JOURNAL OF GREATER MEKONG STUDIES

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PHNOM PENH, CAMBODIA

EDITOR'S NOTE

I am very proud to introduce this inaugural issue of the *Journal of Greater Mekong Studies (JGMS)*, a new initiative of the Cambodian Institute for Cooperation and Peace (CICP). Grounded in CICP's long-standing commitment to pluralism and our belief in the importance of open discussion among policy analysts, scholars, government officials and representatives of civil society, JGMS serves as a vital new locus for rigorous, policy-oriented research engaging with the diverse challenges facing the Greater Mekong Subregion today.

The subregion continues to confront a vast range of long-standing issues such as management of the Mekong river, subregional economic integration and cross-border infrastructure development. Today, these topics are accompanied by new and equally important questions such as the impact of investment inflows and aid programs funded by China, Japan and other external partners; the possibility of a maritime / mainland Southeast Asia divide within ASEAN; rapidly expanding intra-regional migration; and the increasingly complex set of subregional institutions seeking to facilitate improved governance of the Mekong and cooperation among the subregion's member states. To better understand these issues, CICP has brought together its network of scholars and policy analysts from across the globe to contribute to this first edition of JGMS.

As to our future, CICP will publish two issues of JGMS per year, with a focus on social, environmental, security and developmental aspects of the Mekong river and the Greater Mekong Subregion as a whole. We greatly welcome offers of support or collaboration in this undertaking, and look forward to receiving article submissions from analysts and academics with regional expertise, in order to facilitate more substantive dialogue and cooperation on future peace and development of the subregion.

The JGMS also aims to stimulate greater debate over current trends and potential solutions to existing regional tensions. I would urge readers of this journal to take this opportunity to explore more deeply the issues and concerns that continue to affect sustainable and inclusive development and individual livelihoods in the GMS.

Finally, I would like to thank the Embassy of the United States of America in Cambodia for its generous support for our efforts to establish this project, as well as members of the editorial board, the JGMS team of editors, and all the distinguished authors who worked so diligently to make this first edition possible. I would particularly like to thank H.E. Sok Siphana and Professor Milton Osborne for their valuable support and guidance as we launch this journal. I fervently hope that JGMS will serve as a focal point to facilitate discussion, provide fresh insights and serve as a bridge connecting the diverse communities that comprise the subregion and its partners, both internally and globally.

Ambassador Pou Sothirak
Executive Director
Cambodian Institute for Cooperation and Peace

INTRODUCTORY MESSAGE

It is an honor and a privilege to accept Ambassador Pou Sothirak's request that I should offer a brief introductory comment to the inaugural issue of the ***Journal of the Greater Mekong Studies***. The Journal and the concepts behind it are a tribute to Pou Sothirak's recognition of the extent to which the Mekong Subregion has reached an inflexion point in its development, a point that demands thoughtful attention and critical evaluation.

As an observer of the Mekong River for sixty years, I am struck by the urgency attending our consideration of the past, present and future of the Greater Mekong region. Few things make this situation clearer than the title of the important new book by Brian Eyler – *The Last Days of the Mighty Mekong*. That an author with Eyler's close association with the Mekong, and personal knowledge of the river ranging from Yunnan to the South China Sea, should choose such a title gives emphasis to challenges that must now be faced by those who hold responsibilities in relation to the river, its region and its people.

Just as Eyler's book title is a warning that time is not on the side of those looking to preserve all that is important and productive associated with the Mekong region, an equally powerful confirmation of this fact is provided in the statement released by the recently appointed Chief Executive Officer of the Mekong River Commission's Secretariat, Dr. An Pich Hatda. A well-credentialed development specialist, Dr Hatda's statement on his appointment encapsulates the challenges that will be examined in this new Journal. Pointing to the fact that the Mekong region 'has been deemed one of the most vulnerable to climate change', he makes the sobering assessment that 'we do not know the extent of impacts on the basin and the Mekong River system'. He makes this judgment before going on to list other vital concerns: declining fish catches, diminishing sediment flows, the need to balance production of energy and protection of the environment.

For those of us who value the Mekong and its region, this new Journal has an exciting and demanding role to play.

Dr. Milton Osborne
Editorial Board Advisor of the Journal of Greater Mekong Studies (JGMS)

SPECIAL FOREWORD

In light of the recent establishment of the Mekong-Lancang Cooperation (MLC) mechanism and Cambodia's current leadership of the Mekong River Commission (MRC), it is more important than ever to develop deeper insights as to the political, environmental, and human security aspects connected to the Mekong and the future trajectory of its development from short, medium, and long-term perspectives. I believe there is a need to examine more closely the critical phenomena of the Mekong River and their concomitant implications for the Greater Mekong Subregion as a whole.

We have to be mindful that the institutionalization of several existing Mekong mechanisms combined with the new emerging ones compels us to think how we can synergize efforts by all of our external partners to increase overall cooperation for Sub-regional development as a whole. Lessons from other parts of the globe have shown that fragmentation, stemming from overlapping missions, a weak mechanism for trust building, and unspecified focal points for coordination have bedeviled sub-regional cooperation and prevented the achievements of its optimal outcomes. Moreover, we need to ensure that these mechanisms are in line with each state's respective national development strategy as well as supportive of our broader commitments to regional integration in general, and ASEAN in particular.

This inaugural issue of the ***Journal of Greater Mekong Studies*** is a very timely initiative that I hope and expect will stimulate greater debate and shed fresh light on the diverse issues confronting development of the sub-region. Certainly, it can serve as a key locus for dialogue among scholars, policy analysts, civil society, and governments. The analysis set out by prominent scholars and regional experts can also enhance the substance of policy recommendations to relevant policymakers and raise awareness of existing and emerging challenges and impediments to successful sub-regional governance of the mighty Mekong river and its surrounding sub-region. It is thus important that we pay close attention to this aspect, and the Royal Government of Cambodia has indeed placed this issue high on its agenda.

With all of this in mind, I would like to personally congratulate the Cambodian Institute for Cooperation and Peace, under the able stirring hand of H.E. Ambassador Pou Sothirak as its Executive Director for embarking on another remarkable journey to make the Mekong subregion far more than merely a "local" issue. I am confident that this ***Journal*** will be an essential asset for interested stakeholders in Cambodia, across the subregion, and well beyond.

H.E. Dr. Sok Siphana
Senior Advisor to the Royal Government of Cambodia

LIST OF BIOGRAPHIES

H.E. Ambassador Pou Sothirak
Editor-in-Chief, JGMS
Executive Director, CICP

In addition to being the Executive Director of the Cambodian Institute for Cooperation and Peace (CICP) since 2013, Ambassador Pou Sothirak also serves as Advisor to the Royal Government of Cambodia as of February 2014. He was appointed as Secretary of State of the Ministry of Foreign Affairs and International Cooperation of Cambodia from September 2013 to January 2014. He was a Visiting Senior Research Fellow at the Institute of Southeast Asian Studies (ISEAS) in Singapore from January 2009 to December 2012. He also served as Cambodian Ambassador to Japan from April 2005 to November 2008. He was elected Cambodian Member of Parliaments twice during the national general election in 1993 and 2003. He was appointed as Minister of Industry Mines and Energy of the Royal Government of Cambodia from 1993 to 1998.

H.E. Dr. Sok Siphanna
Senior Advisor to the Royal Government of Cambodia

H.E. Dr. Sok Siphana is a practicing attorney and the Managing Partner at Sok Siphana & associates, a law firm specialized in international trade and corporate law in Phnom Penh since 2009. He was appointed by Samdech Akka Moha Sena Padei Techo HUN SEN, Prime Minister of the Kingdom of Cambodia, concurrently as Advisor to the Royal Government of Cambodia, Advisor to the Supreme National Economic Council (SNEC) and to the Council for the Development of Cambodia (CDC) with rank of Minister in 2009, 2011 and 2013, respectively.

Prof. Milton Osborne
Editorial Board Advisor, JGMS

Milton Osborne is an independent writer and commentator on Southeast Asian issues and a former non-resident Fellow at the Lowy Institute for International Policy, Sydney. He is the author of *River Road to China: The Search for the Source of the Mekong, 1866-73*, 1975 and 1996; *The Mekong: Turbulent Past, Uncertain Future*, 2000, updated edition 2006. He is also the author of two Lowy Institute Papers, *River at Risk: The Mekong and the Water Politics of China* and *Southeast Asia*, Lowy Paper 02, 2004, and *The Mekong: River Under Threat*, Lowy Paper 27, 2009. He is a regular contributor on Mekong issues to *The Lowy Interpreter*, the Institute's online publication.

H.E. Watt Botkosal
Deputy Secretary General
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H.E. Mr. Watt Botkosal, MSc in Forestry and Executive MBA in Human Resources Management, has been working for the Government of Cambodia since 1995 and has over 20 years of experience working at the senior management level with the national government, inter-governmental organizations and coordination with different countries under the frameworks of Mekong River Commission (MRC), Cambodia Water Partnership (CamboWP), and Global Water Partnership Southeast Asia (GWP-SEA).

He is presently serving as Deputy Secretary General of Cambodia National Mekong Committee (CNMC), following an assignment as Director of its Planning and International Cooperation Department. Since 2013, he has been a member of the National Working Group for Water Resources, hosted by Ministry of Water Resources and Meteorology. He was the founder of Cambodia Water Partnership and has served as its chairman since 2009, and since 2016, he has served as the chairman of GWP-SEA

Dr. An Pich Hatda
Chief Executive Officer
Mekong River Commission (MRC)

Dr. AN PICH Hatda is currently Chief Executive Officer of the Mekong River Commission Secretariat, having been in the role since January 2019. As the second riparian CEO, Dr. Hatda, a Cambodian national, is leading the organization in expediting the implementation and completion of the current strategic plan 2016-2020, taking charge of the development of the basin development strategy and strategic plan for the next period, and steering the reinvigoration of the MRC's data, modelling and information systems. He was former Director of the Planning Division and Operations Manager of the Regional Flood Management and Mitigation Centre of the MRCS for almost 10 years. He also served the Cambodia National Mekong Committee Secretariat as Deputy Secretary General and Alternate Member of the MRC Joint Committee for several years.

Dr. Bradley Jensen Murg
Lead Editor, JGMS
Visiting Senior Fellow, CICP

Dr. Bradley Jensen Murg is Assistant Professor of Political Science and Director of Global Development Studies in the School of Business, Government, and Economics at Seattle Pacific University. He is also Affiliate Professor at the Henry M. Jackson School of International Studies at the University of Washington. Dr. Murg graduated Phi Beta Kappa from Emory University with a BA/MA in philosophy, received his MSc. in economic history from the London School of Economics, and his M.A. and Ph.D in Political Science from the University of Washington. Dr. Murg has worked in Asia for nearly 20 years, initially having moved to the region as a Henry Luce Scholar at the Asian Development Bank in 2000.

Gwen Robinson
Lead Editor, JGMS
Visiting Senior Fellow, CICP & Senior Fellow, ISIS Thailand

Gwen Robinson is a Senior Fellow at the Institute of Security and International Studies at Chulalongkorn University in Bangkok. She was a Visiting Fellow at the Sydney-based Lowy Institute in 2004 and was for 18 years a correspondent and editor with the Financial Times in Europe, Asia, and America (1995-2013). Among earlier positions she was Tokyo-based correspondent for The Times of London (1993-95) and an editor and writer with Nikkei Weekly (1990-93). She previously covered key events in Southeast Asia for U.S., Australian and British media organizations from 1985 to 1993.

Dr. Deth Sok Udom
Rector, Paragon International University
Senior Fellow, CICP

Dr. DETH Sok Udom is Associate Professor of International Relations and Rector of Paragon International University. Dr. DETH finished his Bachelor's degree with High Honors in Sociology at Boğaziçi University (Turkey), a Master's degree in Southeast Asian Studies at Ohio University (USA), and a Ph.D. in Southeast Asian Studies from Humboldt University of Berlin (Germany). He is also a Senior Research Fellow at the Cambodian Institute for Cooperation and Peace (CICP). Dr. Deth is credited with several academic publications and has been invited to give guest lectures at various institutions/universities and has given a number of interviews to local and regional media on Cambodian and regional affairs.

Dr. Mak Sithirith
Water Governance Specialist

Dr. Mak Sithirith received his PhD in geography in 2011 from Department of Geography, National University of Singapore and Post-doc in transboundary water governance in the context of climate change in 2014.

A strong advocate for resource governances in the Tonle Sap Lake and the Mekong, he involves his students and colleagues in activities that support communities in the Tonle Sap Lake and the Mekong. His professional interests focus on research in the Tonle Sap Lake and the Mekong, particularly the resources and water governance. He has produced number of publications on the Tonle Sap and Mekong in the well-known and recognized publishers. In the future, he will publish more papers for his career.

Kavi Chongkittavorn
Bangkok Post Columnist
Visiting Senior Fellow, CICP & Senior Fellow, ISIS Thailand

Kavi Chongkittavorn is a Senior Fellow at Institute of Security and International Studies (ISIS) Thailand. He has been a journalist for more than three decades covering Thai and regional politics. He began his career as a reporter in 1983 and became the paper's foreign news editor in 1986. Then, he was asked to explore Indochina—first as Bureau Chief in Phnom Penh, Cambodia (1988-1990) and later on in Hanoi, Vietnam (1990-1992). After a year in Oxford University as Reuter Fellow in 1994, he went to Jakarta and served as Special Assistant to the Secretary General of ASEAN in Jakarta in 1995 before returning to journalism. He was name the Human Rights Journalist of 1998 to commemorate the 50th Anniversary of the Universal Declaration of Human Rights by Amnesty International. From 1999-2000, he was the President of Thai Journalists Association. From 2000-2001, he went to Harvard University as Nieman Fellow. He served as a member of jury and from 2005-2008 as its chair of Guillermo Cano World Press Freedom Prize organized by UNESCO.

Dr. Vijay Sakhuja

Former Director of National Maritime Foundation, New Delhi, India; Visiting Senior Fellow, CICP

Dr Vijay Sakhuja is former Director, National Maritime Foundation, New Delhi. He is currently Visiting Senior Fellow, Cambodian Institute for Cooperation and Peace (CICP) in Phnom Penh, Cambodia; Executive Editor, India Strategic; and is associated with Kalinga International Foundation, New Delhi. He has been on the faculty of a number of think tanks and universities in India and abroad. Dr Vijay Sakhuja is member of the international editorial board of Journal of Indian Ocean Region (Taylor & Francis).

Mr. Tom Fawthrop

Freelance Journalist and Researcher specializing on Security Energy in the Mekong Region
Chiang Mai, Thailand

A London-born author, journalist and film-maker, Tom Fawthrop has extensively covered the developing world. He has lived and worked in Southeast Asia for 30 years. His first reporting assignment in Cambodia began on December 25, 1980, just before the 2nd anniversary of defeat of Pol Pot's Khmer Rouge regime. He has borne witness many of Asia's key historical events including the 'Peoples Power' in the Philippines that toppled the Marcos dictatorship (1986), the rebirth of Cambodia after the Khmer Rouge in the 1980s, and the UN's peacekeeping operation (1991-3). In East Timor in 1999, he witnessed the burning and pillaging of the capital Dili, after a referendum that bravely voted for independence from Indonesia's annexation. He has been a regular Southeast Asia contributor for the Guardian/the Economist in the UK, and many online media during his many years living in Phnom Penh, Manila, and Chiang Mai.

CONTENTS

THE MEKONG ONCE FLOWED FREE: A PERSONAL REFLECTION

Milton Osborne

Former Non-Resident Fellow of the Lowy Institute for International Policy, Sydney; Author of "The Mekong: Turbulent Past, Uncertain Future" (2000, Updated Edition 2006)

Editorial Board Advisor of the Journal of Greater Mekong Studies

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As I write this reflective essay in late April 2019, exactly 60 years have passed since I first saw the Mekong River while I was flying from Saigon, today's Ho Chi Minh City, to Phnom Penh in 1959. It was at the height of the dry season and the air was laden with dust, so I saw the river below through a haze that dulled its color to a neutral khaki-grey as it flowed from the north in great sinuous bends. Although I had known well before this first sighting that the Mekong was a large river, nothing had prepared me for its majestic size. And now, after so many years of living besides, travelling on, and writing about the Mekong, the river continues to be an endless source of fascination, but also a cause for deep concern about its future.

Living beside the Mekong in Phnom Penh I became aware of its changing moods, and those of the Tonle Sap River, its vital tributary, that flowed back and forth each year to and from Cambodia's Great Lake. And I soon learnt that this mighty river, the "Mother of the Waters" in a romantic translation of its name, was notably different from so many of the other great rivers of the world. Not only did it still run free of any dams along its course, its distinctive morphology had defeated all efforts to use it for the large-distance transport of substantial quantities of cargo beyond Phnom Penh. Such use of the Mekong was made impossible by the mighty cascades of the Khone Falls, but also by the repeated presence of rapids that punctuated its course. These began in Cambodia, at Sambor near the provincial town of Kratie, and continued intermittently throughout its course in Laos and into its upper reaches in China. Tellingly, when the great French Mekong Expedition explored the river in the 1860s its members ultimately abandoned travelling by canoes

because of the constant need to resort to portage over the repeated sets of rapids they encountered.

As I studied the Mekong's history I found that during the years of colonial control of Cambodia and Laos there were repeated efforts to exploit the Mekong for transport purposes. But these had a very limited success. Dredging of sections of the river to improve navigation and the construction of a rail link to traverse the Khone Falls region may have been seen as "triumphs" over nature in the colonial era. Yet it still took more than a month to travel by river from Saigon to Vientiane, in a process that involved constant changing of vessels as well as making the rail traverse past the Khone Falls. Further north above Luang Prabang it is still possible to see the navigation markers with their faded red and green paint to show where passage was safe or dangerous. But these, too, remain as a reflection of past hope rather than practical achievement in efforts to use the river for more than the local transport of goods and people.

