

# China's Role in Promoting Transboundary Resource Management in the Greater Mekong Basin (GMB)

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*Ash Center Senior Fellow in Development*

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March 2020



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## **ABOUT THE AUTHOR**

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## **A NOTE FROM THE AUTHOR**

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## **SECTION 1: INTRODUCTION<sup>1</sup>**

This paper examines how China can improve transboundary resource management within the Greater Mekong Basin (GMB) through its participation in the Lancang-Mekong Cooperation (LMC).<sup>2</sup> Such improvement would ensure the efficient management and equitable development of the basin's natural resources and ecosystems.<sup>3</sup>

First proposed by Thailand in 2012, the LMC has been enthusiastically promoted by China since 2014. Formalized in the Sanya Declaration of March 2016,<sup>4</sup> it seeks deeper engagement between China and its GMB neighbors—Thailand, Laos or Lao PDR, Cambodia, Myanmar, and Vietnam.<sup>5</sup> The LMC's three cooperation pillars are “(1) political and security issues, (2) economic and sustainable development, and (3) social, cultural, and people-to-people exchanges.”<sup>6</sup> The Declaration asserts that “practical cooperation” would “. . . start with five key priority areas . . . connectivity, production capacity, cross-border economic cooperation, water resources, [and] agriculture and poverty reduction.” Other measures, such as environmental protection and natural resource management, are also mentioned.<sup>7</sup> In November 2017, the LMC Secretariat was established in Beijing and by January 2018 the LMC Plan of Action (2018–2022) was published. This plan described the main topics that would be addressed and

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1 This paper is a revision of a version prepared for a May 2019 workshop at Beijing Normal University. It incorporates criticisms and comments of workshop participants and takes into account what appear to be shifts in China's Belt and Road policies announced in Beijing in President Xi Jinping's speech to the Second Belt and Road Forum on April 26th.

2 A reviewer criticized the idea that China should be “responsible for this,” noting that transboundary resource management should be the joint responsibility of all countries. We agree but so far not all countries have exercised this joint responsibility, to the detriment of the GMB's environment. This paper seeks to understand how—and if—China could provide the necessary leadership.

3 This sentence paraphrases how van der Linde et al. (2001), p. xvii defined “transboundary resource management.”

4 Sanya Declaration of the First Lancang-Mekong Cooperation (LMC) Leaders' Meeting, [https://www.fmprc.gov.cn/mfa\\_eng/wjdt\\_665385/2649\\_665393/t1350039.shtml](https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/t1350039.shtml).

5 Xinhua 2016; Devlaeminck 2018.

6 Sanya Declaration, para. 12

7 The Sanya Declaration, art. 14, states “encourage sustainable and green development, enhance environmental protection and natural resources management, develop and utilize sustainably and efficiently clean energy resources, develop regional power market, and enhance exchange and transfer of clean energy technologies.”

how the practical cooperation would evolve. It also outlined a sequence for the LMC's "foundation-laying" and consolidation activities.<sup>8</sup>

Formal communiques from high-level LMC meetings have affirmed that senior GMB officials welcome the potential for mutually beneficial cooperation. These communiques and other literature (primarily press coverage) highlight LMC activities. They include information on meetings of senior GMB officials, training sessions, LMC development projects, joint working groups on LMC themes, construction undertaken by Chinese state-owned enterprises (SOEs), planning seminars, exchange visits, workshops, and the creation of agencies to study water and the environment.

This is an impressive and vigorous start. The challenge, however, will be to maintain the momentum once the difficulties of cooperation as the LMC's key organizing principle become apparent. The initial emphasis on cooperation has been important in stimulating interest and eliciting commitments to engage from GMB leaders. All participants would wish to cooperate, particularly since China "made the call." Yet, over the medium and longer terms, all GMB countries—including China—will only remain engaged if LMC activities align with their goals, interests, capacities, and preferences. Accordingly, the LMC will have to shift its focus from cooperation to the *public policy* challenges and opportunities that will arise as GMB governments collectively formulate and implement the LMC agenda.

This point is critical because, irrespective of their stated commitments to the LMC, each GMB country has divergent concerns that cannot be reconciled by cooperation alone. An all-too-obvious example is transboundary resource management. Over recent decades, a major driver of economic growth across the GMB has been the exploitation by each country of its "own" natural resources and ecosystem services.<sup>9</sup> This approach has helped produce the decades-long expansion of national output (i.e., GDP). It has also generated serious, sustained environmental degradation.<sup>10</sup>

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8 LMC Plan of Action 2018, especially Section 1.

9 Le and McPherson 2015; Schmittman, Corvino, and Katagiri 2017. Ecosystem services are the benefits humans derive from ecosystems (MEA 2005).

10 Un and So 2009; Vietnam, 2011, p. 2; Vietnam 2016, pp. 50, 90; Lao PDR 2011, p. 7; OECD 2013; Menon and Warr 2013; WB 2017b, pp. 28, 32.

Thus far, no GMB country has significantly modified its pro-growth strategy to prevent or minimize these adverse effects.<sup>11</sup>

GMB countries could move themselves off this counterproductive trajectory by collectively reframing their approach to regional development.<sup>12</sup> This cannot happen as the LMC is currently organized and oriented. It is, nonetheless, a task that China, as the dominant LMC partner, could promote. Such a response would represent a consistent international extension of the country's announced (domestic) desire to create an "ecological civilization."<sup>13</sup>

The paper has the following format. Section 2 describes features of the GMB and the LMC and notes why cooperation (alone, or primarily) is not a viable means of long-term organization or administration. Section 3 focuses on three LMC themes—water governance, connectivity, and environmental sustainability—to illustrate the key challenges and opportunities in promoting transboundary resource management. Section 4 discusses how China could lead the effort to improve transboundary resource management throughout the GMB, and Section 5 concludes by examining the next steps to move the analysis and dialogue forward. Two annexes elaborate topics raised in the text—cooperation and public policy, and adverse cumulative policy outcomes.

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11 There are many studies describing the adverse effects of damming the Mekong. None of them has deflected China, Laos, and Cambodia from continuing this activity.

12 The closest that any GMB country has come to formulating a regional development program has been Laos, with its plan to become the "battery of ASEAN" (Roberts and Sager 2016; Hoogzaad et al. 2017; Thomas 2018). The GMS corridor initiative (Banomyong 2008, 2013; ADB 2011, 2016;2019; Kobayashi et al. 2017) has specifically focused on infrastructure as a driver of regional development.

13 Adopted by the Communist Party in 2007 and now a central feature of the 13th Five-Year Plan (CCCPC 2016, Part X; Wang, He, and Fan 2014; Xinhua 2017a; Standaert 2017; Xi Jinping 2017, and 2018, Section IX). The expression has a number of interpretations ranging from "environmentalism with Chinese characteristics" to "authoritarian environmentalism" to a program that reinforces "the symbiosis between economic development and environmental protection" (Wang-Kaeding 2018).



## SECTION 2: BACKGROUND<sup>14</sup>

### The Greater Mekong Basin

The GMB, covering an area of 795,000 square kilometers—slightly less than the combined areas of California and New Mexico in the United States and slightly more than Qinghai Province in China—is one of the most biologically and geologically diverse regions on Earth. The Lancang-Mekong River, with an average annual discharge of 475 cubic kilometers, flows roughly 4,900 kilometers from the Qinghai-Tibet Plateau to the ocean through the Mekong Delta in Vietnam. The basin has been rapidly transformed, particularly over the past four decades as each country across the GMB has focused on boosting national income, output, exports, and employment by exploiting what each of their governments see as an abundant supply of “cheap” natural resources.<sup>15</sup> The resulting expansion of irrigation, hydro-power facilities, plantations, logging, wild-capture fishing, aquaculture, and the intensification of crop and livestock production have degraded the basin’s natural resources, and urban growth and industrialization have compounded the damage. Much of the environmental transformation is irreversible.<sup>16</sup> With current policies, these trends will continue, and they will most likely be accentuated by climate change.

China has engaged with its GMB neighbors through several arrangements, the LMC being the most recent. Since 1992, the country has been a full member of the Greater Mekong Subregion Economic Cooperation Program (GMS), which was

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14 A reviewer suggested that this section describe the methodology being used and highlight the situation in the GMB before the LMC. The first is premature and the second a digression. Our task is to identify issues promoted by the LMC that improve transboundary resource management. The methodology and analysis will follow from the issues, not vice versa. On the second point, many scholars have examined development performance across the GMB. We build on their contributions to examine China’s future options.

15 Natural resources are only “cheap” from a private perspective. Their social costs, measured as the permanent loss incurred when the *stock* of natural wealth is converted into *flows* of income (GDP), are often exceedingly high (Tarp et al. 2007; Costanza et al. 1997, 2014).

16 Some changes may be technically reversible, e.g., draining wetlands, although the remedial costs may be prohibitive. For others, such as land subsidence and coastal erosion, the biophysical transformations are permanent since they cannot be feasibly repaired with existing (or even foreseeable) technologies and financial capacities.

“founded on a common vision, goals and strategic thrusts for regional cooperation.”<sup>17</sup> And since 1996, China has been a “dialogue partner” of the Mekong River Commission (MRC), which was created a year earlier when the Lower Mekong Basin countries signed the Agreement on Cooperation for the Sustainable Development of the Mekong River Basin.<sup>18</sup>

The LMC has two advantages for China. First, it is a convenient means of interacting with GMB countries on matters that directly contribute to China’s development and security. The mechanism is independent of the Asian Development Bank, the principal sponsor of the GMS, and Western donor agencies that support MRC, and is therefore free of “outside” influence.<sup>19</sup>

Second, the LMC is consistent with China’s “going out” policy.<sup>20</sup> Initially launched to help sustain economic growth, “going out” now encompasses the vision of a Silk Road Economic Belt and a Maritime Silk Road initiative.<sup>21</sup> Designed to stimulate international trade and investment and raise China’s global status by connecting scores of countries across the globe, both of them are now part of the Belt and Road Initiative (BRI).<sup>22</sup>

As the gateway to China’s neighbors within the GMB and Southeast Asia, Yunnan Province is the geographic focal point of the LMC.<sup>23</sup> Critical to China’s campaign to “develop the west,”<sup>24</sup> Yunnan is the origin for the BRI’s China-Indochina Peninsula

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17 ADB 2011, pp. 2–6; ADB 2016a; ADB 2018.

18 Cooperation is common to both arrangements. The MRC was formalized on April 5, 1995, when the “Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin” was signed by the heads of government in Thailand. Article I, “Areas of cooperation,” states: “To cooperate in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin including, but not limited to irrigation, hydro-power, navigation, flood control, fisheries, timber floating, recreation and tourism, in a manner to optimize the multiple-use and mutual benefits of all riparians and to minimize the harmful effects that might result from natural occurrences and man-made activities.”

