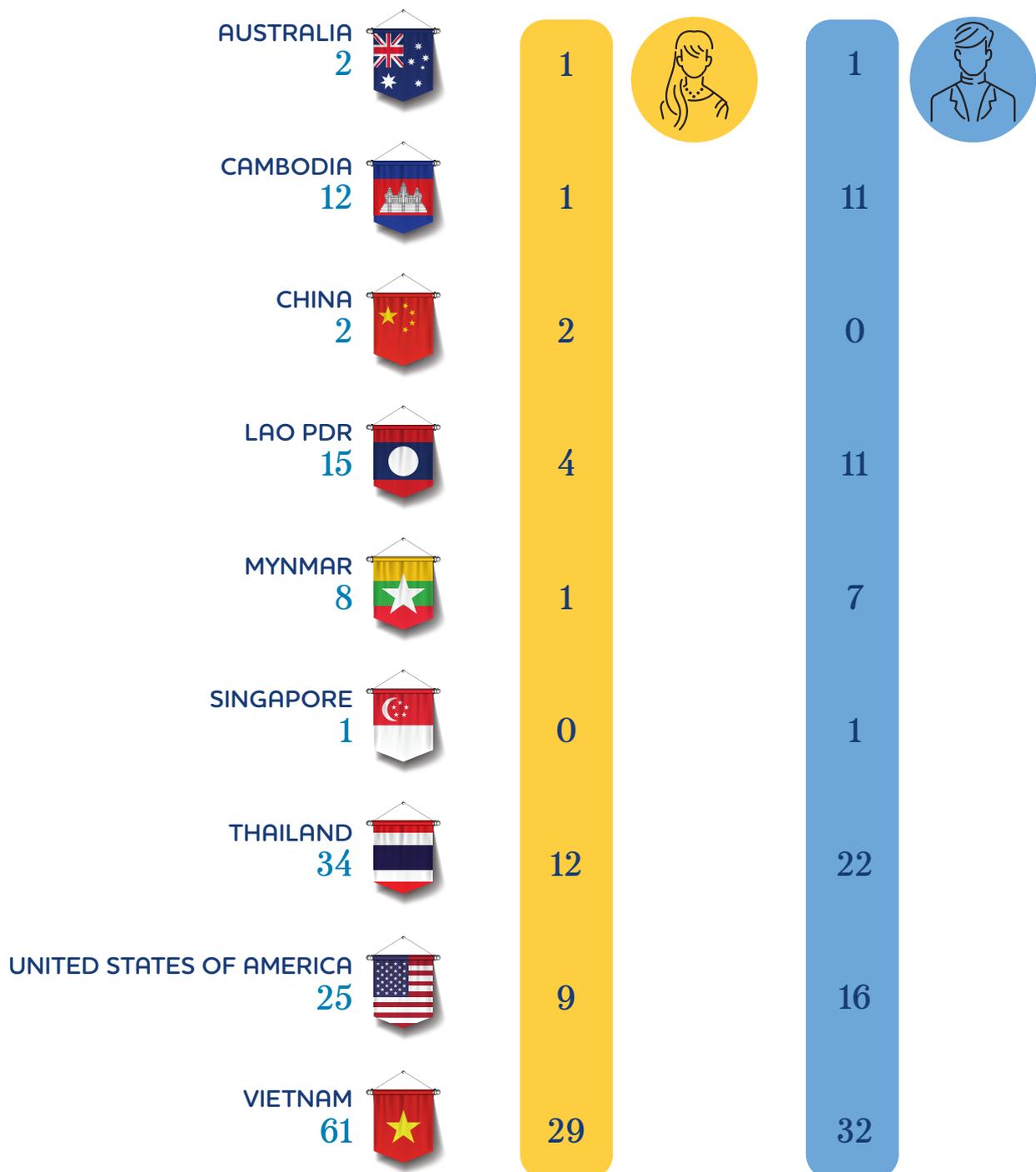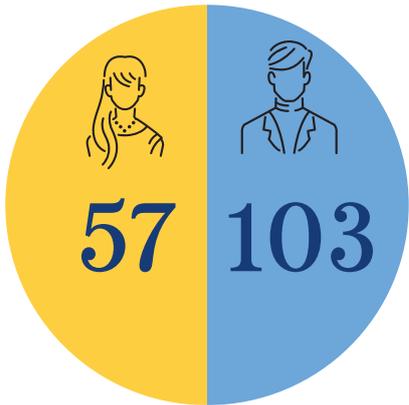
Country	Total	Female	Male
AUSTRALIA	2	1	1
CAMBODIA	12	1	11
CHINA	2	2	0
LAO PDR	15	4	11
MYNMAR	8	1	7
SINGAPORE	1	0	1
THAILAND	34	12	22
UNITED STATES OF AMERICA	25	9	16
VIETNAM	61	29	32

Table 1: Number of participants by country-based who attended the symposium

57 | 103

160

Total participants
by country-based

2019 Mekong Research Symposium

Questions

Question 1. How well were the 2019 Mekong Research Symposium objectives stated below met overall?
1.1 Prioritize activities for strengthening collaboration within the Mekong and with global partners
1.2 Identify actions that Mekong stakeholders can take to improve science-based decision making and management in the region

Question 2: You have gained knowledge from this event.