In the period after World War II the essentially untouched character of the Mekong, still without a single dam along its course, came to be regarded as a geopolitical opportunity in the Cold War atmosphere of the 1950s. This led the U.S. administration to consider a plan for development of the Mekong through the construction of hydropower dams, in a manner that would have echoed the work of the Tennessee Valley Authority. At the highest levels in Washington, indeed within the National Security Council, it was thought that building dams to provide cheap electricity would help counter communist subversion. But this American project was superseded by a report released by the U.N.'s then Economic Commission for Asia and the Far East in 1957 that also envisaged construction of dams on the Mekong in both Laos and Cambodia. When this report was adopted, plans were drawn up for the construction of three dams in Laos and one in Cambodia. An oversight body known as the Mekong Committee, and still closely linked to the U.S., was established in Bangkok.

Australia played its part in this projected plan and in 1960, as a young diplomat based in Phnom Penh, I accompanied the first Australian engineer on a reconnaissance tour of the area around Kratie for the

projected dam at Sambor. It was in this area that an Australian engineering survey team began to assess the possible construction of a dam in 1961. That Sambor is once again under discussion as a possible dam site strikes a very personal note for this writer. But by the mid-1960s, the Australian survey team had abandoned its work in the light of security concerns and the growing reach of the Vietnam War.

Seen in retrospect, the plans drawn up in the 1950s and 1960s to build dams on the Mekong after it flowed out of China were remarkable in their lack of concern for the environment and the populations likely to be affected by their construction. A planned dam at Pa Mong in Laos would have required the relocation of some 250,000 people, while another located at the Khemerat rapids in the country's south would have completely inundated the sizeable town of Savannakhet. What is more, the issue of whether the river's vital fish stocks might be affected by dam construction seems to have been treated as a secondary issue. It is easy to forget that the 1960s were a period of great international enthusiasm for dams -- both large and small -- leading to the construction of such examples as the Aswan High Dam in Egypt.

For the next 20 years as war and revolution raged around the Lower Mekong Basin, the prospect of exploiting the river by building hydropower dams vanished. Over this period my own contact with the river increasingly was restricted to observing it while flying over it, and a brief on-the-ground sighting in the course of a visit to Cambodia in 1981.

In the 1980s there was still little expectation that it would be possible to develop a coherent plan for the exploitation of the Mekong in Laos and Cambodia. But to the general surprise of those whose interest focused on the lower Mekong, myself included, it became clear in the 1980s that China, with virtually no publicity about its activity, had begun a large-scale dam-building program in Yunnan province, where the river is known as the Lancang Jiang. Construction of the first Chinese dam began at Manwan in 1984. This was the start of the remarkably rapid dam-building program that has already led to completion of a cascade of seven dams on the section of the river flowing through China. And there are more to come with an additional four dams under construction and an uncertain further number planned. It would take some time before the

downstream consequences of these dams began to become apparent; and there are still issues linked to the Chinese dams that are unresolved, not least their long-term effects on downstream countries.

What was immediately very clear was the speed with which Chinese was building its dams. In one stark example, I visited the site of the planned dam at Jinghong in the far south of Yunnan province in 2004 when work had only just begun on its construction. Yet the Jinghong dam was completed four years later. The speed of this dam's construction was impressive but it was dwarfed in size and speed by the dam built at Xiaowan where construction commenced in 2002 and was completed in 2010. Xiaowan is a huge dam with an arched wall rising 292 meters, making it the second-highest dam of its type in the world.

As China embarked on its massive dam-building program and as a semblance of peace returned to Vietnam, Laos and Cambodia, plans once again emerged for the establishment of a body that would be responsible for development of the Mekong as it flowed through Laos, Thailand, Cambodia and Vietnam. On April 5, 1995, these four countries signed the text of an Agreement for the Sustainable Development of the Mekong River Basin and at the same time established the Mekong River Commission (MRC) as the body responsible for the agreement's implementation. This important event took place at the time just as I embarked on a book that might be described as a "biography" of the river. (It was initially published in 2000 with an updated edition released in 2006.)

The passage of only a little time made clear that the signature of the Mekong Agreement and the establishment of the MRC were not in themselves the answer to the major challenges associated with the Mekong's future development, as many observers had hoped. For a start, neither China nor Burma (now Myanmar) were signatories to the 1995 agreement. In the case of Burma this was not of great importance, since topography means that relatively little water flows into the Mekong from that country. But the fact that China was not a member was, and indeed remains, a limitation on the activities of the MRC despite China's belated agreement to share hydrographic data, and the more recent establishment of the Lancang-Mekong Cooperation forum.

But more important than the absence of China's membership of the MRC was the fundamental flaw in the nature of the 1995 agreement -- a flaw, that is, for those trying to prevent dams being built on the lower reaches of the Mekong. Contrary to the expectation of many observers, the MRC did not have authority to decide whether or not individual countries could, or could not, build dams on the Mekong's course. Through privileged information I am aware that consideration was in fact initially given to providing the MRC with such mandatory powers so that it could determine whether or not a dam could be built on the river. But in the final analysis, all parties to the agreement decided against granting these mandatory powers. Regrettably, the fact that the MRC lacked this authority was not understood by the body's many critics. This has meant that over the past two decades, the MRC has been the butt of ill-informed criticism, particularly from academic and non-government organization commentators who neglected to study details of the text of the agreement.

It is against this background that the Lao government has seized the opportunity provided by the actual terms agreement to build two dams on the river at Xayaburi and Don Sahong and to contemplate building at least another one -- and possibly two more -- dams within its territory. Whether desirable from an environmental point of view or not, and I readily acknowledge that I am among those who hold grave concerns about the impact of the Don Sahong dam on fish stocks, the Vientiane government is not ultimately acting outside the terms of the 1995 agreement. As the Lao Deputy Minister for Energy and Mines, Viraphonh Viravong has accurately and rather tartly stated, the 1995 Mekong Agreement is "not a mechanism for approving or rejecting any particular project. The MRC is not a building permits office."

There is much that could be added to this reflection on the Mekong's development since my first sighting in 1959. As the result of scientific research, much of it undertaken by the MRC, we now possess detailed knowledge of the patterns of fish migration within the river. This provides a basis for concern about the impact of dams. And we are aware that the dams China has built are already altering the flow of sediment down the river with deleterious effects throughout the Lower Mekong Basin, most particularly in the Mekong delta. I could continue this list of knowledge gained and concerns raised for many paragraphs. But what is

so striking is that fundamental changes have come to the Mekong within such a short span of time, basically within 40 years.

When I concluded the manuscript of my book about the Mekong I wrote of how I treasured my own special memories of the river but noted how they accorded with those of others whose life had been linked to the river. And I ended by quoting the French explorer Francis Garnier who had been second-in-command of the Mekong Expedition in the 1860s. He was a man of his time with all of the prejudices that we now find unacceptable in colonialism. This noted, his short summary of the Mekong rings as true today as it did when he published his own great account of the expedition in 1873. The Mekong, he wrote, “is a singular and remarkable river”.

BENEFITS OF INTEGRATED WATER GOVERNANCE: OBSERVATIONS FROM CAMBODIA

Watt Botkosal
Deputy Secretary General, Cambodia National Mekong Committee

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Introduction

Not that many years ago, food security was a national development priority of Cambodia. Today, however, Cambodia is in a healthy state of development, with economic growth sustained at around seven percent per year. '*The Kingdom of Wonder'* has become a vibrant country with a steadily evolving development agenda.

Since ancient times, water has been (and remains) a key determinant of the national economic and social welfare. The West Baray (near Angkor) was built some 800 years ago and is still in use. Apart from irrigated cultivation, water provides the basis for abundant inland fisheries, not to speak of hydropower generation.

The typhoon season coincides with the period of heaviest rainfall in the area (August September), when seasonal floods are generated by the Mekong on its adjacent floodplains. While Cambodia receives plenty of rainfall on the average, the time and space distribution is highly uneven, and weather irregularities are becoming steadily more frequent due to global climate change. At the same time, new technology provides opportunities for improved water (and energy) efficiencies. Good governance is warranted.

This paper presents some related observations, along with thoughts to share about integrated water governance modalities and practices.

The National Water Governance Framework

Cambodia joined the Mekong River Commission (MRC) when it was founded in 1995 by Cambodia, Lao PDR, Thailand and Viet Nam through the 1995 Mekong Agreement. In the same year, Cambodia ratified the United Nations Framework Convention on Climate Change (UNFCCC) and acceded to the Kyoto Protocol on July 2, 2002.

The National Water Resource Policy (2004) aims to protect, manage and use water resources in an effective, equitable and sustainable manner. It sets out high-level policy directions for a range of key water resource aspects including: development and management of freshwater resources; equitable water sharing and allocation; mitigation of water-related hazards; maintenance, protection and sustainability of aquatic systems; and improved data collection, forecasting and warning systems.

The Water Management Law was promulgated in 2007 with the general purpose to foster effective and sustainable management of the water resources of Cambodia to attain socio-economic development and the welfare of the people. The Law contains the regulatory framework of water policy and its administration. Integrated water resource management (IWRM) is the main tool for implementing the Water Management Law. There are four sub-decrees to support the law: (i) on farmer's water user communities (enacted on 30 June 2008); (ii) on river basing management (enacted on 10 July 2015) (including groundwater, at the river basin scale); (iii) on water allocation and licensing (draft); and (iv)on water quality (draft).

The Ministry of Water Resources Management (MOWRAM), which was established in 1999, has a mandate to manage, lead, and supervise the implementation of this law; to prepare strategic planning, research, and monitoring duties to ensure sustainable management of the nation's water resources; and to ensure hydrological and meteorological services. Moreover, its main focus has been on irrigation development as a means of supporting the Royal Government of Cambodia's (RGC) main priorities of food security and poverty alleviation.

Two authorities report to the MOWRAM minister, the Cambodia National Mekong Committee (CNMC) and the Tonle Sap Authority (TSA). The CNMC is a government body with members from seventeen line ministries and committees and is chaired by the MOWRAM minister, assisted by the General Secretariat; it plays a crucial role in coordinating activities for the effective implementation of the 1995 Mekong Agreement, and the preparation and implementation of other related MRC projects and programmes in the Lower Mekong River Basin (LMB), which covers 86 percent of Cambodia's land area). CNMC works with line ministries, international development partners and international bodies to facilitate and compile information for the overall management of Mekong water resources. Specific tasks include facilitating the collection of water and other related resources data, conducting water resources research, and the evaluation of the environmental effectiveness of using water resources.

The TSA's role is to coordinate the management, conservation, and sustainable development of the Tonle Sap region and relevant areas, which includes Tonle lake and the surrounding flooded forests and floodplains, using the economic, environmental, and social attributes of the area to support economic development and increase the standard of living of the local population.

Basin-level governance in Cambodia is presently promoted as a pilot case under the ongoing Mekong Integrated Water Resources Management Project (M-IWRMP), implemented by CNMC, to support river basin planning activities and improving water and other related resources data collection, analysis, and exchange to contribute to the implementation of the IWRM in the LMB for sustainable economic, social and environmental development.

Integrated development planning

In recent years, national governance has seen a clear orientation towards decentralization, allocating more authority (and more funds) to the sub-national (province, district and commune) levels of administration.

Cambodia has completed several integrated water development plans for specific drainage basins. These have been *'responsive'* (problem-oriented) (for example flood risk reduction and climate change adaptation) or *'pro-active'* (opportunity-oriented), or, in many cases, a combination of the two.

Beginning in 1999, the Mekong River Commission has conducted comprehensive, multi-sector basin development planning, working with the national Mekong committees.

The 4P Area, which is part of M-IWRMP study area, in northeast Cambodia (named after the four Mekong tributaries, or Preks) and its immediate surroundings features several protected areas and significant water-related assets include the community of freshwater dolphins, living in the Mekong upstream of Kratie. All the sub-basins are prone to flash floods caused by extreme, direct rainfall.

Another area is the coastal zone that has its own distinct governance agenda, with particular pressures, concerns, and opportunities. The coastline is effected by global sea level rise, interacting with tectonic land subsidence. Large parts are flood-prone. The protective mangrove vegetation is vulnerable, and so are the offshore coral reefs that are affected by global seawater acidification, exacerbated by destructive trawling. On the other hand, there are attractive development opportunities, notably related to tourism and recreation, and an emerging offshore sector. Once again, good governance spans across sectors, and indicates a portfolio of development initiatives that includes soft, non-structural measures and more comprehensive structural interventions.

To deal with water security[1], there is a general need for strengthened extension services in support of sustainable and resilient rural livelihoods. These involve a general scope for headwater area protection / rehabilitation, possibly involving forestry communities. Sewage and solid

[1] Water security perspectives include (i) healthy and prosperous households; (ii) efficient production systems and sustainable livelihoods; (iii) pleasant and functional cities; (iv) a healthy environment (headwater areas, habitats, ecosystems); (v) flood and drought preparedness; and (vi) appropriate land use.

waste generation and disposal can be improved, supported by better use of (existing) EIA requirements. General concerns include post-harvest losses; poor practices for solid waste disposal (including plastic bags); and contamination of edible fish by agricultural residues.

Lessons learned include the following (ADB and CRBOM, March 2014):

- Active stakeholder participation must be maintained throughout the planning process, preferably including the private sector and the academic community (not to speak of affected communities).
- While the planning adds value by being *'integrated'* (inter-sector and inter-agency), it will to a large extent be implemented sector by sector by various national and sub-national bodies, which must be involved *'up front'*.
- The planning can combine a responsive (or *'problem-oriented'*) perspective (like climate change adaptation and disaster preparedness and risk reduction) and a pro-active (or *'opportunity-oriented'* perspective (like sustainable livelihoods and income generation).
- Development of the knowledge base is a planning objective in its own right.
- The plan's portfolio of specific development initiatives (*'projects'* and *'programs'*) must span across long-term and short-term, big and small, and structural and non-structural initiatives, adding value to each other.

NCDDS (February, 2019) observes that climate-related development initiatives can address various levels and perspectives – sometimes separately, but often in various combinations, in pursuit of *'multiple benefits'* where different initiatives add value to each other. Also, a healthy environment (supported by predictable regulation) will support a good investment climate. Experience from economically prosperous countries clearly shows that investors can readily accept strict regulation, provided that it is transparent and predictable.

The Knowledge Base

Good governance requires tools, skills and knowledge. According to MoE (May 2017), well-informed climate change adaptation and disaster risk reduction require accessible knowledge about:

- Demography and livelihoods, including trends;
- Hydro-meteorology, including normal and extreme rainfall (combining satellite data with a limited number of well-located ground stations);
- Zoning, land use, vegetation cover, including trends;
- Outbreaks of water-born or water-related diseases;
- Health of habitats and ecosystems / biodiversity, including coastal and marine areas, and including trends;
- *'Red spots'* and 'green spots' (or *'assets'*);
- Adverse events: Floods, drought, forest fires, landslides, pollution spills, pest attacks, etc., including trends; and
- Climate change exposures and vulnerabilities, including trends and projections.

Such knowledge will facilitate the identification and scoping of development programs and specific development initiatives; assessments of benefits and impacts; and design optimization. The knowledge must be accessible to those who need it, and the knowledge base must be maintained as the conditions are steadily evolving.

Today, in Cambodia, a visible scope remains for expanding the knowledge base (NCDDS February 2019). This may involve regular stocktaking, building on primary data collected for the purpose; networking and dissemination of success stories; and strengthened extension services in support of timely and appropriate responses to adverse events as well as emerging challenges and opportunities.

Networking and Knowledge-Sharing

There is a clear scope for continued and expanded liaison, knowledge-sharing and active collaboration between practitioners and decision-

makers within the government system, the private sector, civil society, and the academic community.

The networking must proceed *'horizontally'* (between sectors and administrative bodies at each level), as well as *'vertically'*, reaching all the way from the national government to the provinces, districts and communes, down to the community and household level. It must include liaison with established coordination bodies such as the National Committee for Disaster Management (NCDM) and its sub-national bodies, and the National Council for Sustainable Development (NCSD).

In Cambodia, there is a special scope for capacity development within the various extension services that are provided by the province and district administrations, in support of cultivation, livestock breeding, reduced post-harvest losses, sustainable forestry, and good practices for waste generation and disposal, use of fertilizers and pesticides, and improved water and energy efficiencies. A substantial expertise and experience exist from place to place, but is not generally accessible across the country. This can be improved by one administration learning from other (and perhaps nearby) administrations.

Similarly, there are evident benefits related to water user communities, cultivation communities and forestry communities sharing their experience and learning from each other.

Keys to Successful Governance

The following keys to successful governance were observed by CamboWP (January 2017):

- Aim at producing some tangible and useful outputs in the short term;
- Support basinwide, real-time data management (flood levels, storage volumes, forest fires, etc);
- Maintain outreach to decision-makers involved in development planning at the national, province, district, and commune levels, including clear and concise policy briefs;

- Make action-oriented and practical suggestions and recommendations that are clearly oriented towards a specific agency or other body;
- Prefer de-central decision-making, where this is reasonable considering the scale of the decision, and subject to practical (capacity and knowledge-based) constraints; and
- A *'fast track'* can be provided for uncontroversial priority initiatives (in order to demonstrate progress and gain momentum, and to assure that the framework does not, against its purpose, delay the implementation of useful developments).

ADB and CRBOM (March 2014) suggest the following success indicators for integrated governance.