19 Some scholars stress the strategic motivation for the increased engagement (Zhou Shixin 2018).

20 *Economist*, 2009; Nash 2012; Wang Hongying 2016.

21 Aoyama 2016; Bruce-Lockhart 2017; *Economist*, 2017; Tweed 2018; Tan 2019.

22 Truong-Minh Vu and Mayer 2018.

23 Despite Yunnan being its geographic base, the LMC is administered from Beijing.

24 Jin Kai (2014), Li Hongmei (2013), CEN (2013, 2019), Leibold (2014), and Singh (2016). Develop-the-West was introduced in 1999 by the central government to stimulate growth in the 12 western provinces. I thank Professor Anthony Saich for discussions on this topic.

Economic Corridor, with high-speed rail, modern roads and bridges, industrial parks, hydropower dams, and pipelines.<sup>25</sup>

### **Lancang-Mekong Cooperation**

The LMC Plan of Action describes the LMC's development goals as:

contributing to the economic and social development of sub-regional countries, enhancing the well-being of the people, narrowing the development gap within the region and building a Community of Shared Future Peace and Prosperity among the Lancang-Mekong Countries.<sup>26</sup>

To meet these goals, the LMC will:

take into account the development needs of the six LMC member countries and the regional integration process, reflect the framework established in the Sanya Declaration, highlighting the leaders' guidance, all-round cooperation and broad participation, and follow a government-guided, multiple-participation, and project-oriented model.<sup>27</sup>

The "development needs" are political and security interests, economic and sustainable development, and social and cultural cooperation. The first category includes four items, the second ten, and the third six.<sup>28</sup>

The Plan of Action will be implemented "based on the principles of consensus, equality, mutual consultation and coordination, voluntarism, common contribution and shared benefits, and respect for the United Nations Charter and international laws, as well as in accordance with domestic laws, rules, regulations, and procedures of each member country."<sup>29</sup>

.....  
25 Because of its location, its biodiversity, and its large hydropower capacity (with seven hydro dams and plans for up to two dozen more), Yunnan also has a central role in the 13th Five-Year Plan's quest to expand renewable energy, promote green growth, and foster environmental sustainability.

26 LMC Plan of Action 2018, Section I.

27 Ibid., Section II.

28 Ibid., Sections 4.1, 4.1, and 4.3.

29 Ibid., Section II.

These principles will create a new form of regional cooperation:

By synergizing China's Belt and Road Initiative and the ASEAN [Association of Southeast Asian Nations] Community Vision 2025 as well as the Master Plan on ASEAN Connectivity 2025 and visions of other Mekong sub-regional cooperation mechanisms, the LMC is moving towards a new sub-regional cooperation mechanism with unique features driven by internal strength and inspired by South-South cooperation, which will support the ASEAN Community building and regional integration process, as well as promote the implementation of the UN 2030 Agenda for Sustainable Development.<sup>30</sup>

Finally, the Plan of Action provided a time frame:

Years 2018 and 2019 will be the foundation-laying stage when emphasis should be focused on strengthening sectorial cooperation planning and implementing small and medium-sized cooperation projects. The years 2020–2022 will be the consolidation and expansion stage, when member countries will further strengthen the cooperation in the five priority areas and may explore new cooperation areas that help respond to the development needs of member countries, optimize cooperation model[s] and gradually explore cooperation on large projects.<sup>31</sup>

Several points stand out. The approach is all-encompassing, with references to the BRI, the United Nations' Sustainable Development Goals (SDGs), the ASEAN master plan, and other regional arrangements. The agenda is ambitious, comprising 20 topics related to politics, security, economics, sustainable development, and social and cultural cooperation. There is no ambiguity about its administration. The LMC's activities will be "government-guided, multiple-participation, and project-oriented," with their "implementation" based on the 10 "principles" quoted above.

These features would be heavy lifting for any arrangement, let alone one that does not define its principal term. "Cooperation" appears 98 times in the Plan's 14

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<sup>30</sup> Ibid., Section I.

<sup>31</sup> Ibid.

pages but is never defined.<sup>32</sup> Even if we assume the most common meaning of “working together,” the Plan of Action leaves unanswered the question of whose cooperation is required, how, with whom, when, where, and over what period to reflect the “leaders’ guidance” in following “a government-guided, multiple-participation, and project-oriented model”? Even if the term were defined, “cooperation” is an inadequate means for ensuring LMC activities are formulated and implemented. It offers no guidance on how differences in the participants’ perceptions and preferences will be handled, by whom, based upon what criteria or, if they are to be reconciled, how any concessions will be granted by whom and to whom.<sup>33</sup>

The Plan of Action’s authors left some wiggle room by noting the need to “further explore the most suitable cooperation model for the Sub-regional cooperation in line with the unique features and specificity of the six countries.”<sup>34</sup> But suggesting that everyone will cooperate to devise means of cooperating simply pushes the problem back one level.

There are other concerns, especially as they relate to the implementation of the LMC agenda. The Plan of Action does not indicate how the proposed “new sub-regional cooperation mechanism with unique features” might operate. Outsiders—and even many insiders—lack relevant information on LMC projects, both ongoing and proposed.<sup>35</sup> The fragmentary data available show that projects range from training and

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32 This comment applies even to the Plan’s sections on “working structure” and “practical cooperation” (Sections III and IV), both of which should have furnished some minimal idea of what the concept meant. Terms may be undefined because it was too difficult to reach a mutually acceptable meaning. Alternatively, the intention is strategic, enabling participants to use the meaning that best suits their purposes.

33 The descriptions include “optimize the multi-layer framework,” “strengthen communication and coordination,” “promote dialogues and exchanges,” and “enhance cooperation” without indicating how any of them can be done, by whom, or to what effect, or noting how differences of approach, if any, will be resolved. One reviewer suggested that the vague language may not create problems if LMC participants engage in “step-by-step” learning to determine what form of collaborative action might be possible. This is true, but it will be time-consuming and stretch the LMC foundation period (noted in the timeline) well beyond anything that its organizers anticipate. Moreover, to be effective, the learning from this engagement will need to be widely shared, something that the LMC does not encourage.

34 LMC Plan of Action 2018, Section II.

35 As an illustration, the LMC website [www.LMCChina.org/eng](http://www.LMCChina.org/eng) provides only the most general information and press reports, all of which reaffirm the “warm” bilateral relations and positive outcomes of high-level engagement. Descriptions of what is being done by whom, at whose expense, and for whose benefit are not provided.

exchange visits that would cost thousands of dollars to high-speed railways and hydropower dams that would cost billions. When the LMC Secretariat was launched in November 2017, it was announced that 45 “early-harvest” projects were underway.<sup>36</sup> During 2018, other sources reported that 20-plus ongoing infrastructure and industrialization projects were being implemented and “more than 100” projects related to “quality of life” had been completed.<sup>37</sup> Another source stated that by early 2018, there were financial commitments for 132 LMC projects.<sup>38</sup> No details of these activities have been published, although some external efforts to derive them are underway.<sup>39</sup>

### **The Administrative Inadequacy of Cooperation**

As described in Annex I, cooperation cannot and will not sustain the LMC over the long term. The problematic histories of GMB countries stretch back decades and even centuries, and cannot be diminished by extravagant, repeated commitments to cooperate. All GMB countries, including China, will cooperate only in ways that are consistent with their interests, goals, capacities, and preferences. To expect otherwise is naïve and a misreading of the region’s history.<sup>40</sup>

There are too many facts on the ground that influence, even if they do not deter, mutual cooperation.<sup>41</sup> China’s cascade of seven dams (so far) on the Lancang River

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36 Zhang Yue, 2017.

37 Liu 2018; Lifang 2018.

38 Nguyen Khac Giang 2018.

39 These involve triangulating multiple sources to produce detailed estimates of China’s development assistance and its impacts (Strange 2018). They show that from 2000 to 2014, China spent \$354.3 billion on “foreign aid.” Roughly 20 percent of the expenditure meets the international definition of official development assistance (Junyi 2016; Murphy 2017; Hatton 2017). Problems arise regarding the development impact—on “economic growth,” “debt sustainability,” and “environmental sustainability”—of the remaining 80 percent. Ferchen 2018 reviewed these data and concluded that: “the finding that the majority of China’s official finance is based on commercial terms and that it does not contribute to economic growth in the host countries should be as headline-grabbing as anything.” Gaining access to details of what is unfolding in the GMB is likely to require a similar external effort.

40 One reviewer asked “why should history matter here?” The short and long answer is “mutual mistrust” to which we return below.

41 A reviewer argued that all of these were underway before the LMC. She inquired: What could be done under the LMC to deal with these issues? A brief answer is “nothing much, if anything,” since the LMC’s emphasis on “cooperation” excludes consideration of factors—such as interests, incentives, policies, and power—that drive the underlying behavior.

was constructed with no consultation regarding their downstream effects.<sup>42</sup> There are plans for up to 20 more.<sup>43</sup> The largest cities on the Mekong—Vientiane, Phnom Penh, Can Tho—dump untreated effluent into the river. Plans to treat urban effluents are limited and, at current rates, will not be operational for many years. Furthermore, since the relevant national agencies do not enforce existing environmental regulations, this pollution will most likely worsen. The lack of drainage in major irrigation systems in Thailand, Cambodia, Laos, and Vietnam worsens regional water pollution. None of the water authorities in these countries has plans to re-engineer their irrigation schemes to rectify this deficiency.<sup>44</sup> Logging and plantation development silt up waterways by accelerating hillside erosion. Uncontrolled logging remains a prominent feature of forestry “development” in Lao PDR and Cambodia.<sup>45</sup> Overfishing continues to deplete wild-capture fisheries in the GMB’s rivers and lakes. Regulations reducing overfishing are weakly enforced, in part because GMB governments have systematically underfunded their resource-protection agencies.<sup>46</sup> Scores more examples, many given in this paper, are available to illustrate the point that moving beyond the current circumstances through cooperation alone, or primarily, is fanciful. Methods that appropriately incorporate the interests and concerns of all GMB countries are needed.

Yet, even if the GMB partners were inclined to override their interests and preferences and cooperate to address the problems created by these (and other) facts on

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42 Truong-Minh Vu and Mayer 2018.

43 IR 2013; Cronin 2014; Rasanen 2017; Bernstein 2017; Sullivan 2018. The primary function of the dams is energy production. They are managed to impound the maximum amount of water during the wet season to sustain electricity generation in the dry season. China derives economic benefit from the dams, but they have adverse downstream effects. They reduce the translocation of silt, which is important for lowland fertility, and fluctuations in the river flow affect the productivity of wetlands and related ecosystems. Several scholars have argued that the dams strengthen China’s capacity for “hydro-diplomacy” (Middleton and Allouche 2016; Yeophantong 2016; Brilingaite 2017; Zhang and Li 2018), but this presumed advantage is exaggerated. The Lancang River watershed yields 18 percent of the Mekong’s annual average flow and existing dams can impound 28 percent of that flow (about 23 cubic kilometers). Thus, water cannot be carried over from one hydrological cycle to the next. This point will remain relevant even when (or if) all planned dams are completed. China’s threats to hold water back for diplomatic advantage are not credible.

