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Globalization, Regionalization, and Hydroelectric Development on the Lancang

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I. Introduction

"Globalization" has become a buzzword in recent years denoting (among other things) the rapid and geographically widespread increase in capital mobility and the growing clarity of a spatial division of labor[1] that spans the globe. Samuel Kim (2000) defines globalization as "a series of complex, independent yet interrelated *processes* of stretching, intensifying, and accelerating worldwide interconnectedness in all aspects of human relations and transactions" (p. 10, italics mine). This paper uses a political ecology approach to briefly explore the dynamics of hydroelectric projects on the Lancang (Mekong) River in Yunnan Province as they relate to China's integration into the processes of the global economic system. The strength of a political ecology approach lies in its attention to the linkages between local decisions about natural resource use and the political economic processes of global capital. I argue that the hydroelectric projects in question provide a clear window through which to view these linkages to economic processes being played out both on a regional and global scale.

The Mekong River, known in China as the Lancang Jiang, begins its course at an altitude of approximately 4,500 meters, high in the Qinghai-Tibet Plateau. After traveling some 4,500 kilometers across six countries it empties into the South China Sea through its wide and muddy delta in Vietnam (see Figure 1). Measured by runoff, the Lancang-Mekong is the tenth largest river system in the world and the most important in Asia, draining a watershed of nearly 800,000 square kilometers and some 60 million people, many of whom depend directly on the river for their livelihood (Bakker, 1999). The upper reaches of the river in the Tibet Autonomous Region

[1] This concept, originally proposed by geographer Doreen Massey (1984), indicates a division of labor across space wherein social and economic processes are not simply 'mapped' onto space, but space is actually written into those very processes as a fundamental to component to their functioning.

and Yunnan Province are steep and turbulent – while the lower reaches in Cambodia and Vietnam are broad and slow, laden with sediment that replenishes lowland farming areas during seasonal monsoon floods. Wet rice farming and fishing are the major economic activities in the lower Mekong (Jensen, 2001), with Cambodia's seasonally reversing Tonle Sap-Grand Lac system being among the most fertile and unique areas in the region.

The steep terrain of the Yunnan stretch of the Lancang creates tremendous hydroelectric potential. Numerous plans have been on the books since the 1970s if not earlier – long before 'globalization' became a household word – to harness that potential, and the completion of the Manwan dam in Yunnan in 1995, the first on the main stream of the Lancang-Mekong system, marked a significant step toward realizing those goals. In 2003 a second dam came online at Dachaoshan, and six others are in various stages of planning for the Lancang in Yunnan. Of the eight (including Manwan) slated for the main channel of the river, six are so-called run-of-the-river dams and the remaining two are large-scale impoundment dams. They range from the relatively small Ganlanba dam to the massive Xiaowan dam, currently under construction and designed to be the second largest in China. Compared to the Three Gorges dam on the Yangtze, however, none of these projects has received much attention in popular or academic circles.

This lack of media and scholarly attention is surprising for several reasons. First, unlike the Yangtze, which leaves China and empties directly into the East China Sea, the Lancang-Mekong travels through five other countries (Myanmar, Thailand, Lao PDR, Cambodia, and Vietnam) before reaching the sea. Needless to say, there is significant concern among the downstream countries (often referred to as the lower riparians) that dams in Yunnan will alter flows in the lower reaches and have potentially negative effects on agriculture, fishing, and navigation (Decherd, 2002). This concern is compounded by the fact that China and Myanmar

have thus far not participated other than as observers in the Mekong River Commission, which has sought to establish itself as a forum for negotiating cooperative development of the river. Second, even though none of the individual dams on the Lancang will rival the Yangtze's new 'Great Wall', the theoretical combined generating capacity of the Yunnan hydroelectric cascade will be similar in magnitude to that of the Three Gorges (approximately 16,000 MW vs. 18,200 MW installed generating capacity). Third, the joint development of the Yunnan dams – in particular Jinghong (see Figure 2) – represents the first time the Chinese government has allowed international participation during the design phase of energy projects on Chinese soil. Jinghong is also the first electricity generating facility designed entirely for export (*China, Thailand to jointly build hydropower*, 2002). Finally, and most importantly vis-à-vis globalization, the Yunnan hydroelectric cascade is the result of a combination of pressures at various scales that are driving dam construction. These include local energy needs in Yunnan, national economic development policies designed to fuel export-driven coastal economies, and regional energy needs in Thailand and eventually Vietnam. A recent statement from the Electricity Generating Authority of Thailand (EGAT) claimed that predictions of "soaring" economic growth in Thailand over the next decade mean the country will face a shortage of electricity of some 1,830,000 kW[2] in the period from 2010-2016, during which time it expects annual electrical consumption rates in Thailand to increase 5.88% to 6.86% (*Taiguo jiang dali*, 2002). EGAT expects to mitigate or eliminate this shortage by constructing new generating facilities and importing electricity from neighboring countries. The Chinese leadership has repeatedly made