- Observe harmony with applicable national and sub-national development policies and preferences.
- Apply a long-term vision, but a reasonable time scale for implementation (perhaps up to a couple of years).
- Promote revenue generation, cost recovery and sponsorships, in pursuit of financial sustainability.
- Promote improved water efficiencies, improved energy efficiencies and reduced waste generation at the household and community levels, and at irrigation schemes and industries.
- Note and exploit the powerful long-term synergies between economic growth, natural resource management, and environmental management and promote sustainable and transparent resource utilization - water, hydropower, forests, minerals, habitats, etc.
- Apply livelihood generation as a progress indicator in its own right (along with national economic growth, safe water and sanitation, poverty alleviation, etc). Pay particular attention to rural livelihoods.
- Prefer small steps to big ones, whenever the choice is open. There is always a risk of unexpected side effects.
- Involve the private sector with its powerful development agenda and potential. Apply gentle regulation to achieve a balance between immediate and long-term goals, and between private and public development priorities.
- Note the strong links between water resource management and land management. Promote zoning of land use, with a view to land

ownership, land use potential, soil quality, access to water, habitat conservation, flood risk, pollution, and infrastructure.
- Consider the potential for development of tourism and recreation.
- Don't rely on perfect knowledge about the future. Base decisions on the *'best available knowledge at the time when the decision must be made'* - possibly involving the concept of *'Total Economic Value'* across economic, social and environmental benefits.

Conclusion

Successful integrated water-related governance requires:

- Good visioning leadership – an overruling success criterion;
- Access to IWRM-based decision-support services (by in-house capacity and / or provided by external service providers);
- Good relations with IWRM-based institutional and other stakeholders, development partners, and the private sector, building on visibility, confidence and appreciation; and
- An adequate IWRM-based knowledge base and modelling systems.

A substantial integrated water governance capacity has been developed in Cambodia, but remains fragmented and not always readily accessible. One district may offer excellent extension services (perhaps regarding new cultivation technology, reduced post-harvest losses, pest control, outbreaks of livestock diseases, or appropriate use of fertilizers and pesticides), while another district, perhaps nearby, is unable to offer similar services. There is a clear scope for *'capacity-mining'* – making skills and knowledge visible and more accessible. This can be supported by networking and knowledge-data-information sharing, between and among professional practitioners at the various administrative levels, the private sector, and the academic community.

The benefits of integrated water governance are substantial: timely identification of interfaces, gaps and overlaps between related development needs and opportunities within different water and other related sectors; and a comprehensive basis for guidance on resource-based development planning and implementation of specific initiatives.

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SUSTAINABLE DEVELOPMENT IN THE MEKONG BASIN: THE ROLE OF THE MEKONG RIVER COMMISSION'S WATER DIPLOMACY

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The observation by British statesman Lord Palmerston that "*nations have no permanent friends or allies - they only have permanent interests*" is a somewhat cynical reflection on diplomacy. Yet, it remains relevant, perhaps even more so in the current global context and particularly among Mekong region countries. Acting in the interests of your citizens and the whole nation is the foundation of good governance. In developing nations, eradication of poverty and inequality and the pursuit of economic growth as well as social and environmental justice are key components of the national public interest and are recognized in the United Nations-mandated Sustainable Development Goals, adopted in 2015 (United Nations, 2015).

The "triple bottom line" approach to sustainable development is also reflected in the Brundtland Report (1987) *which notes that* there are three components to sustainable development: environmental protection, economic growth and social equity. Balancing these components in developing nations can be particularly challenging, where the demands for rapid development are becoming increasingly strident. Not meeting the current generation's needs can foment social unrest, curb development, and drive migration into neighboring states and further afield. In an increasingly connected world, the expectations of the poor may be driven by the standards of the rich. Migrants are taking enormous risks and suffering considerable hardships to find a better life in wealthy nations. In their 2015 Country Index Technical Report, Chen *et al* show that economic readiness is a key determinant for overall climate vulnerability (Chen, et al., 2015). What increasingly appears to be uncontrollable climate change may spur growing demands for rapid

development. All this may in turn shift focus among policymakers to more sovereign rather than regional policies for development.

Of particular relevance to countries of the Greater Mekong region, SDG10 also calls for addressing income inequalities between nations, while SDG6 calls for cooperation on transboundary waters. Achieving the SDGs in shared watercourses is therefore particularly challenging. There has consequently been an increasing focus on opportunities for benefit-sharing in transboundary basins (Sadoff & Grey, 2002; 2005). However, this can also be challenging in developing basins. The time required to successfully negotiate benefit-sharing arrangements may be too protracted and uncertain to meet immediate growth needs. While the benefits that derive from regional growth, increased trade, reduced migration and more stable neighbors, ["benefits beyond the river," in Sadoff and Grey parlance (2002; 2005)], are too nebulous for national development planning. It is in this milieu that we argue that the 1995 Mekong Agreement provides a framework which, together with the regional approach to water diplomacy, puts the Mekong River Commission (MRC) in a unique position to promote equitable and sustainable development for all its member states.

The 1995 Mekong Agreement

Cambodia, Lao PDR, Thailand and Vietnam share a long history of cooperation in the Mekong River Basin, dating back to the 1950s with the establishment of the *Committee for Coordination of the Investigation of the Lower Mekong Basin* in 1957 (Secretariat of the Interim Committee for Investigations of the Lower Mekong Basin, 1989; Kittikhoun & Staubli, 2018). In January 1975, the four member states of the Commission agreed the *Joint Declaration of Principles for Utilisation of the Waters of the Lower Mekong Basin.* This reflected greater emphasis on a "Duty of Result" underpinned by a more regional view of sustainable development.

In 1991, the four countries started negotiating the future direction for cooperation around development of the Mekong River Basin, and a new agreement, the *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin*, was drafted. This document, signed by plenipotentiaries of the member states in April 1995 (henceforth

the 1995 Mekong Agreement), shifted the approach to sustainable development of the basin's water resources towards a more nationally -focused approach underpinned by commitments to cooperation. The 1995 Mekong Agreement, while adopting some of the provisions of the 1975 Joint Declaration, pivots towards a more contemporary perspective based on rapid national development, with commitments to reasonable and equitable use and the avoidance of substantial damage.

It was possible to finalize the 1995 Mekong Agreement in a relatively short time (from 1993 to 1995) as the details of the substantive commitments for notification and discussion of planned water uses, and for maintaining flows in the mainstream, were deferred to later negotiations. These substantive commitments were to be included the "*Rules for Water Utilization and Inter-Basin Diversion*", which the MRC's Joint Committee would develop for approval by the MRC Council. These "*Rules*" are now the MRC's Five Procedures. The objectives and principles of cooperation outlined in Chapter III of the Agreement form the foundation for the Five MRC Procedures and the specific commitments for notification; prior consultation and agreement; maintenance of minimum monthly flows on the mainstream; protection of the ecological balance and water quality; and the sharing of data on the basin and water use. These Procedures also form the foundation of Mekong Water Diplomacy.

The separation of inter-state discussions into notification, prior consultation and agreement processes in Article 5 reflect the separation of proposed water uses based on geographical (mainstream or tributaries), and temporal (wet or dry seasons), and type of use (intra-, or inter-basin). On all tributaries, including the Tonle Sap in Cambodia, water uses that may have a significant impact on the flow regime of the mainstream are subject to notification without need for discussion. On the mainstream, dry season uses are subject to prior consultation, as are wet season inter-basin diversions. A specific agreement is only required when inter-basin diversions are planned in the dry season. These requirements therefore reflect the potential for increasing impacts on water availability in the Lower Mekong Basin, or to reverse flows into the Tonle Sap Great Lake. The greater these risks, the greater the need for engagements through the Commission. Furthermore, prior consultation is defined as

"neither a right to veto the use nor unilateral right to use water by any riparian without taking into account other riparians' rights". The emphasis in the 1995 Agreement consequently shifted more towards sovereign actions and commitments framed by a "Duty of Conduct" to cooperate and discuss where there may be impacts on the availability of water for the other member states.

This signifies an important shift away from the inter-state engagements envisaged in the 1975 Joint Declaration. The Joint Declaration separates major and minor tributaries, which would be agreed by all member states based on their impact "on the regimen of the mainstream." Developments on major tributaries would be treated in the same way as those on the mainstream. In addition, the Joint Declaration does not separate wet and dry seasons, and requires all water uses on the mainstream and major tributaries to be subject to a "*Project Agreement.*" This was envisaged as an agreement among all the basin states outlining their rights and obligations, as well as the sharing of costs and benefits from any proposed use. The Joint Declaration recognizes inter-basin diversions but does not treat these differently. The 1995 Mekong Agreement therefore reflects a shift away from requiring agreement on large projects, towards one that places greater emphasis on water diplomacy and compromises by all the parties. In his commentaries on negotiation of the Agreement, G.E. Radosevich (1996) notes that the member states deliberately did not want to involve the MRC in all national development decisions.

The 5 MRC Procedures

In Article 5 of the 1995 Mekong Agreement, the member states agree to the reasonable and equitable use of the waters of the Mekong River system pursuant to all relevant factors and circumstances, the "*Rules for Water Utilization and Inter-Basin Diversion*" and the notification, prior consultation and agreement processes. The content for these "*Rules*" is outlined in Article 26. Work on developing these began in 2000 with the establishment of the Water Utilization Program (WUP). However, it was soon agreed that "Rules" was too prescriptive and ultimately, the Five MRC Procedures were developed:

- Procedures for Data and Information Exchange and Sharing (PDIES);
- Procedures for Water Use Monitoring (PWUM);
- Procedures for Notification, Prior Consultation and Agreement (PNPCA);
- Procedures for the Maintenance of Flows on the Mainstream (PMFM); and
- Procedures for Water Quality (PWQ).

These Procedures are supported by Technical Guidelines which were approved by the Joint Committee. The development of the PDIES, PWUM and PNPCA (or the "Procedural Rules") was quite rapid, and by 2003 these Procedures had been signed off by Council, and by 2006 their Technical Guidelines had been finalized. The "Physical Rules", the PMFM and PWQ, took more time to finalize, and the Technical Guidelines for these were only agreed on a working basis in 2017, 23 years after the signing of the Agreement. These Procedures are currently being implemented primarily as monitoring tools and are considered as still in development.

Despite the long process of development, the member states must still agree on key requirements of the 1995 Mekong Agreement, that is, the timeframes for the wet and dry seasons, criteria for determining surplus water, actions that may be needed to maintain flows above the specified thresholds, actions that may be required to maintain water quality, and mechanisms for monitoring and reporting water use.

As such, while the Procedures and Technical Guidelines are now all being implemented in some form, they do not aim to achieve a Duty of Result, but rather a Duty of Conduct. Nonetheless, the MRC is working on mechanisms to link these in an Integrated Water Resources Management (IWRM) context and on a reporting framework which will directly support discussions in the Joint Committee. This will in turn place the MRC in a better position to influence water resources developments in the basin, by calling on the member states to implement certain measures or take certain actions. This has already happened with the last two prior consultation processes.

THE CURRENT CHALLENGES

Farnosi F., *et al* (2018) note that research suggests that degrees of conflict and cooperation coexist in most water-related events. This has certainly been the case in the MRC. While the member states "agreed to disagree" in the prior-consultation cases of the Xayaburi and Don Sahong dams in Lao PDR and have not clearly endorsed the country's Pak Beng and Pak Lay dam projects as a "reasonable and equitable" use of the Mekong River System, it would be unfair to suggest that the MRC has not made significant progress over the last 24 years (Kittikhoun & Staubli, 2018). However, several key challenges to the implementation of the 1995 Agreement and Procedures remain. Perhaps the most critical of these has resulted from growing awareness of the impact that development of the basin will have on the region's ecology, fisheries and sediment transport processes. The 1995 Mekong Agreement retains a focus on water quantity and quality, and mutually beneficial projects. However, while concerns over water diversions and mainstream flows remain, these are to some extent being offset by the higher dry season flows due to the operations of hydropower projects in China. Now much greater attention is being paid to the disruption of fish migration and the associated loss of fisheries potential, the trapping of sediment behind mainstream and tributary hydropower dams, and the disruption of natural flow regimes and consequent impacts on the ecological functioning of the river.

Unfortunately, while the PMFM provides some shield against reduced mainstream flows, there are no equivalent procedures to maintain transboundary fisheries and sediment transport. As a result, tributary developments that may have significant transboundary impacts escape the rigor applied to mainstream projects. Moreover, despite efforts to reduce the potential for adverse impacts emerging from the prior consultation processes, it is likely that some transboundary harm will still occur. Neither the Council Study (Mekong River Commission, 2017) nor the prior consultation processes ventured opinions as to whether these residual impacts would rise to the level of substantial damage as contemplated in Articles 7 and 8, or whether any proposed use would be "reasonable and equitable."

Nonetheless, in both the Pak Lay and Pak Beng cases, stakeholders in the notified states requested compensation due to potential loss of fisheries production. In the absence of any clear compensation mechanism, the notified states would be hesitant to suggest that any proposed use would be "reasonable and equitable." Similarly, project developers would be hesitant to propose cross-border compensation mechanisms for fear they may be made liable for impacts that are not of their making. Indeed, many of the adverse impacts on shared watercourses, such as those from flow-regime changes due to hydropower projects in China, pollution, intensive fishing pressure and sand mining are not subject to prior consultation or even notification.

The 1995 Mekong Agreement and the Five Procedures are therefore not necessarily the ideal tools to guide the "reasonable and equitable" use of the Mekong River System, while measures for fair, cross-border compensation still need to be investigated. However, despite these challenges the political will to maintain and increase efforts to cooperate for the sustainable development of the basin remains. Leaders of the member states have consequently re-confirmed their commitment to the 1995 Mekong Agreement and the "Mekong Spirit" in their previous three summits, held in Hua Hin, Thailand, in 2010; Ho Chi Minh City in Vietnam in 2014; and Siem Reap in Cambodia in 2018.

CONCLUSIONS

Since the conclusion of the 1975 Joint Declaration, and in the years since the signing of the 1995 Mekong Agreement, the MRC member states have changed their approaches to cooperation from a "Duty of Result" to a "Duty of Conduct." The specific outcomes implicit in the need to agree all large projects, as well as the shift from "Rules" to "Procedures" reflect the Commission's role as an enabler rather than a regulator of regional approaches to sustainable development. The implementation of the Procedures now provides the basis for discussion in the Joint Committee, which in turn may be reflected in requests to the member states to make every effort to implement certain measures or take certain actions. This also reflects a greater need for water diplomacy within the MRC.

Many would argue that this has weakened the Commission and made it largely irrelevant (Dore & Lazarus, 2009). The non-government organization Save the Mekong even took the rather drastic step of boycotting the last prior consultation process. However, this perception is more a result of a limited understanding of the practicalities of implementing the 1995 Mekong Agreement, the functions conferred on the Commission by the member states, and the provisions of the Agreement itself. Perhaps more importantly the current approaches to implementing the Agreement are much better aligned with the realpolitik of the member states, and indeed progress towards achieving the SDGs across the region.

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TOO MANY COOKS?
BIODIVERSITY AND INSTITUTIONAL DIVERSITY IN THE GREATER MEKONG SUBREGION

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Over the last decade there has been an unprecedented increase in dam construction along the Mekong River. The feverish building pace is perhaps only matched by the rapid establishment of subregional institutions seeking to participate in governance of the river, most recently Beijing's Lancang-Mekong Cooperation mechanism (LMC). While expansive national commitments and public pronouncements declaring support for regional integration, mutual cooperation, and protection of the river's biodiversity are certainly laudable, from a governance perspective the region today confronts deep challenges of: institutional fragmentation; the absence of inter-institutional coordination mechanisms; widely divergent national interests as regards the future of the river; and the absence of clear lines of accountability. These realities threaten to undermine the achievement of the goals professed by state actors both inside and outside of the region.

The Mekong is well known as one of the most biodiverse areas of the world and provides food security for around 60 million people. However, the construction of mainstream and tributary dams continues to present a distinct threat to the subregion's biodiversity and food security. A recent Mekong River Commission (MRC) study examining the effects of dam construction highlighted two major impacts along the Mekong: (i) the

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creation of barriers blocking water flows causing changes to fish migration patterns and sediment distribution and (ii) changes to the flow of the river affecting water levels and agricultural sustainability (Hortle & So, 2017). These problems are exacerbated by concomitant processes of climate change, deforestation, and overfishing – necessitating a more comprehensive approach to management of the river. This paper explores these and other environmental and sustainability issues before briefly examining the institutional complexities that threaten to undermine the resolution of these challenges. At present, the development of new institutions and initiatives appears to correlate inversely with genuine mitigation of the negative impacts of dam construction, necessitating a more serious focus on coordination and inter-institutional cooperation by policymakers.

Biodiversity and Food Security in the Mekong: Growing Challenges

Literature examining threats to biodiversity and food security stemming from dam construction and other causal variables has burgeoned in recent years and is too vast to explore fully in the confines of a single article. However, several broad trends are worth highlighting in order to make clear the magnitude of the challenges at hand.

A relatively early study (2012) estimated the tradeoffs between biodiversity, food security, and hydropower in the Mekong river basin for tributary dams. In 2012, 27 tributary dams had been slated for construction between 2015 and 2030. Owing to the fact that they fell within national boundaries, these dams "necessitated only a 'notification' to the MRC Joint Committee; this is despite their potentially significant transboundary impacts…." Unlike "main-stem" dams, these essentially fall outside of the multilateral framework of the MRC and therefore do not require extensive review or international agreement (Ziv, Baran, Nam, & Levin, 2012). These 27 tributary dams would also "produce less energy and pose greater environmental risk than the construction of only the upper six main-stem dams." (Ziv, Baran, Nam, & Levin, 2012) The authors noted that the planned locations for these dams fell within the borders of Laos (which has described itself as the "battery of Asia"); however, they would "have graver impacts on fish biodiversity basin-wide and on the Cambodian and Vietnamese floodplain's fish

productivity than the combined impact of the six upper main-stem dams on the lower Mekong River" (- 19.1% migratory fish biomass by 2030) (Ziv, Baran, Nam, & Levin, 2012). In a scenario assuming the construction of an additional six main-stem dams, the loss rose to - 23.6% of migratory fish biomass by 2030. Escalating numbers of main-stem dams only increased the fallout, with the high-end scenario of 78 tributary dams and 11 main-stem dams resulting in -51.3% migratory fish biomass by 2030. Other studies have highlighted the "localized drivers" of risks to biodiversity and environmental stability in the Mekong region: overfishing, deforestation, and infrastructure development that will likely serve to exacerbate the negative impacts of dam construction and climate change.