44 On the few occasions when drainage is mentioned in the GMB literature, it refers to urban areas and flood control (MRC 2004, 2012).

45 Terra Daily 2013; Butler 2013; Saunders 2014; IUCN/WCS/WWF 2017.

46 Allan et al. 2005; Berdik 2014; Connor 2019; Eyler and Weatherby 2019; Seiff 2019.

the ground, their prospects for joint action would be blocked by a more formidable barrier, namely, the requirement that the LMC be based on “a government-guided, multiple-participation, and project-oriented model.” This approach, which has been fundamental to China’s worldwide “development assistance” for decades,<sup>47</sup> is unlikely to be modified to suit GMB partners. It is a top-down mechanism that treats development as something that China does *for* recipient countries and their people rather than something it does *with* them.<sup>48</sup>

This operational model has several drawbacks. First, it is explicitly noncooperative, characterized by a lack of local consultation on project selection and minimal levels of local participation in project implementation. Second, project funding is almost exclusively determined by what Chinese entities will finance rather than what the recipient country has the capacity to support.<sup>49</sup> Third, “government-guided” projects have a poor record of protecting the environment and boosting community livelihoods.<sup>50</sup> And finally, it does not promote regional development. This is obvious with the LMC, where China manages its development assistance through bilateral, high-level, government-to-government interactions. We return to this point below.

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47 China has six categories of assistance: “undertaking complete projects, providing goods and materials, conducting technical cooperation and human resources development cooperation, dispatching medical teams and volunteers, offering emergency humanitarian aid, and reducing or exempting the debts of the recipient countries.” (Xinhua 2011; State Council 2014, Section III; Carter 2017, Section 2). The first two items account for more than 80 percent of China’s foreign assistance (State Council 2014; Yun Sun 2014; Junyi Zhang 2016).

48 Gaining access to information on China’s foreign aid or official finance is difficult. Formally, it is a state secret. Yet, even if it were not, aid, official finance, and foreign investment are regularly conflated (Kitano 2016). Copper 2016 (p. xi) explained: “China has linked its economy to the rest of the world, providing China the key to expanding its status as a world power while forcing many to accept a redefinition of the terms ‘foreign aid’ and ‘foreign investments.’” A recurrent issue is whether China’s foreign aid has strings attached. Officially, there are no conditions (State Council 2011, Preface). Few observers believe this (Kitano 2016, section 2; Chong 2017; Fang 2018). Four of the top five recipients of China’s official finance—Angola, Pakistan, Russia, and Venezuela—are under China’s direct influence.

49 Kyngge 2018. The “debt trap” issue is discussed further below.

50 Mekong Eye 2016; Nguyen Khac Giang 2018; Wang Yan 2018.



### SECTION 3: LMC THEMES

This section relates transboundary resource management to the three LMC themes—connectivity, water governance, and environmental sustainability. There are four reasons for emphasizing these topics. First, they are central to the LMC Plan of Action and, as such, have been formally agreed by all GMB countries. Second, they feature prominently in the national agendas of each GMB country. Third, none of them is handled well or consistently by GMB governments. Fourth, they all generate significant positive and negative transboundary externalities.

#### Connectivity

The value of upgrading and extending infrastructure for all GMB countries is beyond question;<sup>51</sup> there is compelling evidence that improving connectivity stimulates and sustains rapid economic and social development.<sup>52</sup> China's advance since the late 1970s is an example.<sup>53</sup> Based on that experience, China's leaders have concluded that large-scale infrastructure investments will be equally transformative on a global level. The BRI backs this view with action.<sup>54</sup>

Many of the infrastructure projects already underway as part of the LMC either began as, or have become, BRI activities. With few exceptions, they are being implemented by Chinese state-owned enterprises, with Chinese technical support, using commodities and materials sourced from China, and they are financed by official or semi-official Chinese entities. As mentioned earlier, this reflects China's long-established approach

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51 ADB 2005, 2012a; WB 1994, 2009.

52 The remains of Roman bridges, roads, viaducts, aqueducts, and ports highlight this point. Scholars such as Deane (1965) have argued that the United Kingdom's canal system helped stimulate the Industrial Revolution.

53 Prior to China's rise, the gains registered by the "Asian tigers"—Singapore, Hong Kong, South Korea, and Taiwan—depended heavily on broad-based improvements in infrastructure (WB 1993; Page 1994). Finally, all "high growth performance" economies identified in the World Bank's Commission on Growth had invested heavily in infrastructure (WB 2008, Brady and Spence 2010).

54 Zhu Feng 2013; *Economist* 2017; Millward 2018. When asked about the inspiration for the BRI, President Xi stated that it was "aimed at galvanizing global cooperation and is open to all" (Xinhua 2017b). Other assessments of the BRI are more guarded (Kuo and Kommenda 2018; Small 2018; Kynge 2018; Bloomberg 2018; Greer 2018).

to development assistance.<sup>55</sup> Its major advantage is that it gets things done, even if after-the-fact monitoring reveals significant slippage.<sup>56</sup> But it often leaves recipient countries with several disadvantages related to project financing, the quality of work, environmental damage, local participation,<sup>57</sup> and sustainability.<sup>58</sup>

Infrastructure and connectivity across the GMB have improved over recent decades. Progress in some areas—urban roads,<sup>59</sup> electrification, air travel, and telecommunication coverage—has been dramatic, although much remains to be done. Multiple studies describe the massive investments required to upgrade GMB connectivity and highlight several areas needing special attention.<sup>60</sup> There is no regionwide electricity grid.<sup>61</sup> The road network has limited capacity and is undermaintained. There are few international or internal bridges. Ferry and barge services have low capacities, formal border-crossing points are congested, and transit procedures are costly and time-consuming. River port facilities cater to local traffic rather than long-distance trade and commerce. There is an east-west economic corridor,<sup>62</sup> but nothing approximating a north-south one.

Ongoing and proposed LMC connectivity investments will address some of these deficiencies, and LMC communiqués suggest that billions of dollars have already been committed. This is a useful start, but other issues need to be addressed. GMB governments should consider whether the projects chosen contribute to a coherent regional development program, how the recurrent costs (i.e., operations and maintenance) will be covered once the investments are made, and if the investment projects contribute to narrowing the GMB's development gap.

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55 French 2010. Referring to Chinese support to Africa, Yun Sun (2014) noted: “Chinese development finance, combined with the aid, aims at not only benefiting the local recipient countries, but also China itself. For example, China’s ‘tied aid’ for infrastructure usually favors Chinese companies (especially state-owned companies), while its loans are in many cases backed by African natural resources.”

56 Facilities are built, but the quality is often substandard (*Economist*, 2011, 2015; Wang Ruka 2017; Greer 2018).

57 Chandran 2018.

58 A recurring problem in Cambodia has been poor quality road construction (Serey 2012; Dara and Masy 2018).

59 Banomyong 2008, 2013; Perdiguero 2016; ADB 2011, 2016a, 2018.

60 Asia and the GMB's infrastructure gap have been widely analyzed. Estimates for Asia of the *capital* costs are around \$1.7 trillion a year (ADB 2017; Sungsup Ra and Zhigang Li 2018; WB 2018).

61 Despite the widely discussed effort to develop a GMB power pool (Antikainen, Gebert, and Moller 2011; ADB 2012b; Weatherby and Eyer 2016), a detailed assessment of the situation noted that there is “very little connectivity in the power systems of the GMS” (ADB 2013a, p. 86).

62 ADB 2010.

With respect to the role of infrastructure in fostering regional development, GMB countries have collaborated extensively in designing and building infrastructure throughout the region.<sup>63</sup> The LMC Plan of Action referenced this activity when it highlighted the ASEAN Community Vision and the Master Plan on ASEAN Connectivity. As noted above, the BRI would “synergize” with these programs. Thus far, nothing has been published to describe how that would be done, by whom, over what period or what effort, if any, the LMC would make to link with the ASEAN and GMS initiatives. With China deciding LMC activities on a bilateral basis, regional activities will not be supported. Thus far, LMC projects have been chosen to more closely match the capacities and preferences of the implementing agencies (primarily Chinese SOEs) rather than the projects that fit existing regional development programs.<sup>64</sup> High-speed rail facilities, coal-fired power plants, and industrial parks are obvious examples. For its part, China is motivated to improve the access of its western provinces to international seaports. Whether and how, if at all, this priority fits within the broader infrastructure expansion plans of GMB governments is yet to be determined.<sup>65</sup>

If GMB governments are to operate efficiently and maintain appropriately the anticipated expansion in LMC infrastructure investments, they will need to fully fund the additional recurrent costs.<sup>66</sup> Infrastructure investment adds to a country’s physical capital stock, but the economy will continue to benefit from that increased capital

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63 A review of the current national development plans for each GMB country shows that they cover issues such as international outreach, regional integration, and regional infrastructure, and in the case of China also the “deepening” of “pragmatic cooperation with neighboring countries” (CCCPC 2016, chapters 52 and 53). Other GMB countries note their commitments to the GMS and ASEAN regional development activities, particularly transportation (Lao PDR 2016, Section 3, especially 3.4.6, and Section 5, especially 5.3; Vietnam 2016, section 3, point 12 and Part V; NESDB 2017, p. 22, Part 4, Strategy 10, and Section 2.7.2; Myanmar, Government of 2018, p. 4, section 3.4.8 and 3.6.6; Cambodia, Royal Government of 2018 pp. 4, 5, and 17 and Section 1.3, Rectangle 2). Cambodia’s plan is the only one that mentions “One Belt-One Road,” or the BRI as it is now called (*op. cit.*, Part 1.6).

64 Tan (2019, p. 15) refers to an American Enterprise Institute study stating that “through the end of 2017, Chinese state-owned enterprises (SOEs) were responsible for 95% of BRI construction.”

65 As of December 2019, the LMC website offers no guidance on this point. Its “top news” and “bilateral cooperations [*sic*]” refer to a host of individual activities, none of which involve multilateral or regional planning.

66 Some infrastructure, such as Cambodia’s roads, mentioned above, has both poor initial construction and limited maintenance. Public infrastructure in Vietnam has suffered from a chronic shortage of recurrent-cost financing for years. A public finance review noted: “the] maintenance budget can only meet approximately 50 percent of estimated needs at the moment” (WB/VNM, 2017, pp. 15, 19).

only so long as it is operated at, or near, its installed capacity.<sup>67</sup> Two matters require attention. First, each government should maintain an appropriate balance between its *capital* spending and the annual flow of *recurrent* resources needed to operate and maintain the physical facilities. It will also have to generate the human capabilities to manage and operate the capital projects—hydro dams, telecommunication facilities, roads, bridges, power plants, pipelines, railways, effluent treatment facilities, and industrial zones. Under normal circumstances, these capabilities are created when relevant professionals and workers are trained while the infrastructure is being constructed. That, however, requires participation, something the LMC has not promoted.