Question 3: You have gained good experience from this event.

Question 4: You would like to stay engaged with relevant events and activities in the future.

Question 5: The way the event was organized and facilitated was easy to follow and engaging.

Question 6: Your participation in this event will help to advance your work.

Question 7: Logistical arrangement of the event was satisfactory.

Question 8: Have you attended the event through the entire three days?

Question 9: Which session(s) have you found the most interesting and useful?
The five sessions that scored the highest were:
- Session 4: Climate Models, Weather Forecasting, and Disaster Risk Reduction,
- Session 2: Cumulative Impacts and Cascade Hydropower Management
- Session 5: Drought and Flood Prediction, Resilience, and Mitigation
- Session 3: Socioeconomics and Stakeholder Engagement,
- Session 8: Integrating priorities for Informed Decision Support

Question 10: Which session(s) have you found the least interesting and useful?
The five sessions that scored the highest are:
- Session 6: Mekong Governance and Stewardship - Fisheries and Marine Debris.
- Session 4: Climate Models, Weather Forecasting, and Disaster Risk Reduction, and Session
- Session 5: Drought and Flood Prediction, Resilience, and Mitigation
- Session 2: Cumulative Impacts and Cascade Hydropower Management
- Session 8: Integrating priorities for Informed Decision Support (I)

Question 11: What else impressed you during this event?
- Discussion by answering questions, sticky notes and trees
- Group work
- The way of connecting people & engaging people in collaboration is impressive. The level of interactions among the participants. The cooperation between participants.
- Flexibility
- Organizers and speakers. The professionalism of speakers and amount of knowledge that I can gathering. Knowledge sharing, available data and resources
- My impression is facilities, and the event is very interesting. Conference room is excellent. The logistical arrangement. The accommodation and meeting arrangement are very good, and it was very convenient
- The infrastructure database, and the future Decision Support Framework (DSF) that we can share. The recommendations to access data & information. Modeling of hydrological field. Many models can analysis and use. Groundwater modeling. Innovation modeling experience in lower Mekong research
- Idea sharing during answer the question. We can share the data and documentation in same website introduced by presenters; much informative
- Tracking sustainable infrastructure
- Participants from different countries and organizations
- Stakeholders and socioeconomics
- Integrating priorities for informed decision support
- Multi-disciplinary concerned in the event. Diversity and interdisciplinary. Very good selection for participants.
- Ideas and experience
- Cascade Hydropower Management
- Time management in this event is excellent.

- Learned about availability of many models and data sources. Information discussion with participants
- Very well organized
- I am impressed by IBM's software group presentation
- Data sharing, Decision theater
- Opportunities for collaboration
- The organizer provided the chance in setting up the networking and collaboration
- Participants can take part in the event through numerous activities
- Good planning and arrangement, smooth facilitation and very well experience presentation from a wide range of reputable public, research and non-government organizations.
- Select topics are relevant and could apply for current works
- Advance model and platform to collect data for analysis
- Organizer effort and lead all issues great
- Each topic related each other

Question 12: What else did not impressed you during this event?
- The symposium has rarely mentioned about situation of environment in different countries in the region
- Glass of water on table, it makes activities inconvenient
- The climate patterns have changed in the lower Mekong river
- Projector screens are far from the participants
- If the organizers can provide information about the schedule with details in advance, this is very useful
- There are too many databases showcased at the symposium. It is unclear what direction/role of LMI will play
- Data integrate and sharing
- Times for discussion is short
- The accuracy of data has not mentioned interdisciplinary
- The symposium information is poorly announced, especially the detailed presentation list and topic
- Session 7: Tracking Sustainable Infrastructure: Trends, Tools, and Impacts
- There are many sessions in Day 3
- Limited time to ask participants to present
- Panelist discussion seems to be too short
- The time of event is so short.