More recently, Pokhrel et al (2018) have helpfully highlighted the triple effects of climate change, land use, and hydropower development on the Mekong subregion. Although, as noted above, climate change will have a significant impact, evidence suggests that dam construction has so far had larger effects in the subregion over a shorter period of time. On the question of food security, they conclude that if current trends continue, an increase of 19 - 63% in agricultural land use will be necessary in order to ensure that food security remains stable. Buttressing this conclusion are the earlier finding of Kondolf et al (2017), estimating that if all dams and reservoirs either currently underway or planned were completed, sediment trapping by the dams and reservoirs would rise to an astounding 96%. With only 4% of sediment reaching the Mekong delta, the result would be a situation of "hungry water" whereby sediment enrichment is sought from surrounding embankments leading to erosion and potential danger to infrastructure such as bridges. This can also lead to a reduction in natural soil fertility renewal which will have lasting effects on populations living near the Mekong that rely on its rich soil for agricultural production.

In addition to sediment trapping, there are concerns about the effects of dam construction, in the form of altering river flows, on fish stocks. Absent the construction of proper fish ladders, dams create significant barriers for fish migration, disrupting breeding patterns. Particular concern has been expressed for residents living along the banks of the Tonle Sap in Cambodia. It is estimated that "up to 80% of all animal

protein consumption in Cambodia comes from fish and other aquatic animals," meaning that a reduction in this supply would create a significant threat to food security especially among populations that rely solely or primarily on Tonle Sap (Keskinen, Someth, Salmivaara, & Kummu, 2015).

The blocking of sediment by dams poses a particular problem for the Mekong delta. While many impacts of dam construction are projected or estimated, the current impact of sediment blockage can be measured. Li et al (2017) found that 66% of the Mekong river delta shoreline is eroding as river sediment decreases. Dams have already reduced the Mekong's sediment discharge by approximately 50 million tons / year since the pre-dam era. The study concludes that sediment capture of currently existing and projected dams "will eventually be transmitted to the delta and lead to the retreat of the delta's shoreline," with devastating effects for the "Asian mega delta with a 700km long shoreline that supports unique biodiversity." (Li, Liu, Saito, & Nguyen, 2017)

The impetus for hydropower development, in addition to finally providing electricity to the region's underserved populations, is the economic benefit from increased productivity. A 2018 study conducted a tradeoff analysis between the benefits of the MRC's Basin Development Plan 2 (BDP2) and its likely effects (Intralawan, Wood, Frankel, Costanza, & Kubiszewski, 2018). It is particularly valuable owing to the authors' attempt to correct and update the numbers from the MRC's BDP2 projections in 2016 dollars to see if the projected costs and benefits assumed at the outset of the dam building boom hold.

The paper assumed the construction of "11 mainstream dams plus 30 dams planned in the tributaries scenario," updating the cost and price estimates of various inputs (Intralawan, Wood, Frankel, Costanza, & Kubiszewski, 2018). The study used best-case data when assessing three factors: hydropower generation benefits, fisheries loss, and sediment / nutrients loss. Under this scenario, there were "severe impacts including lost biodiversity, environmental hotspots, and risk of extinction of Giant Catfish and Irrawaddy Dolphin." (Intralawan, Wood, Frankel, Costanza, & Kubiszewski, 2018) The study found significantly lower benefits to the damming project than the MRC's original BDP2

projections, and much higher costs. While the original BDP2 numbers estimated a net benefit of USD 33.400 billion, the 2018 study estimates a net cost of USD 7.329 billion. The reason for this difference lies in the BDP2 overestimating the value of hydropower generation, grossly underestimating the cost to fisheries, and not considering the social (e.g., relocating communities displaced by floods, etc.) and sediment costs. The authors also note that the opportunity costs are unclear with regard to climate change resiliency, the development of alternative energy sources, and other factors. If these estimates are accurate, then the economic premise of the project in the context of the sustainable development of the Greater Mekong subregion is questionable, at best.

Ensuring Sustainability: Institutional Cooperation and Coordination

The MRC has been the primary governing institution in the Mekong region since its establishment in 1995. Opinions as to its efficacy are divided, with some suggesting that the existing framework has been deeply undercut owing to wide disregard of its call for the cessation of dam building cessation. At the same time, the MRC has had undoubted successes in monitoring and flood forecasts, but criticisms as to the absence of concrete policy and enforcement mechanisms are a constant refrain from scholars researching the future of the Mekong River and its tributaries. Kittikhoun and Staubli are more favorable, arguing the the MRC's task has been Herculean from the start:

> "Not enough credit is given to the regional institutional frameworks in the Mekong Basin in the management of tensions and disputes on transboundary water resources. In this regard, while there are other actors, only one organization has the legal mandate from the Lower Mekong Basin countries to coordinate, jointly plan and balance socially and environmentally just development of the catchment including its protection and the conservation of resources." (Kittikhoun & Staubili, 2018)

Kittikhoun and Staubli (2018) argue that the MRC is an important hub of technical knowledge and a platform for parties with disparate interests to cooperate and to negotiate. They point to the historical tensions between various nations of the region, and highlight a series of cases of what they

consider to be successful mediation and cooperation between conflicting member states under the auspices of MRC. Even the controversial Xayaburi dam in Laos, they suggest, is a partial success - pointing out that public debate did take place, and that MRC recommendations "contributed to the improvement of the dam." (Kittikhoun & Staubili, 2018) They conclude that the MRC performs well in technical areas such as "assessment and guidelines," and that "one can fairly say that it is one of the most successful cases of transboundary cooperation over a major river in the world in a region that is known as a hotbed of conflicts and rivalries from within and without."

The multilateral institution framework is further complicated in light of the fact that individual countries have differing national interests in respect to the Mekong's resources. While "Thailand primarily focuses on agricultural irrigation… [,] Laos chiefly focuses on hydropower development…[and] Cambodia particularly emphasizes fishing resource development." (Chen & Zhu, 2016) Downstream countries such as Thailand and Cambodia are justifiably wary of upstream projects but are too often dissuaded from outright opposition through the provision of various incentives.

At present, a total of 12 different multilateral institutions claim a role in the governance of the Mekong, ultimately precluding any of these from real accountability to stakeholders for future development of the river. This fragmentation and the absence of inter-institutional mechanisms of coordination, exacerbated by mutual distrust, depicts an institutional mix that is ultimately not fit for purpose as regards ensuring long term environmental sustainability and sustainable, subregional development consistent with the United Nations Sustainable Development Goals (SDGs). The gravity of the situation is underscored by the essential consensus in the literature as to the diverse threats posed to the river and the interaction of those threats.

The urgent need for institutional reform – specifically the strengthening of the MRC as the primary focal point for coordination and enforcement - is made even more urgent by the top priority that Beijing has attached to the development of the river as part of its Belt and Road Initiative (BRI) and the massive role it sees for the river in facilitating the development of

China's southwestern provinces. The LMC has developed quite rapidly, and will enter its "consolidation phase" next year. This new actor joins an already dysfunctional set of institutions and has yet to clarify precisely how it will "complement" and coordinate with the MRC and other subregional institutions, while also raising questions as to how Beijing's asymmetric bargaining power with other subregional states will impact the existing set of institutions. At present the institutions governing the Mekong appear to be caught in something of a low-level equilibrium trap, unable either to properly incentivize or sanction, and thus unable to provide the necessary subregional governance of the Mekong. Whether the vast ambitions of BRI and LMC and the impacts thereof on downstream states are a sufficient shock to facilitate a fresh critical juncture for institutional renegotiation remains to be seen.

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METAMORPHOSIS OF BIG POWER RIVALRY IN THE MEKONG REGION

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Intensifying rivalry among big powers for influence in the nascent Mekong region has generated new interest from donor countries and organizations since 2017 after decades of relative neglect. A key driver has been the rise of the U.S.-led "Free and Open Indo-Pacific" strategy which has encouraged the revitalization of mechanisms such as Washington's Lower Mekong Initiative (Lower Mekong Initiative, 2019) and the Thai-led ACMECS (Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy) (Ministry of Foreign Affairs of the Kingdom of Thailand, "Declaration of 8th ACMECS Summit,", 2018), as well as Tokyo's expansion of its Mekong-Japan Cooperation program (Ministry of Foreign Affairs of Japan, 2018).

These moves have brought fresh momentum to regional development efforts alongside more than 10 other major Mekong-focused cooperation frameworks and a host of bilateral initiatives (Ho & Pitakdumrongkit, 2019). They have also shifted the focus of Washington's FOIP strategy – initially seen as a China containment initiative focused on security aspects – to a multi-layered initiative targeting economic development throughout the region, particularly through infrastructure, social programs, capacity building. And partnerships with like-minded countries.

They also highlight growing emphasis on geo-strategic considerations. Similar to the FOIP strategy, aimed broadly at containing Beijing's expansionary ambitions, these recent initiatives highlight concerns about China's steady push into its so-called "backyard" region through its Lancang-Mekong Cooperation framework (Lancang-Mekong Cooperation, A Brief Introduction of Lancang-Mekong Cooperation, 2017). The LMC, a sweeping program to boost economic and social development in the Greater Mekong Sub-region (defined by China as the

five Mekong countries -- Cambodia, Laos, Myanmar, Thailand and Vietnam -- plus Yunnan and Guangxi, in China's southwest), was formally launched in 2016 and has so far announced at least USD 18 billion worth of projects, concessional loans, credit lines, grants and other schemes for the region (Open Development Mekong, 2019). China's total investment in the Mekong region topped USD 42 billion in cumulative terms in CY 2017 and rose by more than 20% from the previous year, Premier Li Keqiang told the LMC leaders' summit in 2018 (Lancang-Mekong Cooperation, 2018). There is no exact figure for China's total investment in infrastructure development projects since the LMC was launched in 2016, but calculations based on announced initiatives suggest the figure surpasses USD 23 billion if energy-related projects and commercial activities of state-owned enterprises are taken into account. In total, by late 2017, Chinese enterprises (state-owned and private) had signed contracts for infrastructure development projects in the five Mekong countries worth USD 138 billion, increasing 9.2 per cent from the previous year, according estimates by the Chinese commerce ministry (Ganjanakhundee, 2017).

While China's LMC is often seen as a regionalized dimension of Beijing's global Belt & Road Initiative, as one of the region's early investors, China sees it as both inherent to – but distinct from -- its broader BRI strategy. Well before any notion of a sweeping global infrastructure initiative, Chinese state-owned enterprises and commercial enterprises were investing in manufacturing, mining and agriculture in northern Laos from the late 1980s. China's first major foray into regional infrastructure in 2005 came through its USD 30 million contribution to the Boten-Houayxai Route 3 highway in 2005 (Santasombat, 2018).

Since then, China's state-led expansion into hydropower, infrastructure, electricity trading, real estate and other sectors has grown under the LMC, fueling the region's "dam politics" and highlighting the importance of control over one of the world's biggest rivers. Ironically, perhaps, it was the growing tide of Chinese investment that helped to galvanize the West's recognition of the region as a strategic gateway to "mainland Southeast Asia." (Wong, 2018)

While the achievements and potential of the LMC owe much to factors including China's rising economic power and steady increase in regional aid, the bottom line is a "geopolitical fait accompli" rooted in the Mekong River, which originates in Tibet as the Lancang River and flows through Yunnan into the five Lower Mekong countries. The fait accompli refers to China's seven dams on (the Chinese side of the Lancang River, a factor directly influencing the downstream countries, notes Shang-su Wu of RSIS (Wu, 2018). Although extra regional countries, with their considerable national capacity, are able to provide funding and other forms of aid for development in the region, they cannot supply any effective alternative to the river water held by the Chinese dams (Wu, 2018).

For the Lower Mekong countries, intensifying rivalry between major powers for regional influence has had unexpected benefits, lifting them from a position of weakness, squeezed between the interests of China's BRI and the U.S. -led FOIP strategy. From this perspective, the Mekong region remains vulnerable to rapacious investment, environmental damage and development decisions driven by self-interest among their own authoritarian governments.

However, the recent proliferation of new programs and funding initiatives is steadily providing more options and negotiating power to Lower Mekong countries in their dealings with donor countries and international bodies. Key to this are moves by the U.S., Japan and South Korea among other countries to upgrade and broaden their regional engagement. The U.S. elevated the Lower Mekong region in its foreign policy priorities through the revival in 2017 of LMI, originally established in 2009, and more recently through the inclusion of the Lower Mekong region in the U.S Asia Reassurance Initiative Act (ARIA), passed in December 2018 by Congress.

The Act sets out new initiatives and priorities for the Trump administration's Indo-Pacific strategy and requires it to report annually to Congress on implementation. It authorizes funding of USD 1.5 billion annually from 2019 to 2023 for regional initiatives and calls for increased regional engagement with Lower Mekong countries "in the areas of environment, health, education, and infrastructure development."

(Thayer, 2019) It also draws some red lines including bans on any funding that benefits the government of Cambodia and on certain programs in the Philippines and Myanmar, and contains harsh words for nine Asian countries including China, Laos, Myanmar, the Philippines, Thailand and Vietnam concerning human rights or civil liberties.

More significant in terms of putting muscle and money behind U.S. engagement with the Indo-Pacific region was the passage by the Congress of the BUILD (Better Utilization of Investment Leading to Development) Act in October 2018, widely seen as a direct response to China's BRI moves. Described as "the most important piece of U.S. soft power legislation in more than a decade," the act more than doubles U.S. development finance capacity to USD 60 billion from USD 29 billion in FY2018 and establishes a new U.S. Development Finance Corporation to replace the existing Overseas Private Investment Corp., most likely by the end of 2019 (Runde & Bandura, 2018).

The Lower Mekong countries in recognition of the convergence of renewed Western interest, have positioned themselves to leverage expanded largesse, both on a bilateral and multilateral basis, particularly through Thailand's revived ACMECS. For the U.S., Japan and other donor countries in need of appropriate mechanisms with the right economic and social dimensions to fund and implement projects in the Mekong region that do not include China, ACMECS with its flexible framework ticks the right boxes. Originally established in 2003 by Thailand's former prime minister Thaksin Shinawatra as a funding and cooperation mechanism for the five Lower Mekong countries, ACMECS fell into disuse until it was revived under the military regime of Thai Prime Minister Prayuth Chan-ocha in 2017. At the group's 8th summit held in 2018, held under the theme: "Towards an Integrated and Connected Mekong Community," Prayuth cited interest from more than 30 countries and international organizations in becoming ACMECS' development partners (Ministry of Foreign Affairs of the Kingdom of Thailand, 2018). Indeed, in late 2018 Japan agreed to incorporate in its regional funding considerations a list of nearly 150 projects with ACMECS – categorized as "ongoing or possible cooperation projects," from construction to cybersecurity and postal service reform, across the five Lower Mekong countries.

With such momentum, it can be argued that the five Lower Mekong countries have moved into a vital new phase, reflecting a position of greater strength to better balance competing programs, donor countries and organizations (S.2736 - Asia Reassurance Initiative Act of 2018, 2018). This follows decades of narrowly focused but large-scale assistance in the region spearheaded by the Asian Development Bank, as well as water resource management initiatives by regional bodies – primarily the Mekong River Commission -- and varying degrees of support from donor countries including Australia, France, Japan, South Korea, New Zealand and the U.S.

Now, fresh competition for regional engagement and influence extends well beyond China's LMC initiative, and is drawing together countries with diverse agendas. At the forefront is the U.S., with its clear determination to loosen China's regional grip; and Japan, which is playing an increasingly diverse role in the Mekong region. In late 2018, it placed its own framework for Mekong cooperation, the "New Tokyo Strategy for Mekong-Japan Cooperation" under a broader umbrella that can draw on the government's vast infrastructure development funds including a USD 50 billion fund announced by Shinzo Abe in mid-2018 (Yuda, 2018).

With its own evolving FOIP framework for regional cooperation, Japan in many respects is emerging as a model for a more flexible and nuanced approach to regional engagement. On one hand, as a staunch U.S. ally with shared interests in checking China's advance in the Mekong region, Tokyo clearly supports the U.S.-led FOIP strategy with compatible regional initiatives. On the other hand, wary of the Trump administration and reluctant to adopt Washington's human rights-linked funding constraints on some regional countries, Tokyo is discreetly following its own path. One striking example is Japan's move to launch unprecedented third-country cooperation with China, even as it challenges Beijing on many other fronts.

Ultimately, no single country can match China's vast, top-down and sweeping approach to funding and implementing a sweeping infrastructure initiative on the scale of BRI. But in the Mekong region, the convergence of interests between the U.S., Japan and other financier

countries and organizations would suggest that bodies such as ACMECS and the U.S.-dominated LMI will have larger roles to play in future.

Tokyo's growing cooperation with China shows how Japan is diverging slightly from the U.S. view of FOIP and striving to give its own FOIP a distinct character. There is also a strong suggestion that Tokyo, still wary of the Trump administration, is hedging bets on its long-standing relationship with the U.S.

Overall, as Tobias Harris observes, Japan could be establishing a new model for constructive engagement with the region. "By articulating new principles for investment, enlisting new partners and bolstering its financial commitments, Japan has developed an alternative to China's BRI that could limit developing countries' dependence on Chinese lending. These efforts could even influence China's own practices, as Japan has made its quality infrastructure program the basis for bilateral development cooperation with China." (Harris, 2019)

The China-Japan cooperation move follows a landmark agreement between the two countries in 2018 on Third-Country Business Cooperation. The agreement provides for joint Sino-Japanese financing and implementation of 52 projects, mainly infrastructure initiatives, including a project with Thailand to develop an industrial zone into a "smart city" south of Bangkok, and a high-speed railway linking three major airports as part of Thailand's Eastern Economic Corridor scheme (EEC, 2019). Despite teething problems including differences over project specifications and timetables, Japanese officials frequently stress the symbolism of such cooperation (Wijaya & Osaki, 2019).