LMC activities will encounter recurrent-cost problems. None of the GMB governments regularly fund their recurrent costs adequately.<sup>68</sup> Indeed, they typically support infrastructure investment because it offers tangible evidence of economic progress, but they are less enthusiastic about having to make the annual budgetary allocations to operate and maintain the additional capital improvements. Consequently, the capital regularly performs below its designated capacity,<sup>69</sup> and those who use it incur higher costs resulting from added wear-and-tear, congestion effects, and reduced reliability.<sup>70</sup>

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67 Utilization rates are critical determinants of an investment's viability. If operational inefficiencies or poor maintenance prevent planned utilization rates from being attained, prospective benefits are lower than projected and user costs are higher. Examples of Chinese investment, old and new, illustrate this. The Tazara railway, the first major Chinese investment in Africa (built during the early 1970s), has operated well below capacity for decades (Schneider 2010; van Mead 2018). Kenya's Standard Broad Gauge Railway was significantly overbuilt (*Economist* 2015, Oirere 2016, Kacungira 2017), and since it was completed in 2017 has operated at less than half its projected capacity (Griffiths 2018).

68 There is nothing novel about the recurrent-cost problem. Providing adequate recurrent funding is a fundamental principle of responsible public finance. Failing to provide for maintenance was a major cause of wasted capital in the Soviet Union (Granick 1957). The problem was also widely studied by aid agencies in the 1970s and 1980s, especially in Africa. Donors would invest in roads, bridges, buildings, irrigation systems, and so on, but local governments did not provide the resources to operate and maintain them (Heller 1979; Gray and Martens 1982). That pattern has persisted.

69 Performance is typically measured as vehicles per hour for roads, bridges, and tunnels, rush-hour passengers for ferries/buses/trains, and peak-demand volume for pipelines.

70 There are many examples of unrepaired or poorly maintained roads increasing vehicle operating costs and travel times; intermittent electricity supply raising investment costs (e.g., in back-up generators) and reducing the serviceable life of electrical equipment; and undermaintained and poorly supplied public facilities such as schools, hospitals, and health clinics lowering the quality of learning, raising public health risks, and reducing citizen access to public services. One source argues that the decline in China's investment in infrastructure will reduce economic growth, but this is only partly true (*Economist* 2018). Growth will also decline unless existing capital is appropriately maintained and operated.

The third matter related to connectivity is the degree to which the relevant investments contribute to the LMC's development goals. Properly selected, planned and implemented, connectivity investments would help narrow the development gap, promote economic and social development, enhance citizen welfare, and build a regional community of shared peace and prosperity. Prudent management is needed to achieve these outcomes. Excessive levels of debt to finance the infrastructure will widen rather than narrow the development gap with a debt trap, blocking or reducing further investment.<sup>71</sup> Citizen welfare will not be enhanced if infrastructure investments do not meet pressing community needs. As an illustration, when completed, the China-Laos railway will provide ultra-modern high-speed transport for those traveling from Kunming to Vientiane and beyond.<sup>72</sup> This billion-dollar-plus project will speed passengers past towns and villages without electricity and other basic services, delivering them to a city that lacks a functioning wastewater treatment facility. Such contradictions should be avoided if citizen welfare is to improve and the development gap to narrow.

Promoting economic and social development requires attention to local engagement in decisions about what infrastructure will be constructed and local participation in its construction and maintenance. This is where the LMC's "government-to-government" decision-making breaks down. "Trickle-down" effects are weak, at best.<sup>73</sup> LMC project selection should ensure that significant numbers of GMB citizens and households contribute to, participate in, and benefit from LMC activities. A regional community of

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71 China's foreign minister was quoted as denying that China's assistance contributes to a "debt trap" (Chen Jia 2019). Zeinullayev 2019 (Section 4.1, p. 15) specifically found that "no [BRI] country has crossed the high debt threshold purely due to BRI lending." Both ignore a fundamental lesson about debt, namely, avoiding debt problems requires responsible borrowers *and* responsible creditors. Zeinullayev's data reveal that BRI lending has significantly augmented the debt of countries (Djibouti, Kyrgyzstan, Egypt, Ukraine, Sri Lanka, Pakistan, Montenegro, Iraq, Belarus, Laos, Maldives, and Mongolia) that had debt above the "sustainability" criterion of 60 percent of GDP.

72 Xinhua 2019.

73 The Western development strategy mentioned earlier is an example of "trickle-down economics." It has had a modest but unbalanced impact with small declines in the relative income/welfare gap but large increases in the absolute income gap (Moxley 2010; van Dijk 2011; Kwong Man-ki 2015). The China Statistical Yearbook 2018, Table 6-17 shows that from 2013 to 2017, average household disposable income in Tibet (the poorest Western province) increased from 23.1 to 27.1 percent of average household disposable income in Shanghai (the richest in the East). By contrast, the absolute income gap between the two increased from ¥32,433 in 2013 to ¥42,977 in 2017.

shared peace and prosperity will emerge if the benefits of connectivity are broadly disseminated. But for this to materialize governments should actively strive to minimize the negative effects of infrastructure expansion, particularly as it relates to population displacement without compensation, environmental damage, and the continued neglect of welfare programs of groups whose villages and towns remain unconnected. Finally, shared peace will be elusive if the social costs of the infrastructure-generated prosperity are too highly concentrated, especially on the poor.<sup>74</sup>

### **Water Governance**

Water governance relates to the efficient administration and management of all water resources—blue, green, and gray, surface and subsurface.<sup>75</sup> No GMB country administers water efficiently. This is puzzling since the wealth and prosperity of all six countries depend directly on the private benefits, social amenities, ecosystem services, and economic productivity that water provides.

Ensuring that water makes the maximum possible contribution to national and regional development would involve rationalizing the current water-management arrangements, creating basinwide procedures to price water more appropriately, and raising the quality of water throughout the GMB. A fourth goal would be to improve the access of the basin's poorest households to safe water.<sup>76</sup>

Water is not managed efficiently across the GMB because the formal authority for water supply, control, quality, access, distribution, marketing, drainage, and pollution abatement is fragmented within and across dozens of ministries and departments.<sup>77</sup>

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74 Apart from specialists, few officials notice the effects of dam construction and operations on daily and seasonal water flows. The disruptions and variations in flow reduce the productivity of wetlands and damage river-bank plots (Clark 2014; Laura Zhou 2018). The poor—most often the very poor—derive a large share of their livelihoods from wetlands and riverbanks.

75 It is also defined as “what determines who get water when and how much” (UNDP/SIWI 2016, p.4).

76 This is part of Sustainable Development Goal no. 6, to which all GMB governments are committed.

77 Country reports compiled by Aquastat, the FAO's global information system on water and agriculture (available at [www.fao.org/nr/water/aquastat/countries\\_regions/](http://www.fao.org/nr/water/aquastat/countries_regions/)) have sections on institutions and water management. In 2012, Laos had 10 separate committees and departments under four ministries and the prime minister's office that were responsible for “water management, policies and legislation related to water use in agriculture.” For Vietnam, the 2011 report describes water-related entities within nine ministries and the PM's office plus the National Water Resources Council. The 2011 report on Thailand noted “in total there are 31 ministerial departments under 10 ministries, one independent agency and six national committees that are involved in

The problem is worsened by the lack the incentives to collaborate. With authority so widely disbursed, relevant laws and regulations are (at best) weakly enforced.

The national-level divisions are repeated and often magnified at the subnational level. For countries like China and Vietnam, with administrative structures stove-piped from the central to the subcommune and village levels, this web of overlapping authority leaves key tasks untended. Maintaining water quality is an example. There is no incentive for China and Laos, both of which are upstream, to change their behavior to preserve downstream water quality. This problem recurs at the national level as well. Water users in the Upper Mekong Delta of Vietnam pay scant attention to how their behavior—the over-application of agrochemicals, high levels of water extraction, and aggressive flood control—multiply the difficulties faced by the population in the lower delta.

Despite the myriad national agencies involved in managing water, no GMB country has an agency or group of collaborating agencies responsible for transboundary water governance. The Mekong River Commission has no mandate in this area either. As stated in the 1995 agreement cited earlier, its role is to foster the development of “an economically prosperous, socially just and environmentally sound river basin,” which it has been pursuing through detailed surveys of the basin’s features, analyses of water-supported livelihoods, studies of factors affecting river flow (such as damming and climate change), the selective monitoring of water quality and seasonal flood

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water resources development.” In 2011, Cambodia had four ministries and four separate units and departments handling water issues. The 2014 report for Myanmar stated that “no institution is responsible for the overall management of national water resources in the public and private sector.” The Ministry of Agriculture and Irrigation, the Water Resources Utilization Department, the Irrigation Department, the Settlement and Land Records Department, and the Agricultural Planning Department all have some jurisdiction over water. Finally, a 2012 Aquastat report for China showed that seven ministries, two national commissions, the state council, and local water resource management departments and water resource bureaus oversee various, often related, aspects of water. A Global Water Partnership report (GWP 2015) highlighted the urgency for China to adopt an integrated approach to water management. A more recent report indicated that there are now 11 ministries involved in water management and protection (Zhu and Kong 2016). Some GMB countries are attempting to overcome this fragmentation. In Vietnam, the Ministry of Planning and Industry intends coordinating all water activities, although the details are still being worked out (interview with MONRE officials Hanoi, April 2019). Thailand, too, plans place the 38 governmental agencies concerned with water under an Office of National Water Resources (ONWR). The methods for doing this are being devised. Myanmar has recently formed a National Water Resources Committee. (I am grateful to Chayanis Krittasudtacheewa for this information.)



pulses, and training scores of officials and others on water-related issues.<sup>78</sup> None of the MRC's activities has addressed the issue of how water in the Lower Mekong Basin is, or should be, managed and administered, and by whom, however.<sup>79</sup> Other international organizations, such as the International Water Management Institute (IWMI) face similar issues.<sup>80</sup> and there is no indication that this situation will change.<sup>81</sup>

There have been consultations over water issues between the MRC and LMC. They have agreed on six areas for cooperation, and the MRC has suggested transboundary environmental assessment guidelines, but concrete actions have been slow to emerge.<sup>82</sup> This gap leaves problems such as upstream/downstream implications of dam construction, overfishing, improving water quality, preventing water pollution, regulating sand-mining, and preserving or restoring wetland ecosystems widely recognized, well understood, but largely unaddressed.<sup>83</sup> Due to this institutional gap, there no obvious focal point for basinwide responses to the intensifying effects of climate change,<sup>84</sup> two of which are projected to be increased flooding and extended periods

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78 MRC 2004, 2005, 2009, 2012, 2015; Bache et al. 2012.