Question 13: After participating in the event, how can you apply knowledge and skill for your actual work?
- Contact and collaborate for project development
- Sharing data is a big problem of lower Mekong countries
- My job must has varying of data to use mapping. So, data is very important
- We can prepare our data (sampling needs) to incorporate for using in MRC and our own benefit
- The strengthening process/activities on improving the existing decision support framework
- The model and conceptual framework that can applied for doing research related to socio-economic in the Mekong delta
- My function in work is relevant to power generation from hydropower but a little bit relation to water resource management that is more important than the benefit from power purchase
- Knowledge and experience can do my work going well
- There are many ways to access data, information about Mekong river. Some data can be used in my work
- There are some presentations that is useful information for my research about Mekong
- I can use some information to do my research
- I can apply knowledge and skill in actual work for water resources planning and management in my country
- I will take this knowledge and idea to discuss with my colleague to consider do more research on irrigation area with groundwater supply
- Some presentation did help me to update information. And I can use these deeply learn more
- Better understanding of activities that are happening. Possible collaboration among partners
- We can apply in our actual work of hydrology and climate
- I will analysis by flood models, many water models. I got many knowledges and I improved skill for my work
- I can learn many open-source models and tools from the symposium
- My work is related to forestry, river basin. Tools is very useful for my major
- Data provided in the website will be useful for us in specific research
- I have some knowledge on what MRC is working on and the other organization like SIP and Mekongwater.org which I can refer and reference for my work
- I will pay more attention on these models
- I can take some model for my work and study about flood
- How to collaborate the information
- How to integrate the data
- I have much knowledge after participating in the event because I am government officer in river conservation field. To understand about some modeling for hydropower, flood, drought, climate change and fishery
- Awareness of data availability useful
- Continue to predict weather in future
- Expand professional network
- I obtain the information about needs for enhance Mekong good governance, and I will apply this information to plan about knowledge development for river basin communities and local people in my field work
- I earn knowledge especially flood and drought to help forecasting to the people living in the vulnerability area

- Many topics are relevant to my current works
- Technological advancement i.e. tools
- Form up new team with new field for further study on the Mekong river
- Apply information in my lectures for students
- Use tool freshwater health index for my studies
- I can be more aware of scientific tools to make use of in my future works, especially the tracker and Mekongwater.org These are beneficial resources
- I think Stimson databases will be useful, the tool from GIZ will also be helpful
- Most contents and information are related to my job
- Some best practices "Model, Approach, Methods, Tools" could be adapted
- I will research more information and sources of data to make report and analysist
- I will work on energy, sustainability and also groundwater
- I got many knowledges about Mekong river basin and the experts help me know how to collect the data in this area

Question 14: What recommendations or suggestions would you like to make for future events? (optional)
- Lack of session about land cover and land use change
- Do the difficulties analysis for collaboration/sharing can apply in the grass-root at the Mekong basin
- Keep inform us any similar event that we could meet and make further collaboration
- You have to focus on the topic of collaboration or how to collaborate more than innovation
- More collaboration
- We want to see how the database and model accumulate data and calculate then give the result to serve decision support framework
- Session on the lesson learned from the previous forum
- Should focus on how to share database of all field that related to solution on socio-economic data platform
- Provide the presentation material before meeting (If possible)
- Should talk about water quality monitoring, cascade dam hydropower, and stakeholder consultation event
- You should set up projector screens at side of the conference room to easily watch
- All presentations should be ready before the meeting
- My recommendation is to share presentation before the meeting
- I would like to know advantage and disadvantage including the effect and impact of groundwater use
- It would be good to continue emphasize in each day on what the objective of the symposium willing to achieve at the end and how to move forward
- Geological changes of earthquake event
- I like your time management. Well-organized
- Climate change impact to Mekong region
- Analysis tools should be introduced for practices
- Data collection should be continuously shared or accessed by participants
- Projector screen is not suitable to make the participants of the back clearly see the presentation slides
- Please send symposium report to all participants
- It would be helpful and more effective way for the participants if you could distribute the presentation files before the event starts, as early as possible
- The next symposium should be arranged in some place along Mekong basin
- It should have this event in next time
- I wish to see the collaboration and information of data and information in practicable work
- I would like to suggest for participation of Hydropower developer in the LMI events for sustainable hydropower development and river basin management
- As Mekong river is international river, all participants or stakeholder should cooperate and share for future and ever
- The pilot project for hydropower cascade operational modeling to demonstrate and leaving input and mitigation
- For conference room, it should provide more projectors
- More discussion/presentations on impact of energy and water resources (economic and impact of hydropower mainstream projects)
- We can perform the sustainable collaboration by implementing the integrated research project. For the future events, the sections based on the discipline/background could be separated, and could be taken more times for the discussions and conversations
- Put more technical and financial support to the flood and drought for local people
- More frequent events and trainings
- Better arrangement in logistic
- The information provided by the speakers should be more informative and straight to the point rather than more irrelevant information
- Participation from private sectors and technology developer e.g. Google
- More river systems operator
- Keep technical model descriptions to a minimum
- It would be great to have this event in every year
- Future events should be the next step result of base on this recent event
- Come up with new idea
- Should have more similar events again

Question 15: Do you have any questions to any facilitators, presenters and/or organizer team? (optional)
- How to collaborate MRC, LMI and LMC together?
- Capacity building training
- Nominate panel leader to direct questions to a particular panel person who can be answer the question. No need all panel people to respond to all questions
- It would be great to get a list of participants & organization, summary description of what they are doing and contact information

"Collaborating and Innovating for the Mekong"

2019 MEKONG RESEARCH SYMPOSIUM

LOWER MEKONG INITIATIVE