Yet, just across the border in the southern Cambodian coastal city of Sihanoukville, Sino-Japanese rivalry seems sharper than ever, particularly on Cambodia's southern coast where the two countries are involved with competing port and special economic zone projects (Kawase, 2018).

Broadly in the Mekong region, China has faced some of the same criticisms levelled at its BRI, particularly on issues concerning lack of transparency, environmental consideration and local consultation, as well

as over the suitability of projects, for example in Laos and Cambodia over dams and other projects (Balding, 2018; Westerman, 2019).

The criticisms have propelled U.S. initiatives in Southeast Asia where promotion by the U.S. and Japan of the FOIP strategy stresses the superior "'quality" of their governance standards, transparency and infrastructure building, often with unfavorable comparisons to China. Among the more tailored regional initiatives under the Indo-Pacific outlook, and programs under LMI directly aimed at the Mekong region, the U.S. has launched

- The Digital Connectivity and Cybersecurity Partnership (DCCP), which will use public-private partnerships and technical assistance to support digital infrastructure in the Indo-Pacific.
- The Infrastructure Transaction and Assistance Network (ITAN) which will form an interagency body to coordinate efforts to assess projects, direct development finance, and give technical assistance.
- Asia EDGE (Enhancing Development and Growth through Energy) which will promote energy security and access by boosting U.S. exports and encouraging market-based policies.

The U.S. is also promoting its ability to harness America's private sector for participation in regional joint ventures and directly invested projects, using some funding from its new ITAN program to provide political risk insurance, advice and other support services to companies on both sides. The implied and direct criticism of poor governance and infrastructure standards appears to have had effect, not least in the tacit acknowledgement by Chinese leaders at the 2nd BRI Summit in Beijing in April 2019 of widespread criticisms of BRI policies and clear indications of willingness to reform BRI practices and policies (AFP, 2019). A recent example of this more responsive approach came in China's move March 2019 to drop a previous agreement with Laos and Thailand to blast rocky outcrops and islets in the Mekong river in order to make way for big ships. The decision came after China undertook consultations with local communities along the Mekong River in early 2019, and acknowledged that the blasting program would disrupt local lifestyles and fish life (Kyodo News, 2019).

Reflecting a more responsive, "gentler" approach, China has taken other steps to modify its policies, in an apparent effort to reduce BR-related tensions, as Xue Gong of RSIS notes: "Beijing has toned down the exaggeration of the BRI as a powerful tool. Inside China, there is a growing interest in exploring more explicit and defined rules and higher standards for China-funded infrastructure projects in the BRI participating countries. The Chinese government is also considering the possibility of redefining BRI projects to improve levels of transparency. This is because China increasingly realizes that it alone cannot carry out this large-scale initiative. We have seen some positive signs of growing collaboration between China and other major powers. China and Japan, for instance, have tentatively agreed to cooperate on infrastructure investments in Thailand." (Gong, 2018)

But even with a fresh, collaborative approach and the rise of new donor mechanisms, there is still a vast infrastructure gap facing developing Asia, estimated by the ADB at USD 26 trillion in infrastructure investments that will be needed from 2016 to 2030 simply to maintain growth momentum, more than double the estimate in 2009 (Gong, 2018). The needs of the five Lower Mekong countries alone are estimated at USD 29.9 billion up to 2020, and USD 51.3 billion beyond 2020, while the private sector will need to increase infrastructure investments from $63 billion in 2017 to $250 billion by 2020 (ADB, 2017). No country however, even China, is capable of single-handedly filling the gap. It is partly this realization that is driving the push among donors to collaborate, to more effectively address the infrastructure gap and, in the case of the U.S. and its allies, counterbalance the Chinese leviathan (Weatherby, 2019).

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LABOR MIGRATION IN THE GREATER MEKONG SUB-REGION: THE CASE OF CAMBODIAN MIGRANT WORKERS IN THAILAND

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Introduction

In 2017, ten years after the Declaration on Promotion and Protection of Rights of Migrant Workers in ASEAN in Cebu, the Philippines, the ASEAN Consensus on the Protection and Promotion of the Rights of Migrant Workers was finally signed during the 31st ASEAN Summit in Manila, in which the governments of ASEAN pledged to enforce laws that protect the rights of migrant workers. However, this consensus "only covers migrant workers who are documented and those who become undocumented through no fault of their own" (ASEAN, 2017). In that same year, the announcement by the Thai government of the Royal Ordinance on Management of Foreign Workers "has led to an intensified campaign to criminalize [undocumented] migrants and the subsequent mass exodus of migrants– mostly Cambodian migrants–owing to their fear of arrest and the extremely severe punishments that may follow" (Mekong Migration Network, 2017a, p. 10). The 2017 crackdown mirrored that undertaken by the Thai junta government in June 2014, following the coup a month earlier, which prompted more than 200,000 Cambodian migrant workers in Thailand to flock to the border *en masse*.

As the Mekong Migration Network observed, "Migrant workers have long been a fundamental part of the economy of the Greater Mekong Sub-region (GMS), filling labor shortages in destination countries while sending remittances home. Despite their importance, migrants in the GMS often work and in live in precarious situations" (Mekong Migration Network, 2017b, p. 8). The case of Cambodian migrant workers in Thailand is no different.

This paper provides a brief overview of Cambodian labor migrants in Thailand, discusses some of the major challenges in the governance of labor migration between the two countries, and offers a number of policy recommendations for the improvement of labor migration management in the immediate and long terms.

An Overview of Cambodian Migrant Workers in Thailand

According to the International Labor Organization (ILO), intra-ASEAN migration increased from 1.5 million to 6.9 million between 1990 and 2015, and a large majority of migrant workers (87 per cent) are either unskilled or low-skilled (ILO, 2018, p. XIII). In the Great Mekong Subregion, Thailand is a top destination receiving close to 5 million migrant workers, mainly from Myanmar, Cambodia and Laos (ILO, 2018, p. 83). The common supply and demand factors that stimulate cross-border worker movement within ASEAN include: young population in countries of origin in search of job opportunities (such as Cambodia); economic disparities, the need for livelihood support, and wage differentials; ageing populations and shortage of labor of receiving countries (e.g. in Thailand); and the political process of regional integration (ILO, 2018, p. XIII). The realities around Cambodian migrant workers who have sought jobs in Thailand are generally consistent with this set of push and pull factors.

During the 1980s, people from neighboring countries entered Thailand primarily as refugees. In the 1990s, as various industries in Thailand began to face shortages of unskilled workers in the labor-intensive construction and manufacturing sectors, the Thai government began to allow migrant workers from neighboring countries (including Myanmar, Cambodia, and Laos) to fill the human capital requirements of its economy. Across the border, labor migration has become a significant and growing phenomenon for Cambodia, as the number of Cambodians abroad has increased from around half a million in 2000 to 1.2 million people in 2015. Despite the country's steady economic growth, insufficient demand for labor in the domestic market means that many households choose migration as a strategy for improving their livelihoods (OECD / Cambodia Development Resource Institute, 2017, p. 15).

Of the more than one million Cambodian migrant workers abroad, a large majority of them are working in Thailand, particularly in the construction, agro-processing, and food-related sectors. Many hail from bordering provinces such as Battambang and Banteay Meanchey, although the number of workers from other inland provinces has also increased. As Naomi Hatsukano observed, "For those living inland, however, working in Thailand was not the first option. They initially sought job opportunities in Phnom Penh. However, in the 2000s, information on jobs and from human networks motivated them to work far from their hometowns. For example, in Prey Veng Province, where the people are poor and have limited agricultural land, workers have been migrating to the fishery sector in Rayong Province in eastern Thailand since the early 2000s" (Hatsukano, 2019, p. 5).

Governance of Migrant Workers: Issues and Challenges

Although, as noted above, there are almost one million Cambodian migrant workers in Thailand, only 114,779 of them (as of January 2016) who were working there went through official channels based on the MoU signed between Thailand and Cambodia in 2003 (subsequently revised in 2015) (Hatsukano, 2019, p. 9). The lack of official status among the Cambodian migrants resulted in a major crackdown by Thai authorities. In June 2014, following the coup that overthrew Yingluck Shinawatra's government in Thailand the previous month, the junta adopted measures that had direct impacts on the Cambodian workers. The security forces began to arrest and deport documented workers on the ground; although the government denied that such actions took place. Within days, news of the crackdown prompted some 200,000 workers to flee to Cambodia. Many arrived in trucks and were received by the Cambodian authorities and various civil society organizations that attended to their immediate needs (Mekong Migration Network, 2014).

While the junta eventually justified the crackdown by citing the need to fight human trafficking and to promote human rights, other observers have attempted to explain the rationale of the crackdown somewhat differently. Paul Chambers, for instance, suggested that the message of the crackdown was clear: "the Thai military could create migrant

instability for Hun Sen if it wanted to" (Chambers, 2014, p. 62). Erich Molz, on the other hand, attributed the crackdown to a different set of political calculations, whereby the crackdown "potentially weakened the rivaling police force that had benefitted from the trafficking business and threatened the military's power," while at the same time, "Thai authorities could finally prove their commitment to fighting human trafficking and to promoting human rights to the international community — albeit unsuccessfully" (Molz, 2015, p. 40). As I have written elsewhere, "Whatever the primary intention of the Thai junta was, the crackdown and the ensuing exodus of migrant workers (both illegal and legal) reminded the leaders of both countries of their economic interdependencies" (Deth, 2017, p. 39). In fact, many Thai businesses owners and employers, particularly in the construction, farming, and rice trade industries, expressed displeasure and concern over the abrupt departure of migrant workers that would severely affect their respective industries and the Thai economy as a whole (Mekong Migration Network, 2014, p. 2). To ease the situation, the junta took steps to facilitate the return of the Cambodian migrant workers by establishing "Facilitation Centers for the Return of Cambodian Workers" and "One Stop Service for the Registration of Migrant Workers" throughout the country (Mekong Migration Network, 2014, p. 2).

Following the crackdown, both Cambodia and Thailand have pursued collaboration in facilitating and encouraging the legalization of Cambodian migrant workers who wished to seek jobs in Thailand. As a result, the number of 'officially recognized' workers increased from about 416,000 in 2012 to more than 730,000 in 2016 (Hatsukano, 2019, p. 10). Still, from the perspective of migrant workers, the most preferable mechanisms that could meaningfully facilitate the labor migration process would be simplification and cost reduction in the process of obtaining legal documents (otherwise, many would still opt for the illegal channel which remains faster and cheaper). In 2017, for instance, Thai authorities still deported 73,275 illegal workers back to Cambodia through the Poipet International Border Checkpoint. As a positive response, new passport offices have been opened in Battambang, Banteay Meanchey and Koh Kong provinces since June 2018 (Sen, 2018).

While progress has been made in the legalization of the registration process, challenges remain. A recent report by the International Labour Organization (ILO), for instance, pointed out that migrant workers in ASEAN in general continue to face significant challenges such as legal barriers (i.e. lack of access to social security benefits), maltreatment in the host country, and discrimination (ILO, 2018). Similarly, reports by the Mekong Migration Network suggested that overseas assistance to migrant workers "is one of the most urgent gaps in Cambodia's current system" (Mekong Migration Network, 2017b, p. 34). Accordingly, increased human resources should be invested in Cambodia's consular service in Thailand in order to provide more effective services, especially to those in need of legal support. Furthermore, Cambodia's Ministry of Labor and Vocational Training should provide closer scrutiny and oversight of recruitment agencies, as false information from unscrupulous firms was identified as a prevailing problem among migrant workers. News reports also point to corrupt practices among immigration officers (both in Cambodia and Thailand) who demand bribes from migrant workers before permitting them to cross the border (especially during holiday seasons) (Whong, 2019).

While facilitating the legalization process of labor migration and expanding social and legal support to potential or returning migrant workers is needed in the short and immediate terms, the Cambodian government should also take into consideration the long-term impacts of labor migration on Cambodian economy and society. Whereas remittances seem to bring short-term benefits to the families of migrant workers, the opportunity costs for their social welfare and for Cambodia's economy as a whole is high, too. Problems include:

- Higher school dropout rates among children of migrant families, especially in rural areas (Hing, Lun, & Phann, 2014);
- Increasing household debt among migrant families spent on both productive and unproductive assets (as future remittances incentivize both borrowers and lenders to take / provide loans) (Lor, 2019);
- Loss of manpower in the agricultural sector especially during harvest season due to the absence of migrant workers (OECD / Cambodia Development Resource Institute, 2017); and

- Injuries and abuses committed against workers: as many as 9000 migrant workers were repatriated to Cambodia after suffering abusive behavior by their employers (Khuon, 2019).

To address these problems, it is recommended that Cambodia takes a holistic view toward labor migration governance. For instance, inter-ministerial coordination among the Ministry of Labor and Vocational Training, Ministry of Agriculture, Forestry and Fisheries, and the Ministry of Land Management, Urban Planning and Construction is needed in order to assess the labor demand in Cambodia's domestic market in the agriculture and construction sectors and to disseminate useful information to targeted provinces to reduce emigration that negatively impacts Cambodia's own economic development. Similarly, Cambodia should seriously consider enforcing labor laws that place quotas on foreign employment within the country, especially in low-skilled sectors such as construction, which is booming at present.

Finally, Cambodia should encourage the shift of labor flow from emigration abroad to domestic migration to special economic zones in border areas or inside the country, facilitated by foreign direct investment and domestic job creation. Through such a policy, the negative impacts of cross-border migration (particularly family breakup and human trafficking) can be reduced / minimized in the long run.

Conclusion

Labor migration from Cambodia to Thailand has been a reality for almost 30 years and has served as an attractive option for poor, unskilled Cambodians, especially those living along the Cambodian-Thai border. The relative ease of border crossing had prompted hundreds of thousands of Cambodians to seek jobs in Thailand through illegal channels. Since the crackdowns on undocumented workers by the Thai government in 2014 and 2017, however, attempts have been made by both countries to register and facilitate the legalization of migrant workers in Thailand. Still, much remain to be done to significantly improve the situation of labor migrant workers. These include more extensive overseas assistance to migrant workers, stricter regulation and scrutiny of recruitment agencies, and a clampdown on corrupt practices among

immigration officials, as well as provision of basic financial literacy training to migrant families (for productive investments and to avoid debt traps). In the long term, it is in the interest of Cambodia to create an environment conducive to diversified investments where job creation for the local populace could help to reduce the need for migration to other countries, especially when such migration does not generate value-added skills for future homegrown industrialization. Similarly, wherever possible (as in the manufacturing sector), Thailand could also explore and encourage Thai investments in the special economic zones along the border inside Cambodia, as such investments would reduce the needs for migrant workers inside Thailand and diffuse potential social and political problems for both Cambodia and Thailand in future. Only when such measures are taken can the region achieve the goals envisioned by the ASEAN Consensus on the Protection and Promotion of the Rights of Migrant Workers.

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MEKONG RIVER COOPERATION: A CASE STUDY OF HYDROPOWER DAMS IN THE SESAN, SREPOK AND SEKONG BASINS

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Introduction

Rivers that flow across international boundaries have the potential to fuel conflicts between upstream and downstream countries over water use and inequitable water sharing. Many scholars argue that increasing competition for limited freshwater resources along international rivers and the construction of dams to maximize the use of water in a basin could heighten political tensions (Falkenmark, 1986; Westing, 1986; Homer-Dixon, 1994; Gleditsch, Furlong, Hegre & Lacina, 2006). Yet, a worldwide study of 261 river basins points out that "there has never been a single war fought over water" (Wolf, 1998, p.257). A regional study on transboundary water sharing in the Mekong Basin found no major conflicts between 1948 and 2008 (Pearse-Smith, 2012). Instead, the Mekong riparian states have cooperated to manage the Mekong River and share its benefits. In 1995, the lower Mekong countries formed the Mekong River Commission (MRC), moving the region from the battlefield into a zone of cooperation (Onishi, 2011). Despite some interstate tensions due to the building of large-scale dams, Mekong states still cooperate and share the benefits from hydropower development (Onishi, 2011; Pearse-Smith, 2012). Indeed, transboundary river cooperation has led to the Mekong being called a "river of peace" (Bobekova, Pearse-Smith & Svensson, 2013).

Transboundary river cooperation is facilitated by regional institutions that are at the center of how states collectively manage and use common water resources. These institutions carry out a number of functions, including water allocation; management of water infrastructure;

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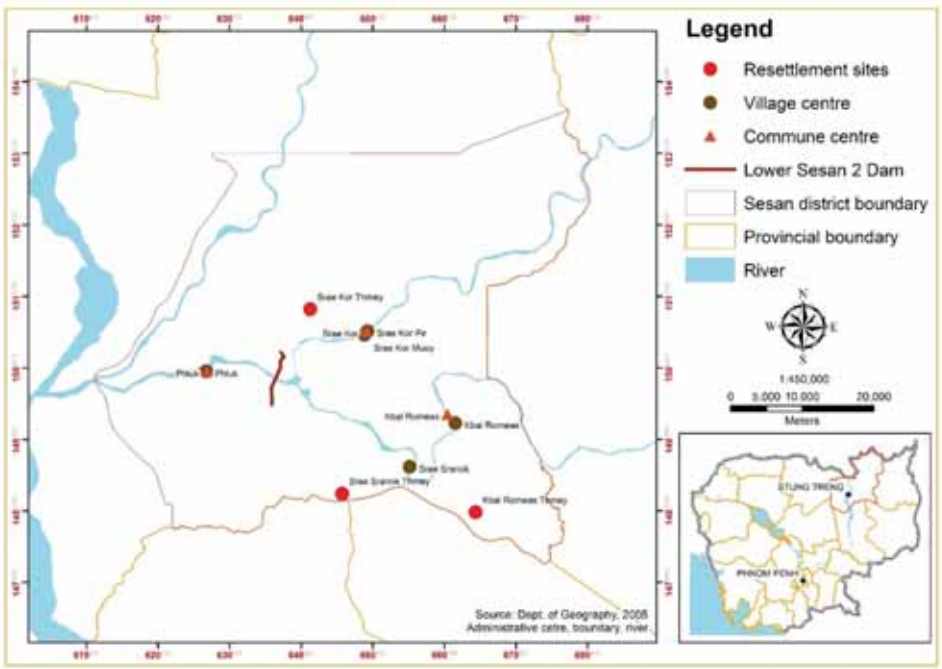
implementation of flood management policies; and protection, monitoring and assessment of water quality and quantity (Dore, Lebel & Molle, 2012; Sanchez & Roberts, 2014). Treaties, agreements and policies guide dialogue, negotiation, decisions and actions among riparian states to promote equitable use of, and benefits from, shared waters (Zeitoun & Warners, 2006).