79 The recently created Lancang-Mekong Water Resources Cooperation Center reflects this. It will deal with information sharing, flood control, drought releases, and the monitoring of hydrological data (Zhong Yong 2018).

80 International water conventions do not help. Vietnam is the only GMB country that has acceded to the United Nations Watercourses Convention (UNWC).

81 Even under the best of circumstances, China's GMB neighbors will have difficulty inducing cooperation in the area of water governance. China is the world's most "upstream" country, sharing 110 rivers and lakes with 18 downstream countries (Daming He et al. 2014; Zhang and Li 2018; CWR 2018). Because of this, China has no obvious incentive to agree with its GMB neighbors on water governance principles that could potentially bind it in ways that may be inconvenient in its dealings with other downstream countries.

82 Again, I thank Chayanis Krittasudtacheewa for information on these areas of cooperation and for references to MRC's plans on environmental impact assessment, joint action plan, and joint monitoring plan for water resource cooperation.

83 On these matters, GMB countries could learn from international experience. There are roughly 270 transboundary river basins worldwide and much cumulative experience on transboundary water governance (Solanes and Gozalez-Villarreal 1999; Abbott et al. 2007; Zeitoun, Goulden, and Tickner 2013; Baten and Titumir 2016; OECD 2015, 2018). For this learning to occur, the LMC would need to support open, transparent research on the relevant water governance issues.

84 A productive area of collaborative research for all GMB countries would be to compile a water balance for the basin that tracks annual inflow and outflow. This would show the aggregate sources of water (surface and subsurface, blue, gray, and green) and their uses (irrigation, aquaculture, wild-capture fishing, hydropower, transport, industrial and urban use, household consumption), and functions (environmental health, preservation of wetlands, and provision of other ecosystem services). Once assembled, this information would enable researchers to trace the projected seasonal shifts in the water balance as climate change intensifies (MRC



of low dry-season river flow. Both will significantly affect the progress LMC makes toward its development goals.

Promoting the efficient use of water has several direct advantages. It raises the *effective* supply of water for key functions such as supporting ecosystem services. It broadens household access to water, thereby improving equity. It raises water productivity and creates an incentive to maintain water quality. Generating and sustaining these effects will require water users to change their behavior. Raising the price of water to levels approaching its social cost will be essential.<sup>85</sup> Making this distinction between price and cost is critical. The price of water is the exchange value mutually agreed by willing buyers and sellers,<sup>86</sup> whereas its social cost is the value of all resources (human, physical, and natural) employed to make it available to its users.<sup>87</sup>

Following the suspension of irrigation fees in Vietnam in 2008, the formal price farmers pay for irrigation water has been zero. The social cost of water, however, includes the cost in material, time, and effort farmers employ to gain access to the water at its delivery point, plus the value of all the resources they devote to using the water and disposing of any drainage or “waste.”<sup>88</sup> These costs are generally low so farmers have no incentive to economize. Farmers gain but the aggregate (nationwide) impact is negative. An adverse aggregate effect is low water productivity.<sup>89</sup> Indeed, national

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2009; ADB 2013b; Lebel et al. 2014; CCCPC 2016, chapter 21; Vietnam 2016, Section III; Schmittmann, Corvino and Katagiri 2017; Hong and Johnson 2018).

- 85 A reviewer wrote, “Water price is a very sensitive issue in LMC countries. [It is] difficult to implement in practice.” Both are true, reaffirming why “cooperation” is inadequate. Some entity will have to impose higher water fees and enforce them. This is a matter for public policy (Buchanan 2003).
- 86 The number of buyers and sellers is less relevant than the voluntary nature of the transaction.
- 87 The social opportunity cost is the value of all resources employed in their best alternative use (Buchanan 1998).
- 88 A full accounting would include the amortization on the construction of the canal, the recurrent costs of maintaining and managing the water facilities, the foregone value of the water in its alternative uses such as ecosystem and transport services, aquifer recharge, biodiversity maintenance in wetlands, and household and industrial water supply. It would also allow for negative externalities, such as losses from waterborne diseases and pollution created by effluents and toxic substances.
- 89 The GMB literature regularly confuses water use efficiency and water productivity (Dang Kieu Nhan et al. 2011; Dang Kieu Nhan 2013). Efficiency refers to the use of water to the point where its marginal value product (product price multiplied by the marginal physical product of water) equals its price. Productivity is physical output per unit of input, e.g., kilograms of rice per cubic meter of water. Vietnamese use water significantly less productively than, for example, their counterparts in China and India (WB 2016; WB/VNM 2017, p. 19; Bastiaanssen and Cai 2018).

output and income in Vietnam would rise if water were transferred to higher value uses such as industry and aquaculture. Social welfare would increase as well because the water “freed-up” would help sustain wetlands and coastal mangroves (reducing coastal erosion), flush iron sulfides from the soil, recharge shallow aquifers, and increase dry-season water flow, thereby reducing crop losses from saline intrusion.<sup>90</sup>

Since water charges are well below the social value of water in other GMB countries as well, major improvements in water allocation and water use would occur if they too raised their charges. Some observers have argued that access to water is a “right” and its price should be kept low to help the poor. In practice, the poor already have limited access to good-quality water and regularly bear significantly higher costs—mainly waterborne diseases arising from consuming polluted water. The irony is that higher water charges, on average, help the very poor by increasing the water available for wetland preservation, supporting higher levels of wild-catch fish and aquatic production, and more frequently flushing the canals and pools from which the poor draw their household water.<sup>91</sup>

The general inability of GMB countries to maintain water quality represents a major governance failure. Households, towns and cities, industries, and mines regularly dump untreated effluents into the basin’s rivers and lakes, and farmers, livestock producers, and aquaculture processors add agrochemicals and other contaminants.<sup>92</sup> The result has been a marked decline in overall water quality with several notable hotspots such as Vientiane, Phnom Penh, and the mid-to-lower Mekong Delta.<sup>93</sup> The increase in water pollution is tangible evidence that none of the GMB governments attaches a high priority to water quality, either within or beyond their jurisdictions.<sup>94</sup>

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90 A reduction in upstream water use in agriculture improves the welfare of coastal residents. The increased river flow reduces their purchases of treated water and/or the costs of upriver travel to collect fresh water.

91 The very poor can have their access to water subsidized through a “lifeline” rate. Common to electricity distribution systems, a lifeline rate involves a low or zero charge for water consumption below a predetermined amount (e.g., 100 liters per person per day) with significantly higher charges for amounts beyond that limit.

92 A major study from the Government of Vietnam and World Bank highlighted the damage created by agricultural pollution in Vietnam (Nguyen Tin Hong 2017; Nguyen Van Cong 2017; Tung Xuan Dinh 2017).

93 Hart, Jones, and Pistone 2001; Kumm and Sarkkula 2008; Chea, Grenouillet and Lek 2016; Sopheap 2016; *Economist*, 2016; Meyn and Dara 2017; Chanthavilay et al. 2017

94 The governments of Vietnam and China have both proclaimed that they seek clean water and unpolluted air (CCCPC 2016, Box 17; WB/MPI 2016, pp. 30, 106). President Xi Jinping has been widely quoted as saying, “Clear

China has recently introduced regulations to improve water quality.<sup>95</sup> Reports suggest some positive outcomes,<sup>96</sup> although decentralized implementation and regulatory indulgence are slowing progress.<sup>97</sup> The reality is that few (if any) of these circumstances would have arisen if GMB countries had enforced their existing anti-pollution laws and regulations.

Current institutional arrangements virtually guarantee that water quality will continue to decline. No GMB country includes the full social costs of water degradation in its project analyses or planning exercises.<sup>98</sup> This omission artificially inflates the financial and social returns for GDP-raising activities that degrade water quality. China's recent push to create an "ecological civilization," noted above, and efforts to "green the BRI" would help reverse that bias, if they were implemented.<sup>99</sup>

Other factors affect water quality—siltation from logging operations, urban and industrial dumping, groundwater contamination through overextraction, and increased salinization of coastal waters as dry-season water flows decline. Governments need to find remedies. Some immediate relief would result if GMB countries enforced their existing environmental laws that prohibit water-polluting activities. These actions

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waters and green mountains are as good as mountains of silver and gold." (Geall 2017; Yanzhong 2018). Yet neither country has created a viable path from present goals (of rapid GDP growth with continued pollution) to the clean water and clear blues skies that, in Vietnam's case, are expected to materialize by 2035. China's growing emphasis on renewable energy is a useful start. Yet, senior officials show little evidence that they recognize how long it will take for the "clear waters and green mountains" referred to by President Xi, to materialize. International experience—from the U.S., U.K., and Europe—indicates that it will take several decades. In Vietnam, key measures of pollution continue to worsen (WB 2017a; VNNet 2017; VOA 2018; DTiNews 2017).

95 In 2015, China introduced the Water Ten Plan, under which 12 ministries and departments were to be coordinated to undertake 238 specific actions in 10 major areas (CEN 2015).

96 In private communication, Chayanis Krittasudtacheewa noted that these outcomes were reported to the forum on environment of the China ASEAN Environmental Cooperation Center (CAEC) in 2017.

97 Zhang Jiaqi 2018.

98 A reviewer commented: "No country in the world does this." Besides being untrue, it misses the point. As von Ciriacy-Wantrup (1952, 1961) and the Sarkozy Commission (Stiglitz, Sen, and Fitoussi, 2009, p.7) pointed out we regularly ignore or devalue what is not measured. More important, as the commission noted, "what we measure affects what we do."

99 MEP 2017. Like the LMC Plan of Action, this initiative relies on cooperation. It includes a list of 25 projects ranging from "international high-level dialogue on ecological and environmental cooperation" to "China-ASEAN environmental technology and industrial cooperation demonstration bases." It does not explain how the cooperators will handle divergent objectives, perspectives, perceptions of risks, capacities to contribute, and willingness to participate.

should be complemented by an increased focus on agricultural drainage and the introduction of water fees. Fees would induce users to economize, thereby making water available for supporting ecosystem services that dilute and remove contaminants.<sup>100</sup> In some cases, households would need to be relocated away from saline-affected and heavily polluted areas.

### ***Environmental Sustainability***

It is difficult, both technically and conceptually, to define what environmental sustainability means across the GMB. Most of the Basin's population depends directly on the use of natural resources for their livelihoods.<sup>101</sup> They have dammed rivers, drained wetlands, expanded irrigation, migrated to urban areas, constructed infrastructure, extended logging operations and plantations, intensified aquaculture and livestock production, and discharged effluents into the environment. These actions have permanently transformed the immediate locations where they occur and often seriously affected areas downstream, downwind, or downslope.

Accordingly, any workable concept of "environmental sustainability" needs to be flexible.<sup>102</sup> To anchor the present discussion, we use the Google Dictionary definition of the environment as "the natural world, as a whole or in a particular geographical area, especially as affected by human activity." Sustainability, in turn, conveys the notion of persistence, endurance, renewal, regeneration, and revival.<sup>103</sup> Given projected increases in population and income, and anticipated rates and patterns of socio-economic development across the GMB, human-induced disturbances will continue and many will intensify. Government incentives, regulations, and investments will amplify or attenuate their impacts by shaping the behavior of

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100 MEA 2005.

101 Accurate estimates of the GMB population are elusive. An Aquastat report (see note 77 above) cited 70 million in 2007. The MRC regularly reports that there are 60 million in the Lower Mekong Basin.

102 "Sustainability" is a slippery term. Dobson (1996) reported more than 300 definitions in the literature, and major studies of sustainability provide detailed analytical frameworks to track its multiple dimensions (Matson, Clark, and Andersson 2016, chapters 1 and 2). Other scholars distinguish weak from strong sustainability (Hediger 2008; Davies 2013), with the distinction resting on whether human and physical capital can substitute for the loss of natural capital.

103 Google Dictionary defines it as avoiding "the depletion of natural resources in order to maintain an ecological balance."

the basin's residents, particularly whether they continue to exploit or begin to preserve its natural resources.

Though the LMC Plan of Action does not define environmental sustainability, it affirms the commitment by GMB governments to the UN's Sustainable Development Goals, from which we can infer what environmental sustainability might mean for them. SDG 15 asserts that participating governments will "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss."<sup>104</sup> Three specific actions by GMB governments would make a major contribution toward this goal. They should implement fully existing environmental regulations, appropriately value natural resources and ecosystem services, and manage collectively the basin's ecosystems as coherent entities.

The ineffectiveness of environmental protection across the GMB is perplexing. Existing legislation in each country stipulates how individuals, corporations, and other entities will avoid environmental harm and, if they create any, the procedures required for repairing and/or ameliorating the damage. Through strategies and plans and representations at multiple international gatherings, each GMB country has reaffirmed the critical importance it attaches to environmental protection.<sup>105</sup> But the problem is not passing legislation and devising relevant regulations; it is implementation. Oversight agencies are typically underfunded relative to their responsibilities, their staffs are inadequately trained and equipped, and they are regularly required to overlook the adverse environmental impacts of government and state-owned agencies. Environmental protection at best, is weakly, unevenly, and arbitrarily enforced. Thus, *de facto* policy (i.e., what is implemented) differs in major ways from *de jure* policy (i.e., what is intended). Through their actions, GMB governments have demonstrated that environmental sustainability has not been a priority. Moreover, even when there have been attempts to remedy the situation, implementation has been distorted by adverse incentive effects (see Annex II for an example).<sup>106</sup>

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104 United Nations 2015.

105 For instance, see State Council (2015), CCCPC (2016, Part X) and Vietnam (2012a, 2014). Despite years of worsening pollution, China's 1989 environmental protection law was revised only in 2014 (Duggan 2014).

106 Yanzhong Huang (2018) highlighted the contradictions involved in China's implementation of "pollution control." In the wake of Beijing's pollution emergency in January 2013, scholars criticized the folly of promoting

Natural resources across the GMB nations' ecosystem services are systematically undervalued. This practice has grossly distorted the allocation of all productive resources, leading to the destruction and degradation of large amounts of the GMB's natural wealth. The distortions have been perpetuated through the continued use of conventional valuation techniques that underrepresent the contribution of natural wealth to national income and welfare.<sup>107</sup> None of them includes the permanent loss of natural wealth required to generate each project's transitory flows of income.

To remedy this and other evaluation biases, each GMB country should begin basing its project and program decision-making on the full social contribution to national income and welfare of all productive factors, including natural resources and their associated ecosystems services. One method that is being increasingly adopted internationally is the System of Environmental and Economic Accounts (SEEA). These accounts, which upgrade the current System of National Accounts (SNA), explicitly value the stocks of natural, physical, and human capital and the flows of income they generate.<sup>108</sup>

Revamping national accounting systems takes time—particularly to generate the necessary human capacities and strengthen the relevant institutions—but some modest adjustments would have immediate desirable results. One is to introduce payments for ecosystem services (PES) on a broad range of natural assets. Vietnam, Thailand, and China are already doing this for selected services. Laos and Cambodia are moving in that direction. Examples include ecotourism charges, watershed service fees, irrigation fees and groundwater charges, an eco adjustment to utility bills, timber stumpage fees, and license fees for the regulated discharge into the environment

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GDP, which is valued, at the expense of the environment, which is not (Wharton 2013; Albert and Xu 2016; Yana, Andersson and Shiqiu 2016).

107 Tarp et al. 2007; ICEM/IUCN 2013; Lebel et al. 2014; Hall and Manorum 2015. Benefit-cost techniques, as well as the international System of National Accounts (SNA), attribute significant, but varying, contributions of unmeasured or "uncosted" inputs to the measured effects of physical and financial capital and human labor, artificially inflating their returns. This makes projects appear financially viable, irrespective of their impacts on natural capital.

108 An advantage of shifting to SEEA is that it directly reveals the increasing relative scarcity and social value of natural resources. As Johnson (2000) noted, for all practical purposes, the stocks of natural resources and flows of ecosystems services are fixed; i.e., they cannot be augmented with current technology and financial capacities. These circumstances do not apply to human, physical, and financial capital or information. As the latter stocks cumulate over time, the value of natural capital (technically its shadow price) increases.

of effluents, such as treated water, exhaust from electricity-generation plants, and vehicle emissions.<sup>109</sup> The objective should be to charge for the services provided by natural resources—through fees, taxes, or direct pricing—at levels that approximate their social value/cost.

Another immediate constructive change would be for GMB governments to mandate that all project and program evaluations cover the full social costs of the natural resources being transformed (making allowances for the losses of amenity and third-party productivity) and projected remediation costs. Relevant procedures are widely available.<sup>110</sup>

None of these changes will alter the full social costs of investment activities, which are incurred whether governments acknowledge them or not. The changes will attribute the explicit contribution to output and income of natural resources, the value of which now enters conventional project appraisals at zero. This information will not radically alter the projects that are currently underway or have been selected for political reasons. But by focusing on the full social benefits of natural resources, government decision makers and other stakeholders (including citizens) will be reminded of the contribution natural resources and their associated services make to national wealth and welfare.

Transboundary effects can be readily incorporated into project and program appraisal as GMB countries upgrade their accounting procedures. These effects are characterized by the interdependencies, both positive and negative, for which the SEEA was designed.<sup>111</sup> Examples include the change in river flows and wetland productivity resulting from dam construction and operation, the distributional effects of expanding fossil-fuel electricity production, changes in agricultural productivity due to reductions in silt deposition, and the basinwide impact of the destruction of fish stocks through overfishing.

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109 The revenue generated pays those who provide or sustain the services (Kolinjivadi and Sunderland 2012; Janekarnkij and Polpanich 2014; Lebel, Wattana, and Talerngsri 2015).

110 Many of the methods were developed by the World Bank's efforts to measure the value of natural capital and develop a broader measure of national wealth (Dixon and Hamilton 1996). Much of that work has been incorporated in the Wealth Accounting and the Valuation of Ecosystem Services (WAVES) and other initiatives designed to improve natural resource valuation (WB 2012b, 2015; Vardon 2014).

111 Van der Linde 2013. This is evident in Environmental Impact Assessments that Campbell et al. (2015) show focus on a narrow range of issues. The SEEA overcomes this bias.



The integrated management of the GMB's natural resources and ecosystems is a topic that links the work of many agencies, including the MRC, the GMS, and non-government organizations such as the International Union for Conservation of Nature, the World Wildlife Fund, SUMERNET, and the Asia Foundation. Most efforts to foster integrated ecosystem management have been thwarted by the GMB countries' views regarding sovereignty over their "own" natural resources. Whether these claims ever made sense, given the trans-frontier mobility of flora, fauna, surface and subsurface water, and the atmosphere, they are irrelevant as climate change intensifies.<sup>112</sup>

Constructive collaboration in this regard will require efforts to overcome the widespread institutional fragmentation that hinders environmental management.<sup>113</sup> Convincing GMB governments to give greater weight to the social value of natural resources will take time to make the case and to organize the response, for example by expanding PES and adopting SEEA. Creating the domestic capacities to deal with transboundary ecosystems will involve reordering institutional responsibilities and devising incentives consistent with those responsibilities. The bureaucratic difficulties, especially in authoritarian systems, should not be underestimated. Sharing information would provide a useful starting point.<sup>114</sup> An area where cooperation may be the easiest is the one furthest from central government such as community-run programs along national borders.<sup>115</sup>

The difficulties involved in each area will emerge as efforts to collaborate unfold. This is where the activities of international and regional agencies are important. These entities—some of which were referred to earlier—view natural-resource management

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112 Raising the productivity of energy use (ADB 2013a) is an area where all GMB countries could make a significant contribution. A common global measure of energy productivity is output measured in 2011 constant international dollars per kilogram of oil equivalent ([www.wdi/worldbank.org/table/3.8](http://www.wdi/worldbank.org/table/3.8)). Except for Myanmar, all GMB countries are below the world average of 7.9 in 2015. China was 5.7; Thailand and Cambodia were 7.5, and Vietnam was 7.7. (Data for Laos were not reported.)

113 This is a key feature of Transboundary Natural Resource Management (TBNRM). Effective TBNRM is "dependent on good NRM; it is not meant to replace it" (van der Linde et al. 2001, p.106). So far, no GMB country has "good NRM."

114 As Clark (2014) noted, it would avert downstream damage from unexpected water surges.

115 Based on lessons using TBNRM in transboundary peacebuilding, Roberts (2003) noted that starting locally builds trust, improves communication, sorts out land tenure issues, provides resources to meet local challenges, and enhances management capacities.



in transboundary terms. They have different perspectives, priorities, and time horizons, but these differences could be readily accommodated if GMB governments signaled their commitment to better manage their transboundary ecosystems. A final question is whether the GMB has an obvious leader in this area. Thailand has emphasized the “sufficiency economy” for more than two decades<sup>116</sup> and, as noted earlier, China has been promoting an “ecological civilization.” In theory, either country could lead. That, however, is incidental to the main goal, which should be to prevent further environmental damage.

### **Overview**

The discussion so far has identified significant, widespread, institutional underperformance and nonperformance across the GMB. But it is important to keep this matter in context. Institutional underperformance in GMB countries is a matter of choice. Each country is a “hard”—that is, authoritarian—state that regularly demonstrates its capacity to determine what can and cannot be done. Each country closely controls domestic political activity and the media and rigidly enforces internal security. Each country also spends lavishly on its public sector and subsidizes loss-making enterprises that serve their leaders’ purposes. The inability of GMB countries to manage the basin’s natural resources effectively, in large part, has been deliberate.