Water cooperation in transboundary river basins is fraught with difficulties. It involves many different actors with asymmetric powers and hydro-hegemonies that use different tools and strategies to legitimize their positions and influence decisions about water allocation and distribution. Different forms of power shape different forms of hydro-hegemony, which, in turn, establish different forms of interaction in transboundary water governance (Mirumachi, 2013). The dominative form of hydro-hegemony is thus associated with induced relative scarcity for the weaker riparian states and unstable hydro-relations. However, when the riparian states are roughly equal in power, the established control of the resources may become contested, with the resulting competition leading to either a reversal of the dominant form of hydro-hegemony or progress towards a leadership form. Nevertheless, tensions tend to be high when the downstream state is powerful, but less intense when the downstream state is weak (Zeitoun & Warners, 2006). Moreover, although the downstream state is weak, it will not maximize its position and geographical space to influence the sharing of transboundary waters and compete with upstream countries. In doing so, the weak downstream state will employ cooperation and competition strategies to cope with upstream states (Sithirith, Evers & Gupta, 2016).

This article draws on the conceptual discussion above to analyze transboundary river cooperation in the Sesan, Srepok and Sekong (3S) basins. The Lower Sesan 2 hydropower dam on the confluence of the Sesan and Srepok rivers in Cambodia was selected for detailed study. Fieldwork was carried out between January and May 2017, after most of the villagers affected had been relocated; 25 key informants were interviewed and seven focus group discussions conducted in new and old Srae Kor 1 and 2 villages, new and old Kbal Romeas villages and new Srae Sronok village.

Figure 2: Map of the study area



The Mekong River Cooperation, Dialogue and Negotiation

The four lower Mekong countries of Cambodia, Laos, Vietnam and Thailand formed the Mekong River Commission (MRC) in 1995 to cooperate over the uses and management of the Mekong River (Mekong River Commission, 1995). The MRC *Agreement* on the Cooperation for the Sustainable Development of the Mekong River Basin was signed on 05th April 1995 by its members. The Agreement promotes sustainable development along the Mekong with the construction of hydropower dams still remaining possible.

Two key principles, notification and prior consultation, form the basis of the MRC Cooperation Framework. Any potential actions by MRC members that use or exploit the Mekong's resources are subject to these requirements in order to ensure the equitable use of water, to maintain mainstream flows, and to minimize any harmful effects on other member states. However, these principles are applied differently to developments on the Mekong mainstream and its tributaries, and between the wet and

dry seasons. Water use projects on the tributaries only need to notify other member states, whereas projects on the mainstream require prior consultation so that member states can implement thorough environmental impact assessments (EIAs) (Mekong River Commission, 1995).

Notification has become a non-negotiable, yet perfectly legal aspect of the MRC *Agreement* on the Cooperation for the Sustainable Development of the Mekong River Basin. None of the dam projects in the tributaries of the Mekong, including the 3S basins, requires prior consultation, so downstream impacts were not fully integrated. For instance, the EIA for the Yali dam was carried out only in Vietnam, about 80 km downstream of the dam site, and Cambodia was poorly consulted (Wyatt & Baird, 2007, p. 430). Instead, the MRC only facilitated a number of meetings between Cambodia and Vietnam to discuss the impacts of the Yali dam) (Wyatt & Baird, 2007).

However, prior consultations were carried out at both regional and national levels for mainstream dams such as Xayaburi, Don Sahong and Pak Beng. Nevertheless, the results of the consultations show opposition to the Mekong dams. Despite these disagreements, Laos continues to build mainstream dams and remains protective of its sovereignty and national interests (Sunchindah, 2005; Keskinen et al., 2008). The following section discusses dam building in the 3S basins and cooperation in greater detail.

Hydropower Dam Development in the 3S Basins

The 3S (Sesan, Srepok and Sekong) basins have a catchment area of 78,650 km^2 (Mekong River Commission, 2003; Piman et al., 2013; Arias et al., 2014). The 3S rivers flow across Vietnam and Laos to Cambodia where they merge to form the largest tributary in the Mekong Basin before joining the Mekong mainstream at Stung Treng. The mountainous topography of the upper basins provides a large elevation drop as the rivers flow downstream. The average annual discharge of the Mekong River as a whole is approximately 475 km^3 (Mekong River Commission, 2011) and the 3S rivers contribute 23 percent of this (100 km^3) with an average flow of 2,886 m^3/s (Asian Development Bank, 2010b; Piman et

al., 2013). The population in the 3S basins stood at 3.99 million in 2008. However, it increased to 4.4 million between 2007 and 2015 (Constable, 2015).

All three countries are eyeing hydropower development as a way to meet booming electricity demand. The 3S basins hold vast renewable energy potential given their deep narrow valleys, fast flowing rivers and low population density. Taking advantage of this, numerous hydropower and irrigation dams have been built over the past decade. There are three major hydropower dams in the Sekong basin, eight in the Sesan, and seven in the Sre Pok (Constable, 2015). Vietnam has already built 14 dams and plans to build more on the Sesan and Srepok rivers; Laos has built three, has one under construction and proposed 15 more; and Cambodia is building Lower Sesan 2 (LS2) and plans to build another six (Merme, Ahlers & Gupta, 2013; Piman et al., 2013). Overall, up to 24 hydropower dams are planned or under construction in the Sekong, and another 20 in the Sesan and Srepok basins (Asian Development Bank, 2010b; Constable, 2015).

Vietnam's Yali dam was built in 1993-2001 on the Sesan River (Halcrow & Partners, 1999). In addition, more dams on the Sesan and Srepok rivers were built, including Sesan 3, Sesan 3A and Sesan 4. These dams were built in much the same way as Yali dam. Cambodia started constructing the LS2 dam in 2014. And in Laos, Houay Ho dam was built on the Sekong River in 1998 and three others (Xekaman 1, Xekaman 3 and Xe Namnoy 1) are under construction. Laos has also built two dams on Mekong mainstream, Xayabuiri dam in 2012 and Don Sahong in 2016, and construction of a third, Pak Beng dam, is set to start in 2017 (Sithirith, 2016). These under-construction and planned dams will further intensify transboundary water governance issues in the Mekong region. Transboundary water governance, particularly in Cambodia, is closely linked to personal security, environmental security such as floods and droughts, food security, economic security and political security, and all of these together lead to issues of national security.

The Cambodian government has been reluctant to "make an issue…of Yali Falls" and other dams with the Vietnamese government, or of Don Sahong dam with Laos, as it also wants to build two mainstream dams,

the Stung Treng and Sambor (Hirsch & Wyatt, 2004; Pear-Smith, 2012). Due to the unresolved issues surrounding the Yali dam and other dams on the Sesan and Srepok rivers, Cambodia has, in response, used its own position as an upstream nation (the Mekong Delta lies within Vietnamese territory) as a weapon. As the lowest downstream country on the Mekong, although Vietnam has continued to build dams in the 3S basins, at the same time it has urged upstream countries to protect water flows in the Mekong mainstream. This geopolitical situation has hindered the entire Mekong cooperation process, resulting in the MRC Agreement being of little practical use.

Building the Lower Sesan 2 Dam (LS2)

Following the hydropower dam building in the Mekong and 3S basins, Cambodia is also competing to build hydropower dams. The first dam built in Cambodia on 3S rivers is the LS2, located about 1.5 km downstream from the river's confluence with the Srepok River, 25 km from where the 3S (Sesan, Sekong and Srepok) rivers meet the Mekong mainstream (Key Consultants Cambodia, 2008). The dam will have a 75 m high wall and a 340 km^2 reservoir. Construction is being carried out by Hydro Power Lower Sesan 2 Co. Ltd., a joint venture of the Royal Group of Cambodia and China's Hydrolancang International Energy. Construction started in early 2014 and is due to be completed by 2019. The estimated cost of construction is USD 781 million (Power Engineering Consulting Joint-Stock Company No1 & Key Consultants Cambodia, 2008; Phnom Penh Post, 2014a).

The government of Cambodia is happy with the construction of LS2 after many years of planning and design in Cambodia. Armed conflicts in the country between the 1970s and 1990s prevented Cambodia from building hydropower dams in the 3S basin. Lack of financial support further delayed the development of hydropower dams in 3S basin in Cambodia in the following decades. It took 14 years between 2000 and 2014 to get the LS2 funded. The Chinese and Vietnamese funding enable the government of Cambodia to realize its dream of building LS2 in the 3S basin after many years of struggling with the impacts of dams built by other countries in the Mekong.

In terms of impacts, LS2 could control the floods released downstream from Vietnamese dams and reduce the impacts on its peoples. Second, it could release water downstream that could potentially impact Vietnam: the more flood water the Vietnamese dams release in the 3S basin, the more flood water the LS2 sends to the Mekong Delta in Vietnam. Third, Cambodia will be transformed from a dam impact complainer to a hydropower dam builder and so, will have a bargaining power and voices that will be listened by other riparians in the basins (meeting with provincial departments of Stung Reng Province, 23 April 2017).

LS2 will generate 420 MW of electricity to electrify the north-eastern region of Cambodia, as a poor region. The development of hydropower dams will boost economic development in the region. More importantly, it will reduce dependence on imports of electricity from Thailand, Laos and Vietnam. This will reduce the cost of electricity and promote industrial development in the region (Key Consultants Cambodia, 2008). While LS2 brings prospective benefits to Cambodia, it also brings adverse social costs and environmental impacts. With regard to deforestation, the LS2 development has led to the clearance of about 33,564 ha of forest (350 ha evergreen, 5,073 ha semi-evergreen and 27,711 ha deciduous). Forest clearance contributes to climate change, as forests represent one of the largest, most cost-effective climate solutions available today (United Nations, 2014). In addition, the literature confirm that trees are the best technology to suck carbon dioxide from the atmosphere and reverse global warming, and it is estimated that tropical forest stores 170-250 tons of carbon (tC)/ha (World Wildlife Fund, 2017). Thus, the clearance of 33,564 ha of forest areas in LS2 would result in the permanent loss of about 5.80-8.40 million tonnes of carbon. More importantly, apart from the felling of trees and complete clearance of the shrubs, the areas were burned over a period between 2015 and 2016, emitting a significant amount of CO_2 into the atmosphere. Furthermore, the clearance of forest will contribute to biomass loss – about 45 million tons will be lost due to clearance to make way for dams (Key Consultants Cambodia, 2008) and thus, the biomass loss contributes to the loss of carbon sink, and so, large amounts of CO_2 in the atmosphere will not be sequestrated, contributing to climate change.

The LS2 dam and its reservoir have displaced villagers from six villages: Srae Kor 1 and 2, Kbal Romeas, Chrab, Srae Sranok and Phluk, forcing 846 families to relocate. At the time of study, about 85 percent of affected families had relocated to new sites, but about 15 percent were refusing to move. All families in Srae Sranok and Chrab villages had relocated to the new areas, while 126 families in Srae Kor 1 and 2, and Kbal Romeas had decided to stay in their houses and land in the old village. Unlike the other villages, 12 families from Phluk were completely moved from their areas, making space for the construction of LS2.

Families agreed to relocate receive compensation, which takes two forms: a land and housing package and cash. Per hectare cash payments for the loss of land are only USD 500/ha for lowland paddy, USD740/ha for vegetable gardens/orchards and USD 230/ha for fallow swidden (Key Consultants Cambodia, 2008). The twelve families from Phluk chose the cash package (Phnom Penh Post, 2014b). As part of this package, the compensation for fruit trees is very low; for instance, compensation for a banana tree stand is only USD6. Local people claim that they can sell the fruit from a single banana tree for more over the course of a year than is provided for a stand.

The land and housing package compensates each displaced household in the form of: 5 ha of farmland, (2) a 20 x 50 m housing plot, and a house of 80 m^2. For housing, resettlers have two options: a house built by the company, or to take cash of about USD 6,000 from the project and build their own house. About 50 percent of resettled families decided to take wooden houses built by the company, 18 percent chose concrete houses, 20 percent chose to build their own houses, and 8 percent received only plots of land for housing, not the house. They also received a financial package for livelihood restoration during the transition period. However, the rice lowland lost in places such as Kbal Romeas and Srae Kor is good quality rice land; the replacement land available in other areas is not nearly as good, and even this low-quality land is available only in limited amounts, often scattered over wide areas. Clearly, the compensation for lost agricultural land is inappropriate and inadequate.

Livelihoods of ethnic peoples from Srae Kor, Kbal Romeas, Chrab and Srae Sranok are very much dependent on rivers, forest, non-timber forest

products, livestock raising and agriculture. Rivers, both the Sesan and Srepok, provide them a modest lifestyle, in which water is used for both drinking and agriculture, and fish is the main food, eaten with rice and vegetables. The forest has long served villagers as a source of food, energy, materials and spiritual life. The land along the rivers and surrounding the villages is cultivated, and rice is the main crop. Rivers, water, forest and lands are home to spirits with whom villagers have lived well and to whom they pay respect through traditional and ritual practices. Livestock raising is not only for income and savings, but also for social and traditional rituals and practices. They believe that any action leading to damaging rivers, forest or land would make the spirits angry, who then will not make their lives longer and happier.

Relocating to a new area means that various ethnic groups from the dam site are forced to adopt a new lifestyle based around markets. From a cashless tradition, ethnic Lao, Phnong, and Kreung now have to adopt a common lifestyle of buying and selling. Free collection of resources from rivers, forests, and land will be replaced by paying to acquire them. This is evident in the resettlement sites, where resettlers need to buy water, fish and meat for their families, which was not the case in the old villages. Some resettlers have used the cash from compensation packages to buy motorcycles, TVs and other items such as phones. In the long run, they will face significant challenges as compensation support dries up.

Conclusion

The LS2 has been built partly to provide electricity to Cambodia and promote development in the northeast, as well as in other areas of Cambodia. It is also a response from Cambodia to the situation of increased dam building in the 3S basin as well as in the Mekong. However, LS2 plus the Vietnamese and Laos dams in 3S will contribute to increasing the cumulative impacts of dams on 3S basin. The cumulative impacts will have a strong impact on the downstream, particularly Cambodia.

As has been shown here, dams in the 3S Basin, whether in Vietnam or Cambodia, are likely to change river flows. It seems that dam building is possible under the 1995 MRC Agreement, either on the mainstream of the

Mekong River or its tributaries. So, how many more dams will be built on 3S tributaries and the mainstream? These will lead to unsustainable development in the Mekong. Hence, there should be a limit to the number of dams. Without that it will be catastrophic.

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MEKONG REGION: INDEFINITE ENDGAME AMONG MAJOR POWERS

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During the Cold War, the mighty Mekong River was the dividing line between the communist and non-communist nations in mainland Southeast Asia. On one side were the three former Indochinese countries of Vietnam, Laos and Cambodia, while alone on the other side was Thailand, their staunch anti-communist neighbor. These four lower riparian states have been working together on development on and off since the early days. At the time, the two upper riparian countries -- China and Myanmar -- were not part of the schemes to harness the region's longest river.

As the world moves further into the 21st century, the Mekong is no longer the fault line, but has become the river that unites all riparian countries, big and small, helping to lift them from obscurity. Competition among major powers for spheres of influence has now permeated the Mekong region as never before. At this juncture, they are engaged directly or indirectly in developing – and, in the case of some, preserving the river. Amid increasingly fierce competition, narrow economic and environmental efforts have expanded to include broader geopolitical factors.

For decades, the Greater Mekong Sub-region has been left behind in overall regional development, becoming the most backward part of mainland Southeast Asia. Foreign assistance through multilateral and bilateral frameworks has helped to preserve the river and its environment from further degradation. But without any prime mover among the lower riparian countries, they have become complacent, focusing on domestic development and maximizing water usage without careful management of the Mekong for future generations or proper policies to build the foundations for sustainability and a green environment.

Prior to 2016, major development efforts in the GMS were multilayered, with a dozen donor countries in bilateral and inter-governmental cooperation frameworks, both at the official and non-official levels. Key funding countries Japan, the United States, Australia, New Zealand, South Korea and Switzerland among others have contributed financial support to various projects to promote the well-being of an estimated 60 million people whose livelihoods depend on the Mekong.

At last count, there are 12 bodies involved in regional management included the Mekong River Commission (1957); the Greater Mekong Subregional Economic Cooperation Program under the Asian Development Bank (1992); ASEAN-China Plan of Action; ASEAN Mekong Basin Development Cooperation (1990's); the Agreement on Commercial Navigation on the Lancang-Mekong River (2000); Mekong-Ganga Cooperation; the Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (2003); Cambodia, Laos, Myanmar and Vietnam Cooperation (2003); Mekong-Japan Cooperation (2007); the Lower Mekong Initiative and the related Friends of LMI (2009) and Mekong-Republic of Korea Cooperation (2011) (The Asia Foundation, 2018).

These frameworks share a common trait -- the absence of a mechanism and initiatives to foster collaboration and synergies. Each framework pursues its own policies and plans, causing some overlap and confusion when they focus on the same sector. Discussions and talks about linking some of them have been marred by narrow self-interest and fear among donors that their frameworks would be jeopardized by bigger or more effective projects. This has led to stalemates and a lackadaisical attitude among concerned authorities and agencies.

Earlier the cooperation was very specific, focusing on harnessing hydropower and water resources. The Mekong River Commission was the first multilateral organization to become actively involved in developing policies in a comprehensive manner, including on climate change, navigation, fishery, energy, flooding, drought and stabilizing embankments. Projects were gradually extended to other sectors. Each had its own niche, taking into consideration the vast array of cooperation mechanisms.