## **SECTION 4: CHINA’S ROLE IN TRANSBOUNDARY RESOURCE MANAGEMENT?**

China could help improve transboundary resource management across the GMB. It is the main upstream country and a major trading partner for all GMB countries and, in view of its national income and material wealth, it can support large-scale regional investments. As the regional hegemon and principal LMC partner, it has the institutional means to provide the necessary leadership.

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<sup>116</sup> First introduced by the King Bhumibol Adulyadej of Thailand in 1974, the idea of “sufficiency economy” was formalized in 1997 and incorporated in the 9th National Economic and Social Development Plan, 2001–2006 (Mongsawad 2010).

How might China induce GMB countries to follow its lead? First, information on all LMC activities will need to be made available. It is unreasonable to expect GMB countries to accept fully that the LMC is “a new sub-regional cooperation mechanism with unique features” serving their interests unless this can be publicly verified.<sup>117</sup> Opening up would involve regularly publishing electronic and print information on all LMC activities, along with their financing, who is implementing them and how, their timing, indicators for monitoring and evaluation, and how they contribute to LMC development goals.<sup>118</sup>

Second, local consultation and local participation should feature in all LMC activities. The current “leader-driven,” bilateral, government-to-government, project-based model used by the LMC neglects these dimensions. China’s insistence on doing *for* rather than doing *with* its GMB partners creates aid dependence, leaves undeveloped local capacities to operate efficiently and maintain effectively the capital and facilities created by LMC activities undeveloped, and potentially creates a level of recipient-country debt that cannot be serviced.

Third, China needs to move beyond its obsession with cooperation as the principal means of LMC engagement. The overemphasis on cooperation reinforces perceptions that its main function is to compel compliance.

Fourth, China should work to ensure that all GMB countries, itself included, account fully for the social costs of all LMC activities. The environmental deterioration throughout the GMB is direct evidence that exploiting natural resources was never a cheap way to grow and develop. Since, as noted earlier, China already has several efforts to appropriately value ecosystem services,<sup>119</sup> broadening the program across the GMB should be straightforward. A further advantage is that it would reinforce efforts to strengthen “green growth” and promote environmental sustainability.<sup>120</sup>

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117 TBNRM is relevant here as well. Van der Linde et al. (2001, p. 106) noted that “here is no blueprint for TBNRM” although they noted: “Communication is essential across the borders, within countries, within and across levels, and across institutional and technical sectors. This includes the sharing of information in a transparent and timely way” (p. 109).

118 Again, TBNRM provides useful lessons. Its practitioners emphasize the need for open, accountable, transparent procedures, regular monitoring and reporting, and widespread availability of information (van der Linde et al. 2001; Ch. 4; van der Linde 2013; Kaul 2015, p. 52; Okonkwo 2017).

119 IUCN 2018, pp. 7, 12–22; Zhu and Ouyang 2019.

120 WWF (2014) and Walker (2019) specifically analyze how the GMB and the BRI can be made “greener.”

How would these changes improve transboundary resource management? Opening up informs all parties of the status and trends in natural-resource stocks and the flow of ecosystem services and how current and projected LMC projects affect them. Broader local consultation and participation would more closely match LMC activities to the needs and capacities of the communities being assisted. With improved information flows, the progress toward the LMC's development goals can be monitored and adjustments made, if needed. At a minimum, these changes would encourage all participants to accommodate differences in attitudes toward the transformation and use of natural resources, to accept opposing perspectives regarding their value and contribution to national income and welfare, and to consider disparate opinions regarding who gains and who loses and who should be compensated by whom, and how.

Another advantage of opening up and local participation is that LMC activities would be subjected to public scrutiny.<sup>121</sup> This may not reduce development disparities across the GMB, but it would prompt progress in that direction.<sup>122</sup> There are some obvious examples. The China-Laos high-speed rail referred to earlier is one. Hydro dams in Laos regularly displace thousands of households without adequate compensation while simultaneously exporting the low-priced electricity generated by the dams to boost the lifestyles of residents in Bangkok and elsewhere.<sup>123</sup> Government-to-government project selection in Thailand resulted in the high-speed rail link from China to Bangkok bypassing the country's northeast, which is already systematically deprived of development opportunities due to local political factors.<sup>124</sup> By contrast, local resistance is making it difficult for Vietnam's leaders to expand coal-fired generation

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121 Junyi Zhang 2016. Zhang Chao (2018) noted that the lack of transparency in China's foreign assistance raises the risk that its programs and their objectives will be misinterpreted both at home and abroad. Opening-up offers a chance to counteract this tendency, particularly between China and its GMB partners.

122 Authoritarian governments are reluctant to open up, but the LMC's goals will not be met unless restrictions are eased so that information can be shared.

123 Sayatham and Sudhardiman 2015.

124 National budgets provide evidence. A 2012 World Bank public financial management review of Thailand showed that the greater Bangkok area, which had 17 percent of the country's population and generated 26 percent of its GDP, was allocated 72 percent of the national budget. By contrast, Northeast Thailand, which has 34 percent of the country's population and generated 11.5 percent of its GDP, received 6 percent of the national budget (WB 2012a, p. 7).

capacity.<sup>125</sup> These and other examples show that if the LMC is to achieve its goals of reducing the development gaps, enhancing citizen welfare, and promoting social and economic development, the potential outcomes of its activities should be closely and critically scrutinized.<sup>126</sup>

What is the likelihood that China will make these changes? Until President Xi's April 2019 speech to the Second Belt and Road Forum, most observers would have argued that China had no incentive to modify its approach.<sup>127</sup> Up to that point, all high-level LMC communiqués were reporting major progress and consistently adding more projects to the agenda.<sup>128</sup> It is inconceivable that any senior Chinese official would have advocated revising what is seen officially and advertised widely as a winning strategy. President Xi's pronouncements, however, may indicate some possibility for flexibility. His speech highlighted the need for transparency, opening up, avoiding debt traps, improving governance (especially "global governance"), and promoting innovation. He also spoke of the "need" for China to "be guided by the principle of extensive consultation, joint contribution, and shared benefits"; "pursue open, green, and clean cooperation"; "pursue high-standard cooperation to improve people's lives and promote sustainable development"; "take a people-centered approach, giv[ing] priority to poverty alleviation and job creation"; "ensure the commercial and fiscal sustainability of all projects so that they will achieve the intended goals as planned"; "make economic globalization more open, inclusive, balanced, and beneficial to all"; and "work harder to ensure the implementation of opening-up-related policies." He also said China would "adopt widely accepted rules and standards and encourage participating companies to follow general international rules and standards in project development, operation, procurement and tendering and bidding."<sup>129</sup>

The speech outlined an expansive agenda that, if implemented, would represent a fundamental shift in China's approach to BRI activities and presumably to the LMC

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125 Mekong Eye 2016; TTN 2016; Le Quynh 2019; Khanh and Gloystein 2019.

126 The development gap will not be reduced quickly. The study of GMS energy prospects noted "development gaps remain very large" (ADB 2013a, p. 88, Table 30).

127 This was the conclusion of the version of this paper presented to the May 2019 workshop at Beijing Normal University.

128 China, 2017, 2018; Lifang 2018; Li Keqiang 2018; Xiang Bo 2018.

129 Xi 2019.

as well. If it comes, change is likely to be slow. It will take time to assess the impact of the President's announcements. Chinese officials recognize the bureaucratic risks involved and are likely to remain cautious, especially in the short-term. Thus far, the LMC has been administered so that GMB countries cooperate in ways that promote China's agenda. Nevertheless, some outside of China may not feel so constrained. The issues identified—recurrent costs, raising water efficiency and quality, and appropriate resource valuation—are critical to national development, essential for improved transboundary resource management and, thus far, largely unaddressed. Officials from other GMB countries just may take President Xi at his word and act accordingly.

## **SECTION 5: CONCLUDING COMMENTS**

China could readily lead an effort to improve transboundary natural resource management across the GMB, although it is not clear that it will. At present, the LMC is serving its “leader-guided” purposes and GMB governments continue to support the LMC agenda. GMB countries are likely to require more time to determine whether government-to-government bilateral project selection and implementation is closing the GMB's development gap and serving other purposes such as regional development.

If China's leaders decide to reorient the LMC's administration, there is plenty to do. This essay has identified areas critical to improving transboundary resource management. Moreover, even if senior GMB officials are reluctant to shift direction, some useful experimentation may be possible at lower levels.

Numerous groups and individuals in the GMB, both inside and outside of government, have made noteworthy progress on topics related to improving transboundary resource management, and with the appropriate encouragement they may directly address the questions raised in this paper.

Four issues stand out.

- The recurrent-cost implications of the surge in BRI investment: Understanding the recurrent-cost implications will require a full accounting of the scale, scope, and timing of the investment expenditure being made to meet the

LMC's goals. It will also require detailed collaborative understanding of each country's budget allocations for operations and maintenance and how they are financed.

- Overcoming the institutional fragmentation that blocks transboundary water governance: Rationalizing the basin's approach to water governance would enable GMB countries to increase the effective supply of water through selective fees while simultaneously raising water quality.
- The collective need for GMB countries to appropriately value *all* of their productive resources and use those valuations in selecting future projects and programs: The appropriate valuation of all productive resources would prevent the massive social waste associated with continued environmental degradation. Furthermore, this approach would ensure that transboundary externalities are no longer overlooked, helping stimulate the collaboration required to enhance *regional* development.
- The collaboration required to formulate transboundary responses to climate change: A further advantage to appropriate valuation is that it would induce GMB countries to begin addressing climate change and dealing collectively with its consequences.

In principle, the LMC provides an institutional framework through which these issues could be addressed. That has not happened so far because of China's focus on using the LMC to drive its bilateral agendas with each GMB country. This situation need not persist. President Xi's references at the second Belt and Road Forum to opening-up, accountability, participation, consultation, people-centred approaches, green cooperation, and global partnership, among others, suggest that changes are possible. Other GMB countries should welcome this shift and, within the limits of their interests and capacities, use it to help meet the LMC's development goals.

## ANNEX I: THE LMC AND PUBLIC POLICY

Cooperation is a central feature of both the Sanya Declaration and the LMC Plan of Action. The LMC presumes that by cooperating, GMB countries will stimulate broad-based development. In their high-level meetings, GMB leaders have agreed to cooperate, but since they do not define the term, they have leeway to decide how cooperation fits their agenda or where their agenda is consistent with cooperating.<sup>130</sup>

In principle and in practice, cooperation cannot cope with the LMC's complexities. First, each country will have to decide what it means to cooperate and how they will cooperate, on what issues, and over what time periods, as well as the procedures through which cooperative activities will be derived and modified. Second, even when they do cooperate the outcomes and consequences will remain unclear. Game theorists remind us that cooperators always have mixed motives.<sup>131</sup> Goals and preferences, perceptions of gains and losses, willingness to bear risks, the time frame involved, and acceptable responses are never completely aligned and may even conflict.<sup>132</sup> Third, none of the GMB countries share the same worldview; relations among them at best have a checkered history, contentious issues continue to emerge, and each of them has competing interests. Offsetting these factors is that each country is tethered in multiple ways to the Lancang-Mekong River, and each has openly asserted that it values peaceful coexistence. Within the limits of their interests and mutual advantage, all of them appear willing to work together to develop the GMB.<sup>133</sup>

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130 These qualifications highlight the point emphasized by Yeophantong (2017, p. 169) that compliance does not imply consent. She specifically criticized how cooperation features in GMB water governance. She aptly reminds us that "lack of contestation does not always indicate cooperation or concord."