Due to its unique location and its tributaries, the Mekong also serves as a demarcation line between Myanmar and Laos, and Thailand and Laos. This region is also adjacent to China's southern provinces of Guangxi and Yunnan. The river, which flows from Tibet, is 4,880-km long, covering an area of 795,000 square km and feeding an estimated 326 million people on the Southeast Asian side, and another 500 million-plus on the Chinese side. Due to the natural environment and changes of river flows, the river demarcation line could become a source of border dispute.

From Mekong's "backyard" to "frontyard

In March 2016 after nearly two-year of intense preparation and discussions with riparian countries, Mekong Lancang Cooperation or Lancang Makong Cooperation (LMC) was officially launched in Sanya, Hainan Island, China after the leaders' meeting. The declaration stressed principles of openness and inclusiveness, supporting priority areas of ASAEAN Community and ASEAN-China Cooperation as well as complement and development in synergy with existing subregional cooperation mechanisms (Sanya Declaration of the First Lancang-Mekong Cooperation (LMC) Leaders' Meeting, 2016).

Within a few months, it was clear that the LMC encompassing framework would become a game changer in the Mekong subregion's development activities. The LMC project reflects China's long-standing desire to open up and connect its under-developed south-western part to mainland Southeast Asia. As a latecomer, China had carefully studied past development frameworks related to the Mekong subregion and decide to further develop Thailand's proposal made in 2012 to promote sustainability in the Mekong region. With lessons learned from the riparian countries, the LMC's priorities and projects are concentrated on urgent issues related to three key areas: water resources, connectivity and poverty reduction.

The rejuvenated southward drive into mainland Southeast Asia under LMC was different from the past, when China reached out to ASEAN members, trying to break its international isolation and expand markets. Strong ties with ASEAN in the first 25 years (1991-2015) helped build China's regional and global standing. This time around, Beijng's

southward drive has stronger economic and security implications, which has generated comment and criticism from academic and political observers. China's keen interest has effectively upgraded the Lancang region from what one could call the Middle Kingdom's "backyard" (*hou-men)* to its front yard (*qian-men*), due to heightened perceptions of its geopolitical and geo-economic value.

Over 54 months of non-stop engagement, China and members of the LMC (Thailand, Vietnam, Laos, Cambodia and Myanmar) have met at all levels at least 36 times, including two summits, three foreign ministerial meetings, and dozens of senior official and working groups, to design and map out details of their cooperation and working structure. With like-minded approaches and constant follow-up, their decisions have been relatively quick and covered a wide range of cooperation.

China's LMC strategy emphasizes consensus, equality, mutual consultation and coordination, common contribution, and shared benefits and respect for the United Nations charter and international laws. With these principles, all members have signed numerous deals across the gamut of multilateral cooperation, including connectivity, production capacity, cross-border economic cooperation, water resource management, agriculture and poverty reduction.

The style of governance of all LMC member countries, which share many political administration and economic outlooks, enables them to make decisions speedily. Decisions taken under this framework are characterized by pragmatism, efficiency and focus on concrete projects. Since LMC's projects launched in March 2016, the mechanism has made fast progress, and has developed a "cooperation culture" of equality and mutual assistance (Tang, 2018)[1].

At the Phnom Penh summit in January 2018, Premier Li Keqiang called for stronger coordination between participant countries on water resource management, accommodating each other's concerns and properly balancing economic development and environmental protection (Five-Year Plan of Action on Lancang-Mekong Cooperation (2018-2022),

[1] Dr. Tang Qifang of China Institute for International Studies.

2018). In response to the concerns of LMC members, China agreed to a five-year plan (2018-2023) to promote water resource cooperation, enhance emergency management on droughts and floods, joint research on water resources and climate change, and an improved water quality monitoring system (Five-Year Plan of Action on Lancang-Mekong Cooperation (2018-2022), 2018).

Several centers were set up to implement projects and improve coordination among the member countries' national secretariats. These included the Global Center for Mekong Studies, comprising six regional think tanks; the Lancang-Mekong Environmental Studies Center in Beijing, and the Lancang-Mekong Water Resource Cooperation Center, also in Beijing (Tang, 2018).

On political and security cooperation, however, gaps remain in a framework that comprises four key areas: high-level exchanges, strengthening political dialogue and cooperation, exchanges among political parties, and non-traditional security cooperation. China has signaled acute awareness of the sensitivity of political and security cooperation in a region with diverse international relations. Prompted partly by growing criticism – particularly in the West -- of China's use of development projects to underpin geopolitical and strategic aims, China has left this portion vacant, waiting for the appropriate time to initiate such cooperation. It is clear that in the next few years, this section will contain concrete proposals regarding political and security cooperation which will inevitably accompany growing links among LMC members and their security preferences.

Catching up with China

With China's active pursuit of the LMC framework, it has suddenly dawned on other donors that had previously engaged in development of the Mekong region that they lag China's efforts in the same area. Leading countries in Mekong cooperation such as the U.S., Japan, South Korea and Australia, are promoting new dialogue and financial cooperation with the lower riparian countries. The 10-year Lower Mekong Initiative, the US brainchild, has been given a big boost in recent months with more dialogues and funding pledges. Other donors have also committed to

contribute to the trust fund, proposed by Thailand, set up by the Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS). The latter represents a regional cooperative framework spearheaded by Thailand and comprising Cambodia, Laos, Myanmar, Thailand and Vietnam. Based on a concept proposed by Thailand in 2003, the organization is aimed at strategizing action plans to connect all lower riparian countries, including Myanmar to promote trade, investment and sustainable development.

Thailand views ACMECS as a land bridge between two economic giants, China and India. Its action plans on connectivity have become the main mechanism for the lower riparian countries to link China's Belt and Road Initiative with the ASEAN Master Plan on Connectivity. At the BRI summit forum in Beijing in April 2019, Thai Prime Minister Prayuth Chan-ocha emphasized Thailand's desire to see more synergy between BRI and other regional connectivity plans (Mathichon Daily, 2019; Waithayagorn, 2019)[2]. It remains to be seen how these frameworks will blend with one another. Such an effort would require new ways of thinking and perspective on parts of China and other riparian countries.

In coming years and decades, Mekong region countries are determined not to be left behind as before. Active defensive and offensive postures being adopted by their dialogue partners --from China to Japan, the U.S. and others -- would make future efforts in the Mekong region more accountable. More cooperation, even on contentious issues, can be expected, as dialogue partners have shown determination to be involved in future connectivity projects. It is to be hoped that deeper and more engaged cooperation would lead to more consultation, transparency and access to information, as well as better results.

As this is still a work in progress, with all riparian countries of the Mekong region trying to juggle their interests to ensure survival of the mighty river and maintain the region's peace and prosperity, the indefinite endgame will continue.

[2]Dr. Panitan Waithayagorn, Advisor to Deputy Prime Minister Pravit Wongsuwan.

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MANAGING MEKONG RIVER WATERS THROUGH 4IR

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Water is a critical resource for the survival of all living forms, from human beings to plants and aquatic life. According to the U.S. Geological Survey (n.d.), nearly 97% of the earth's water is in the oceans and seas and is salty and undrinkable. The remaining 3% is fresh water trapped in the polar regions, glaciers and deep underground. The glaciers are the biggest source of fresh water for human consumption as it flows through rivers. These water bodies are subject to competition and conflict both within countries and across borders.[1]

The impact of climate change on rivers and glaciers is well known (Glick, 2019), which has added new dimensions to the political discourse on rivers amid fears of "rocky times ahead" in South Asia because "many of the disasters and sudden changes will play out across country borders, [and] conflict among the region's countries could easily flare up," according to the Guardian newspaper (Carrington, 2019).

At another level, there has been noteworthy progress on the collection of river data including hydrological conditions, stream flow, sedimentation, and environmental-ecological impacts as they affect the health of the glaciers. This has enabled scientists to monitor the glacier-river-delta continuum, and make systematic predictions about floods, the shifting course of rivers, the erosion of rivers banks, pollution levels and changes at the terminal end as rivers enter delta regions.

[1] For instance, in India, the State of Tamil Nadu and Karnataka had taken their dispute to the apex legal body, i.e. the Supreme Court for redressing issues on sharing of water between the two states.

India and Pakistan signed the Indus Treaty on September 19, 1960, but the river water sharing has been a political issue with India threatening to divert water from the river for its own use.

It is now an opportune moment to technologically upgrade the river data collection process using new technologies and techniques for monitoring and making robust predictions. New tool kits such as artificial intelligence, block chain, machine learning, big data and autonomous platforms, which are collectively known as Fourth Industrial Revolution, or 4IR, can potentially improve predications of river flows and floods. These technologies can act as important enablers for confidence- building measures to address conflicts between upper and lower riparian states.

Mekong River Transboundary Issues

The source of the Mekong River lies in the Himalayas in China's Tibetan Plateau. The 4,800-km Mekong is the world's 12th longest river and runs through six countries starting from China's Yunnan Province through Myanmar, Laos, Thailand, Cambodia and Vietnam before it discharges into the South China Sea.

Several transboundary river management issues between the upper riparian states of China and Myanmar and the lower riparian ones of Thailand, Laos, Cambodia and Vietnam have emerged over the years (Sakhuja, China in Cambodia: Challenges of Friendship, 2019). Key issues include the building of dams, the sharing of hydrological data during dry seasons, the timing for the release of river water, and factors impacting the environment-ecology-pollution matrix. There have been calls for a code of conduct and a rules-based trans-boundary resource management mechanism for the Mekong River (Chheang, 2018, p. 81).

The governments of Cambodia, Laos, Thailand and Vietnam have been engaged in water diplomacy and instituted a formal dialogue process in 1995 under the Mekong River Commission, an inter-governmental organization, to address issues relating to Mekong River. They also invited China and Myanmar as dialogue partners to collectively manage the shared water resources of the Mekong River (Mekong River Commission, n.d.).

The MRC has been holding international conferences that precede the MRC heads of government summit every four years. The MRC conferences held in 2010 and 2014 focused on transboundary water

management issues and the conference debated and discussed best practices by other river basin organizations (Mekong River Commission Secretariat, 2018). The third MRC International Conference held in April 2018 in Cambodia issued the Siem Reap Declaration, which identified a number of "priority areas of action." These included "strengthening the MRC basin-wide monitoring networks and forecasting systems for floods and droughts, and the data and information management systems underpinning them." It also agreed that the MRC member states would "promote common procedures and practices throughout the region for data collection, storage and analysis to support data sharing and integration of existing data management systems based on voluntary participation of countries and institutions." (Mekong River Commission Secretariat, 2018, p. 31)

The MRC council members also agreed to adopt "Procedures for Data and Information Exchange and Sharing," or PDIES, in 2001 (Joint Statement To Strengthen Water Data Management and Information Sharing in The Lower Mekong, 2018). It serves as a "framework for the member states to share and exchange among themselves data on river water, topography, agriculture, navigation, flood management and ecology, among others, for the joint management of the shared water and related natural resources in the region." (Mekong River Commission, 2017)

Under the PDIES, member states share data "to provide real-time water level information and more accurate flood forecasting." In 2002, under a memorandum of understanding, China agreed to provide daily river flow and rainfall data from two monitoring stations in Yunnan Province during the wet season.

The lower Mekong countries have also set up the Mekong Water Data Initiative. At the ministerial meeting of the Lower Mekong Initiative in 2017, it was agreed to partner with the MRC and "create a robust, integrated, and transparent platform for collecting, sharing, and managing data on the Mekong River system." (Mekong River Commission, 2017)

In the context of these initiatives, the unfolding 4IR technologies can provide new mechanisms for monitoring and data management of the

Mekong River and the connected Mekong Basin. This could potentially help solve many of the problems and concerns among the upper and lower riparian states and serve as a tool for confidence building.

What is the Fourth Industrial Revolution?

The first industrial revolution featured steam power for manufacturing goods, the second was led by electric power for mass production, the third or digital revolution currently underway is about information and communication technology to boost production through computerized processes. The fourth revolution is tethered to the third and is unfolding. It is a "fusion of technologies that permeate the 'physical, digital, and biological' domains." (Sakhuja, 2018) It is exponential in scope and can cause massive disruptions in production processes of production as well as the delivery of technological, administrative and fiscal services, with a deep impact on human efficiency.

The key 4IR technologies include artificial intelligence, autonomous vehicles and platforms, blockchain and 3D printing. These are 'transforming social, economic and political systems and placing pressure on leaders and policy-makers to respond," according to a report by the Association of Southeast Asian Nations (Asian Development Bank & World Economic Forum, 2017).

Several 4IR technologies are currently in use for water management in urban centers and for smart city projects. Their use in river management is gaining popularity. At least four technologies can be involved in river water management and monitoring.

First is artificial intelligence. This technology can help predict and thereby reduce the impact of future floods. For instance, Google uses a system that combines "physics modeling plus AI learning" with "elevation and satellite map data" to predict floods (Hebbar, 2018). In India, the Central Water Commission, the national body for the management of water in the country, and Google signed a memorandum of understanding to use AI prediction tools to obtain better flood forecast information (Hebbar, 2018).

Similarly, it is possible to determine the susceptibility of flood-prone regions by using AI enabled models. A hybrid artificial intelligence method called the Bagging-logistic model tree for flood mapping was developed for the Haraz watershed in Mazandaran, a region in Iran known for many devastating floods. The scientists concluded that the "new proposed model outperformed and outclassed the other models" with high prediction accuracy (Dieu, et al., 2018).

A second tool is blockchain. Among the many issues of river management is water flow. A major concern for lower riparian states concerns the accuracy of the quantity of water released during the dry and wet months. During the dry season, it can result in water scarcity. In the wet season, it can cause flooding. Blockchain is a useful tool to monitor and track any discrepancies and counter vested interests. It is a "secure, transparent and distributed public ledger that records transactions between parties," and the "information can't be hidden or changed by the corrupt behavior of governments, corporations or powerful individuals," according to the Hacker Moon website (Russell, 2018). Further, it is "an ideal step in our evolution towards a fairer and smarter water system."

For instance, under a project called "Drone on the Volga', a blockchain-enabled water drone was deployed over a reservoir to obtain water quality parameters and this data cannot be "altered without altering all the subsequent blocks, so historical data is immutable and any addition requires consensus of the network majority," according to Libelium, a sensor platform company (Libelium, Drones, Sensors and Blockchain for water quality control in the Volga river to promote trustworthy data and transparency, 2018). This precludes fudging and adds to the transparency of the scientific observations made by different agencies.

In the Philippines, an initiative to protect the Pasig River by using blockchain and the Internet of Things is taking shape (Mitchell, 2018). Under a proof-of-concept, the Pasig River Rehabilitation Council and CypherOdin, a blockchain startup, are working together to clean the 27-km Pasig River, which is one of the most polluted rivers in the country. The IoT sensors provide real-time data on water flow speed, pollution levels of bacteria and chemical concentrations, and the presence of microplastics.

A third tool consists of remote sensing devices, static sensors and remotely controlled or autonomous piloted platforms which are fast affecting every aspect of human and industrial activity. These can help measure, record and transmit in real time a variety of data concerning river systems. Sensors can be moored to the bottom of the river and rise to the surface at a designated time to transmit data and then return to their position.

An underwater unmanned vehicle can crawl along the riverbed and measure water quality, capture pictures of sedimentation, identify trash, measure scientific data and monitor aquatic life. Similarly, sensors and devices can be attached to buoys or installed on unmanned surface vehicle to record various data. Information on water temperature, levels of dissolved oxygen and the nature of nutrients is critical for the survival of aquatic life.

For instance, the Waspmote Smart Water developed by Libelium is equipped with multiple sensors to monitor and measure water quality parameters (Libelium, 2014). It features autonomous nodes that are connected to the Cloud (or internet) for real-time water control. Among other utility services, it can also detect chemical leakages in river and monitor any diversion of water by dam construction in the upper riparian state.

Big data is another technology that can transform the management of data. In India, under the “Clean Ganges” initiative, the national Central Pollution Control Board designated scan Messtechnik, a German-based technology leader in online spectrometry and a producer of innovative water quality sensors and systems, to identify and mitigate major sources of wastewater and other discharges into the river. The program involves millions of data sets that are transmitted and processed in a challenging process.

In China, the 1,257-km canal linking the Danjiangkou Reservoir on the Han River to Beijing is monitored through an IoT network of 100,000 sensors that inspect the canal for structural strengths to withstand earthquakes, record water quality and flow rates as well as keeping track of animal and human intruders (Hobbs, 2018).

It is argued that 4IR technology can help build and create smart and resilient river system, including management and monitoring. Although it may not answer all the problems related to river issues, it can help stakeholders to not only optimize efforts and investments but also help governments take more considered views on trans-boundary issues of rivers.

However, it is worth noting that many of these technologies may not be available to developing countries such as Cambodia, Laos and Vietnam. Under these circumstances, China can take the lead for 4IR capacity building under the MRC. This technology can also address several issues about transparency in sharing river water data and help alleviate any potential suspicions among the stakeholders.

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ONE RIVER:
IN SEARCH OF A COMMON VISION TO SAVE THE MEKONG

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The mighty Mekong flowing 4840 kilometers from its source in Tibet to the Vietnamese delta, has long enchanted explorers, enriched traders and beguiled travelers. Its journey through heart of Southeast Asia sustains livelihoods and food security for 60 million people thanks to its prolific fisheries, the most productive river on the planet.

Who could possibly want to disrupt this bounteous flow of nature with almost a thousand fish species identified along its course, rivalling the biodiversity of the Congo and the Amazon? The sad reality is that many years of unregulated exploitation of natural resources has left the river in a perilous state, putting fisheries at grave risk. The Worldwide Fund for Nature(WWF)'s lead water resources expert Marc Goichot recalls that "Twenty years ago, the Mekong was one of the last large healthy tropical eco-systems" But today he laments "the water quality is degrading fast, drought and floods are more are becoming more frequent and costly, fish catches are seriously depleted. Several studies confirm the Mekong delta is sinking and shrinking. The main culprits are hydropower, and sand-mining" (Goichot WWF, May 2019) original dream of one river shared by four nations in a spirit of international cooperation and environmental protection was expressed in the 1995 Mekong Agreement (Mekong River Commission, 1995). It gave birth to the setting up of the MRC (Mekong River Commission). But that unifying dream has dissipated. The four member states of the MRC (The Mekong River Commission composed of Laos, Thailand, Cambodia, and Vietnam) have adopted instead a small "pond" mentality, with each country jealously guarding their piece of river sovereignty for competitive and commercial advantage. The huge Xayaburi Dam, a Thai-Lao $3.8 million project, the first hydropower project to be launched downstream on the Lower Mekong was a test case.

The Lao government defied strong protests from riverine communities' civil society and opposition inside the MRC from the other two member states, Cambodia and Vietnam (Herbertson, 2012).

The MRC's prior consultations demonstrated deep divisions among member states. Laos, backed by Thailand, focused on commercial advantage from hydropower, adamantly refused to see the bigger picture of one river, and the need for extensive transboundary research debate and consensus. The 1995 Mekong Agreement lacked any veto provision. The Lao government took a unilateral decision to go ahead in 2012, regardless of the unresolved trans-boundary issues and the absence of credible environment impact EIA (WWF, 2011). This landmark battle for robust environmental protection and regulation, based on a common respect for the Lower Mekong as one river, was lost. Laos and Thailand opted for narrow commercial benefits taking precedence over any shared vision of the Mekong.

The Lao government's assertion of its sovereign right to exploit to the hilt every last drop of their Mekong water, has unleashed the same "dam fever" that has already gripped the Lancang (Mekong) upstream in China which hosts nine dams. More dams - the Don Sahong (under construction) and the Pak Beng in Laos - are the next in line. Along the Lower Mekong nine main stream and 120 tributary dams have been planned over the next 20 years (Geheb, 2018).

How International Actors and master plans have determined the course of Mekong Development

The lack of any unifying vision among the four Lower Mekong states is, in part, based on the emergence of a grand Mekong river development strategy long before the MRC was formed. The ADB released a *Master Plan for Power in GMS* (Greater Mekong Subregion) in the year 2000, which took little account of environment impacts and nature conservation. The World Bank endorsed it and the MRC eventually adopted this ADB framework, designed to speed up trade, investment and hydropower development.

China has incorporated much of this strategy into a new China-based organization the LMC (The Lancang-Mekong Committee) (Lancang-Mekong, 2017). The LMC with the participation of all six Mekong countries is viewed by many observers, as a rival to the MRC (China and Myanmar are only observers and declined to join). It is clear that while the MRC's record in protecting the river's ecology is not impressive, the China-led LMC is even less likely to address the environmental deficit. China's Foreign Minister Wang Yi declared in December 2017 that the Lancang-Mekong Cooperation Framework (LMC) is "practical and highly effective", he went on the state, "We do not go after a high-profile talk shop but a down-to-earth bulldozer" (Geall, 2018).

It is precisely this spirit of "bulldozing development" that worries millions of people and riverine communities downstream, which sharply contrasts with the rhetoric of China's premier Xi Jingpin that the BRI and the LMC will be "green and sustainable" pathways of development. Indeed, the specter of bulldozing or rather dynamiting along the Mekong, is high on the Chinese agenda. Blasting islets, rapids, and rocks that now obstruct navigation, is part of a long-established agenda under the Mekong Navigation Improvement Project (Fawthrop, Blasting the Mekong for commercial shipping, 2017).

If this grand navigation plan is carried out, Chinese cargo boats of up to 500 tons would be able to travel from ports in Yunnan China, penetrating a further 363 kilometers down the Mekong beyond Thai port of Chiang Saen and all the way to the ancient Lao capital of Luang Prabang, a much-revered world heritage site. But what benefits will be shared with the riparian countries? At what cost to the wildlife and water quality, the local economy of the Mekong, and the cultural heritage of Laos?

If the river islands are blasted away, a whole range of environmental consequences will cascade for hundreds of kilometers. Dr. Philip Hirsch a Mekong natural resources specialist at the University of Sydney commented (Hirsch, 2019): "The removal of natural barriers will accelerate the river's flow, erode riverside farms and destroy important fisheries habitat. Thai and Lao farmers and fishers on both sides of the river will suffer economically from such a dramatic transformation of river morphology into a commercial shipping lane." Many years ago,

Thongpho Vongsriprasom, a former Lao Minister of Agriculture warned that the demolition of rocks and rapids would speed up the flow and "big waves caused by huge ships would destroy the country's river banks." Only four percent of Laos's land area is suitable for agriculture (most of this along the shores of the Mekong). Many farmers rely on the fertile, sediment-enriched riverbanks for their annual harvests. Not only would the new navigation undermine the local Lao economy, but Thai economists are equally pessimistic about its impacts on the Thai economy (Rujivanarom, 2017).

However, in a major new development in May 2019 Mr. Don Pramudwinai, the Thai Minister of Foreign Affairs confirmed in writing that in recent talks with Chinese Foreign Minister Wang Yi had stated the government's willingness to end the project, in accordance with proposals from the Thai NGO network from the eight Mekong Provinces. (International Rivers May 2019).

This could be landmark development and one of the first concrete indications that China is starting to listen from protests from downstream.

The Chinese Paradigm on the Mekong

China's narrative is very different. Beijing views their role as helping downstream neighbours with modernization, development and infrastructure. They argue that building a high-speed train from Kunming through Luang Prabang to the capital Vientiane, will bring more tourists and connectivity to Laos, a poverty-stricken landlocked nation. Similar claims are made by China for its navigation improvement plan which would establish an important trading route along the Mekong. Beijing can also point to strong support from two MRC governments who actively lobby for more Chinese aid and investment-Laos and Cambodia.

However, staunch defenders of China's policies overlook the lack of environmental regulation over Chinese investment in the GMS sub-region. The Chinese Academy of Social Sciences reported negative impacts in Myanmar, Laos and Cambodia. A Yunnan University expert,

Liu Zhi, commented (Jing, 2013): "The central government had published a set of green guidelines for Chinese investors working overseas since 2005, but some Chinese companies were obviously failing to observe the rules. The companies are grabbing the economic benefits, but the national interest is being damaged."

Poor quality environmental impact assessments (EIAs) are part of the problem. Zhou Dequn, a conservation biologist at Kunming University of Science and Technology, stated (Eyler, 2013): "These kinds of malpractice have occurred on Chinese-funded hydropower projects in Laos. China is exporting its bad business behavior to the region."

Why the needs a new development path to avert an impending man-made disaster?

The issue of business responsibility, and the need to understand how ecology and economy should work in tandem was addressed by WWF's Stuart Orr: "The Mekong underpins everything from agriculture and fisheries to energy production and manufacturing, and its natural resources provide huge economic value - its fisheries alone are valued at $17 billion a year. Economic growth in the Greater Mekong region depends on the Mekong River, but unsustainable and uncoordinated development is pushing the river system to the brink" (WWF, 2016). The MRC Council Report 2018 provides a strong wake-up call to the region that the most productive fisheries in the world are in serious decline with a massive decline predicted from 2020- 2040 (Mekong River Commission, 2017). The anticipated losses of individual countries by percentages of current catches: Thailand 55%; Lao PDR 50%; Cambodia 35%; and Vietnam 30%. Hydropower operations block fish migration, drastically reducing wild capture fisheries putting food security at risk and increasing poverty. Any development path based on hydropower that condemns the rural population to increased poverty and malnutrition should be rejected, whether it is ADB, the World Bank, or China pushing the model.

The World Bank / IFC model branded as sustainable hydropower tries to distance itself from Chinese dam-building by promoting a more stakeholder sensitive narrative, including support for dam mitigation.

However, the ultimate objective of the World Bank model to proceed with dam projects remains unchanged. The prime issue-to dam or not to dam is almost never debated. If the communities that oppose the project are not persuaded by the mitigation, still the bottom line is that dam must go ahead (Fawthrop, Damming the Mekong - the myth of 'sustainable hydropower', 2016).

In the development of the sustainable hydropower model so far, no criteria have been set forward for stakeholders to judge when a project is not sustainable, and there is little scientific evidence to substantiate claims that fish can be saved by untested mitigation technology. According to a 2017 study (Barlow, Baumgartner, & Raeder, 2017): "no further mainstream dams should be built in the lower Mekong basin until evaluation of the performance of the Xayaburi facilities is available to guide future fish passage design." If environmental harm cannot be effectively mitigated, then the project should not be approved.

Can an alternative vision for the Mekong challenge the Chinese BRI paradigm?

The amazing Siphangdone (Four thousand Islands) district in southern Laos is promoted by the Lao government's tourism office and travel agencies as an ecotourism paradise. The iconic Khone Phapheng waterfall, is a renowned tourist attraction in the region. While Lao tourism officials and the wider world see the need to protect the nation's most iconic waterfall and its idyllic surroundings as a wetlands sanctuary, the Lao government's hunger for investment and hard currency has led then to compromise heritage and nature with the construction of a dam inside the wetlands zone, and the setting up a new SEZ (Special Economic Zone) based on real estate development, hotels and casinos (VIETNAMPLUS, 2018)

The Don Sahong Dam is another strongly contested project (Singh, 2014) that provoked strong international protests, fishermen and riverine communities in Cambodia, Thailand and Vietnam. Renowned Canadian conservationist David Suzuki writes (EcoWatch, 2016): "The way we see the world shapes the way we treat it if a river is one of the veins of the land, not another irrigation water; if river beds are understood to be

precious repositories of nutrient-rich sediment not a location for sand-mining exploitation," then our whole perspective changes.

Both BRI and Lancang- Mekong (LMC) focus on connectivity, production capacity, economy and trade, finance, water resources, agriculture, poverty reduction, forestry.

The environmental protection receives minor attention along with China's assurances of "green and sustainable development" but count for little alongside the key features of this globalization path along the Mekong.

The starting point for an alternative vision to China's paradigm of development should be rooted in a shared understanding that healthy, good river sustainability brings long-term economic benefits in tandem with ecological and natural capital protection. Natural capital consists of: the value of the plants, animals, air, water, soils, and minerals that combine to yield a flow of benefits to people known collectively as ecosystem services. This includes clean air, safe food, water, energy, shelter, medicine and raw materials.

Conclusion

The Lower Mekong's lack of a "One River perspective" has crippled any attempt to develop a more balanced path of development than China's economy and infrastructure driven-development, which is not as "green and sustainable", as President Xi Jinping would have us believe. The environmental damage to a river does not recognize national boundaries and can only be resolved within the framework of a transboundary willingness to treat the Mekong as one river. What steps can be taken by MRC countries to define a new set of priorities to protect the neglected environmental and cultural natural assets of the Lower Mekong?

First, transboundary cooperation should start with the recognition that the Mekong cannot be reduced to finance, trade and commercial gains to the detriment and neglect of nature conservation, heritage preservation and firm environmental protection. The MRC states need to unite around this issue. Second, the protection of the culture and heritage of the Lower

Mekong countries needs to be included in the agenda of both the MRC and the LMC forums. If this does not happen soon, what will become of a great world treasure: the ancient royal capital of Luang Prabang? Urban development plans must accept that conservation and protection of this ancient city as an international obligation stipulated by UNESCO world heritage rules.

Third, all biodiversity and cultural "hotspots" on the Lower Mekong need to be ring-fenced against commercial infrastructure projects that would undermine river's natural capital and heritage. Fourth, the business sector and government agencies need to strongly push for green energy alternatives to hydropower. A moratorium on all dams on the mainstream needs to be implemented in line with the strong recommendation of the MRC consultant report 2010 (International Centre for Environmental Management, 2010). Finally, a new understanding between the MRC states and China could be based around environmental cooperation. Premier Xi has formally recognized the importance of China working towards an "Ecological Civilization" (Tianjie & Qin, 2018; Global Times, 2019). They have also introduced a system of better river governance with the appointment of 300,000 river chiefs mandated to stop pollution. MRC member states should welcome this policy and adopt the system of also introduce "river guardians" to carry out joint environmental patrols on the Lower Mekong?

The BBC's great wildlife presenter David Attenborough has issued stark warnings about the dangers our planet is facing from climate change and environmental destruction. This paper attempts to apply a similar concern to the Mekong, under dire threat from both hydropower and climate change. Without a vision for the future, the Mekong is a rudderless ship battered by the winds of climate change, drifting towards ecological devastation. Too many policy-makers appear to be unaware that healthy rivers, forests, and ecosystems are nature's best defence in combating climate change. "Dammed rivers are damaged rivers; they are less able to protect us from climate change and more likely to worsen problems when big floods and droughts hit," explains Parineeta Dandekar of the South Asia Network on Dams, Rivers and People in clarifying the relationship (Ya & Pottinger, 2013). In 2010, a landmark report (ICEM, 2010) on hydropower impacts on the Mekong warned of

the dangers of eleven dams are to be built on the Lower Mekong. The scientists who compiled that report called for an immediate moratorium on dam building for ten years to It was a landmark report that was sadly sidelined and never debated by the MRC. The 2018 MRC Council Report (Mekong River Commission, 2017) substantially confirms the earlier report. Sadly, scientific reports warning about the crisis of the Mekong have so far had little impact on regional policy-makers, energy ministers, economists, and hydropower companies.

When will the peoples of the Mekong witness a serious act of leadership coming from the downstream nations to challenge the prevailing dangerous course of development that has brought the Mekong to the brink of ecological disaster and dire economic risk? Leading Vietnamese scholar and economist Dr. Tran Dinh Thien (2016) made an appeal to the region's leaders at an international conference in Can Tho in the delta: "We can only save the Mekong by shedding the narrow "pond" mentality of making a profit out of the river in the name of development. What we need is a global movement to protect the Mekong as a cultural and ecological asset of humanity". This need for MRC countries to unite around the principle of one river and one vision committed to saving the Mekong, is now a matter of extreme urgency.

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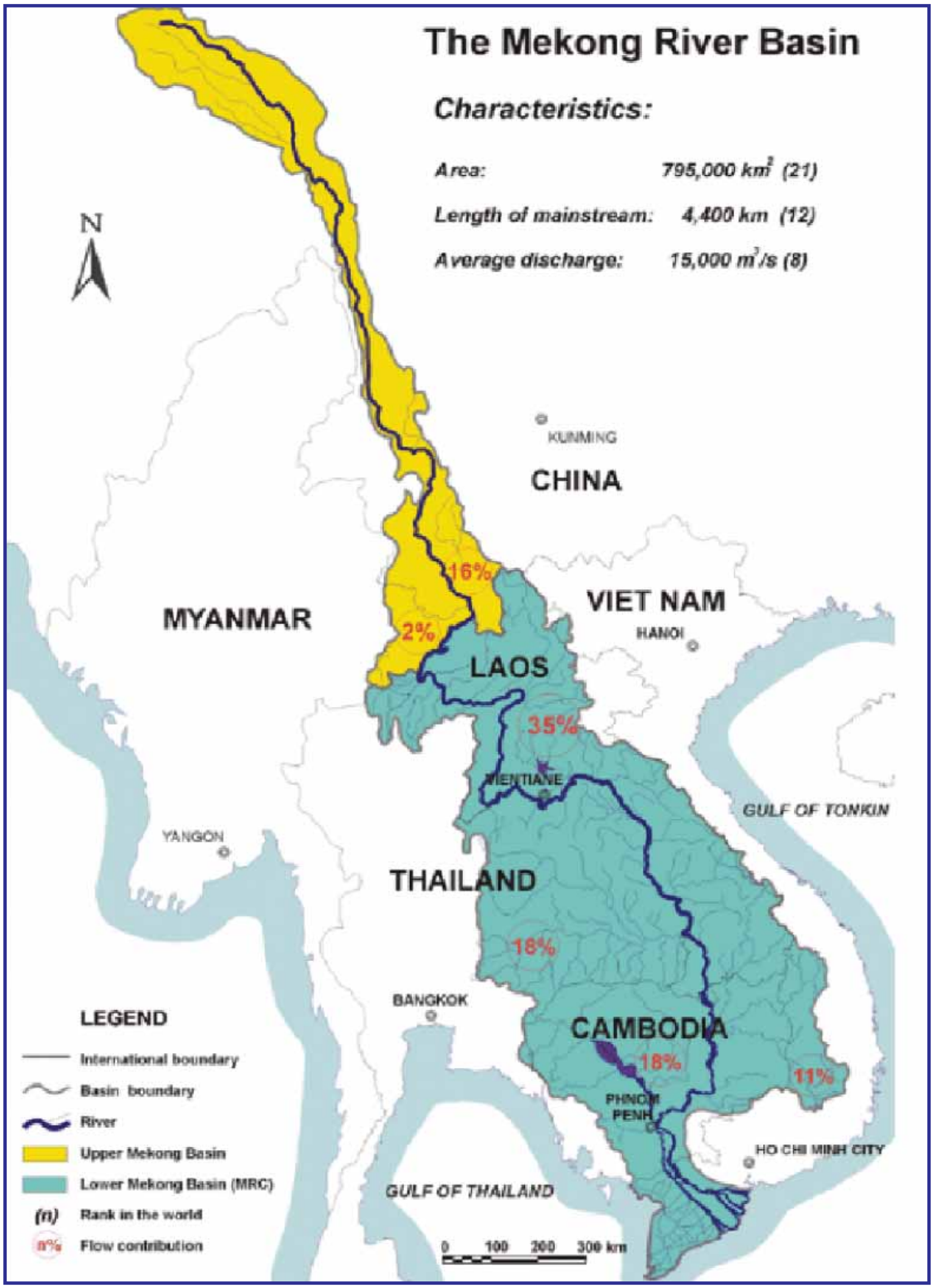

Source: *https://www.researchgate.net/figure/Map-of-the-Mekong-River-Basin_fig3_255661258*

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