131 Schelling 1960, 1978; Aumann 1998; Maskin 2016. Scholars who have addressed GMB issues from a game-theoretic perspective include Belay et al. 2010; Singer (2015), Kim and Dinar (2015), Heydarian (2018) and Middleton (2018).

132 Illustrated by Thomas Schelling's 1960 question: When two dynamite trucks meet on a road built for one, who backs up?

133 Whether the GMB countries embrace the notion of a community of common destiny (Mardell 2017; Zhang Denghua 2018, Truong-Minh Vu and Mayer 2018) or, as the LMC Plan of Action puts it, a "Community of Shared Future Peace and Prosperity," has yet to be demonstrated (Liangyu 2018). One difficulty is that there is little clarity on what "shared community" means in practice (EIAS 2018; Tan Kuan Hian 2019; Zeinullayev 2019).

Fourth, sovereign nations typically welcome cooperation with their neighbors, but it is rarely adequate to sustain their ongoing relationships. All GMB governments will trade off the relative advantages of their prospective mutual engagement, reconcile divergent perceptions of the goals being sought and the risks involved, jointly negotiate how much and in what form they will contribute to the effort, and, in light of the progress they each measure, continue existing activities and selectively modify (or abandon) them.

The implication is that although cooperation has been an important motivator for devising the LMC, it will not be critical to its long-term achievements. This conclusion is unlikely to be accepted by LMC advocates, who will refer to the progress made so far through multilevel cooperation and, as noted earlier, will note that all GMB governments have regularly asserted their commitment to cooperate. Both are true, but beside the point. Government policy is not what is stated in action plans, strategic agendas, formal declarations, or legal instruments. It is reflected in behavior—what is done and left undone, what is funded and left unfunded, and where, how, and from whom revenue is derived. It is this behavior that reveals the government's priorities and defines its agenda.<sup>134</sup>

The LMC's emphasis on cooperation systematically ignores how governments act. The decisions that underpin their actions are motivated by questions like: Who gains and who loses from the activities chosen? Do winners compensate losers and by how much, over what period, and starting when? And how are public-private interactions negotiated and mediated, and in whose interests? None of these matters can be resolved by cooperation. Answers emerge as the respective governments act (or choose not to act) in accordance with their interests, goals, preferences, and capacities.

This point undermines the idea in the LMC Plan of Action that implementation will occur—as noted earlier—according to the principles of consensus, equality, voluntarism, and so on. In practice, LMC implementation will involve negotiation, conciliation, compromise, reciprocation, compensation, adjudication, concession, mutual

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<sup>134</sup> The emphasis on action is deliberate. It is consistent with a wide range of formal definitions. For example, *Webster's New Collegiate Dictionary* (1975, p. 890) defines policy as "a definite course or method of action selected from among alternatives," while dictionary.com defines it as "a definite course of action adopted for the sake of expediency, facility etc."



acceptability and, where appropriate, rejection. For GMB countries to make substantial, sustained progress toward the LMC's development goals, they will need to openly identify, debate, and analyze the relative benefits and costs associated with each LMC activity and, if possible, resolve any difficulties that may arise.

A fundamental problem with the LMC's overemphasis on cooperation is that it assumes GMB countries have deep reservoirs of mutual trust. Numerous examples cited earlier demonstrate that this is not the case. Successful implementation of the LMC agenda will require significant efforts to rebuild and sustain trust.<sup>135</sup> A useful start would be for GMB countries to agree on mechanisms to foster mutually beneficial interaction when cooperation proves inadequate. Efforts should be made to demonstrate to all GMB stakeholders that the LMC can help close the development gap. Relevant actions would be the assurance that all LMC-supported activities will be transparently and accountably designed and selected, that they provide value for money, and that they're being sustainably financed. Procedures to openly and fairly resolve technical and other differences among GMB partners will be needed as well. Finally, the performance of LMC projects will need to be monitored, clearly reported, and widely reviewed so that GMB partners and other relevant stakeholders can examine the outcomes, learn from them, and use the experience to guide future actions.

For its part, China can begin building trust by actively demonstrating that the activities it promotes through the LMC are consistent with its domestic policies such as "green growth" and environmental preservation.<sup>136</sup> This is currently contradicted by its support for coal-fired power plants in Cambodia and Vietnam.<sup>137</sup> The points about openness, transparency, and appropriate monitoring are obvious.

In the absence of a marked reduction in the LMC's reliance on cooperation, the arrangement faces two potentially unattractive futures. One is that the enthusiasm associated with the LMC's launch and the initial burst of activities will fade, and

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135 Lu Guangsheng 2016; Truong-Minh and Mayer 2018. The instrumental role of trust has been widely examined (Coleman 1990; Fukuyama 1995). Critical elements in fostering trust are predictability, reciprocity, transparency, and measured engagement (Yamagishi et al. 2005).

136 Domestically, China is being guided by "the concept of innovative, coordinated, green, open and shared development" (Xinhua 2017b). So far, these grand goals have not carried over to guide the operations of Chinese SOEs which are building LMC-sponsored infrastructure throughout the GMB.

137 Cronin 2014; TTN 2016; Klare 2016; Cunningham 2017; Kotani 2018.

partners' attention will drift elsewhere. LMB countries already participate in several groupings (GMS, MRC, ASEAN, the Lower Mekong Initiative) that actively promote regional development.<sup>138</sup> The other scenario is that the partners remain engaged but in ways that involve, at most, relatively minor adjustments in their existing activities to align them with the LMC agenda as they interpret it. Such "muddling through" is the all-too-familiar bureaucratic response when operational requirements become too disruptive or the outcome is judged to be not worth the political capital expended.<sup>139</sup>

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138 This may already be happening. Chandran (2019) cited a Center for Strategic and International Studies brief that inquired, "Will . . . [BRI] spending help people who need it most? Will it go into viable projects or white elephants? Will it help or hurt climate change? Will it create or destroy value?"

139 "Muddling through" refers to bureaucratic decision making in which governments, ministries, or departments do not act decisively to resolve an issue (Lindblom 1959). Solutions or outcomes are produced (or "ground out") by the existing institutional rules and relationships. Under these circumstances, policymaking becomes "a process of successive approximations to some desired objectives in which what is desired itself continues to change under reconsideration" (p. 86).

## **ANNEX II: FOOD SECURITY, IRRIGATION, AND FLOOD CONTROL IN VIETNAM<sup>140</sup>**

Decisions taken decades ago continue to affect agriculture and the environment in Mekong Delta in Vietnam. The government's quest for food security, irrigation expansion, and flood control illustrates how adverse effects can accumulate.

Vietnam's "rice first" policy was launched in the 1970s in response to widespread food deprivation following the end of the Vietnam War.<sup>141</sup> To boost national rice production, farmers in the Upper Mekong Delta were encouraged to plant three crops of rice a year rather than the traditional one or two. Despite repeated studies showing that the third crop loses money, farmers remain locked in. Communal irrigation schedules and their small plots prevent farmers from shifting out of rice or leaving their land fallow.

Triple-cropping rice reduces soil fertility and intensifies pressure from pests and diseases. Farmers respond by applying more agrochemicals. The Mekong Delta has no dedicated drainage, so irrigation water flows over farmers' fields and returns to the supply canal. This cascading water use increases the concentration of chemicals as the water moves down the Delta, making it progressively less suited for horticulture crops and aquaculture. Producers compensate by using groundwater. Extraction rates are now so pronounced that land subsidence is accelerating. The result is a relative sea-level rise that, when combined with declining dry-season river flows,<sup>142</sup> increases saline intrusion. Farmers, in turn, raise the rate of groundwater use.

These interconnected effects exacerbate the delta's water quality and environmental problems. Unremediated, they will continue the self-reinforcing adverse spiral of environmental degradation, increasing water shortages, and declining water quality.

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<sup>140</sup> Example taken from Le and McPherson (2019).

<sup>141</sup> Ho and McPherson 2010; Le and McPherson 2015.

<sup>142</sup> Vietnamese officials regularly attribute the decline in dry-season flows to the operation of Chinese Lancang River dams. An inventory (S,s) or "bathtub" model will demonstrate that this has the story backwards. Chinese dams impound flood season flows which are then released during the dry season to generate electricity. This behavior boosts dry-season flows through the delta.

These problems are compounded by three factors. The persistence of a policy that equates food security with the supply of rice;<sup>143</sup> the development of irrigation in the delta for water supply only rather than as an integrated water supply and drainage system; and flood control levies and dikes that accelerate peak flood season water downriver leaving less water upriver to sustain dry-season flows.

A fourth factor is ineffectual environmental management. Vietnam's Ministry of Natural Resources and Environment (MONRE), which is responsible for implementing environmental law, lacks the human capacity and institutional stature to require farmers to reduce their use of agrochemicals.<sup>144</sup>

Viewed separately, each decision—achieving food security, expanding water supply, and flood control—could be readily justified, but officials have been slow to recognize their adverse cumulative impacts and take action to remedy them.

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143 A World Bank study noted the high opportunity cost of continuing public irrigation investment to boost rice production (WB/VNM 2017, p. 30).

144 MONRE also lacks the capacity and institutional stature to prevent other agencies, particularly State-owned entities and other ministries, from polluting.

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ADB	Asian Development Bank
CCCPC	Central Committee of the Communist Party of China
CEN	China Economic Net
EIAS	European Institute for Asian Studies
ESCAP	Economic and Social Commission for Asia and the Pacific (United Nations)
FAO	Food and Agriculture Organization of the United Nations
GWP	Global Water Partnership
ICEM	International Centre for Environmental Management
IR	International Rivers
IUCN	International Union for the Conservation of Nature
MEA	Millennium Ecosystem Management
MEP	Ministry of Environmental Protection
MRC	Mekong River Commission
NESDB	National Economic and Social Development Board of Thailand
OECD	Organization for Economic Cooperation and Development
SIWI	Stockholm International Water Institute
TTN	Tuoi Tre News
UNDP	United Nations Development Program
VOA	Voice of America
WB	World Bank
WB/VNM	World Bank/Government of Vietnam
WB/MPI	World Bank/Ministry of Planning and Investment (Vietnam)
WCS	World Conservation Union
WWF	World Wildlife Fund

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