[2] One key to understanding electrical power supply and demand lies in the differing units in which figures are expressed. It is common to refer to a plant's installed capacity in megawatts (MW), where one megawatt equals one million watts, or one thousand kilowatts (kW). Quantities of electricity supplied, however, are usually expressed in terms of kilowatt-hour (kWh), or 1,000 watts of power supplied for one hour. Thus the shortage predicted by EGAT here refers to a cumulative shortage of power over a specific time duration. For more information, see McCully (op. cit)., pp. 136-141.

reference to the Lancang dams as a means of "harnessing untapped potential" and building Yunnan as an "energy depot" for Southeast Asia, and it is clear that provincial leaders in Yunnan are more than willing to take a lead role in the process. What is not clear, however, is the degree to which dam proponents in China have attempted to realistically assess potential human, economic, ecological costs of the Lancang dams.

Section II of this paper provides an overview of the Yunnan dams as they relate to China's integration into the global economic system, illustrating how they represent the type of intensified, accelerated, and interconnected processes Kim (above) describes. Section III briefly reviews some of the literature detailing the costs of large dams – costs that have thus far been downplayed or ignored by proponents of the dams in China. Section IV gives a brief overview of the Mekong River Commission and the Greater Mekong Subregion program, two regional institutions focused on watershed management. The paper concludes with some questions and suggestions for improving communication among individuals and organizations – two key components of globalization – as a means of moving towards cooperative, institution-based development strategies that have minimal negative social and ecological repercussions.

II. Yunnan's Dams

China's push to bring the Lancang dams online even when lenders such as the World Bank and Asian Development Bank question the economic, social, and ecological logic of large-scale hydroelectric projects (Barnes, 2001), reflects the Chinese leadership's commitment to a neoliberal rationality similar to that driving the economic powerhouses of China's 'Gold Coast' (Shanghai, Jiangsu, Shenzhen/Guangdong, etc.). It also reveals a reluctance to seriously consider the potential negative repercussions of the dams both in China and in the lower riparians. The

rationality driving the Lancang dam project is based on the twin goals of export-driven capital accumulation (here, directly through electricity exports and indirectly through providing energy for the export economies in eastern China) and perhaps, to a lesser extent, technology transfer. Increasing electricity demands within Yunnan and elsewhere in China, along with expected increases over the coming decades in Vietnam and Thailand, make it easy to understand the proponents' enthusiasm about the dams. At the same time, however, the dams reflect a continued nervousness on behalf of the Chinese government regarding certain processes of globalization, namely, participation in and involvement with international organizations (including lending institutions) that may in any way be seen as threatening to China's sovereignty.

China holds the greatest estimated hydroelectric potential in the world, somewhere in the neighborhood of 380,000 MW. Total theoretical hydroelectric potential for Yunnan Province has been estimated at 90,000 MW, almost a quarter of China's total theoretical hydropower reserves ("China's Yunnan Province To Export Electricity to Thailand," 2000). One study suggested that since the majority of those reserves are located along the rivers of China's extreme southwest, there is little likelihood that they will be put to use anytime soon due to constraints in infrastructure and technology, especially given China's vast reserves of coal and other fossil fuels (Lin, 1996). The eight dams slated for the Lancang in Yunnan range from the 150 MW local power generation station at Ganlanba in Xishuangbanna, near the southern Yunnan-Myanmar-Lao border, to the massive 5,500 MW dam at Xiaowan, designed to provide power for markets as far away as Shanghai. To date, two have been completed: the 1500 MW Manwan, completed in 1993; and the 1350 MW Dachaoshan, completed in 2002 and put into operation in early 2003. The following table lists some of the key information about the Yunnan dams (see also Figure 2). The remainder of this section will describe the details of the dams as best can be

ascertained at the time of writing, given the limited amount of data publicly available and the fact that some of the dams are still in the early planning stages.

Table 1 Key Dam Specifications (*dams listed from north to south*)

Location	Capacity (MW)	Cost (yuan)	Start Date	Complete Date	Power destination	Impoundment (Million m^3)
Gongguoqiao 功果橋	750-900				Yunnan	510
Xiaowan 小灣	4200	22-50B	2002	2012	Yunnan Eastern China	15,130
Manwan 漫灣	1500	3.7B	1983	1993	Yunnan Eastern China	920
Dachaoshan 大朝山	1350	8.87B	1996	2002	Yunnan Eastern China	890
Nuozhadu 糯扎渡	5500	30B	2005	2014	Thailand Yunnan? Eastern China?	22,740
Jinghong 景洪	1500	30B	2006	2013	Thailand	1,230
Ganlanba 橄欖壩	150	10B			Yunnan?	
Mengsong	600				Yunnan?	

Sources: "China's Lancang Cascade Plan and the Mekong" (1997); "Work begins" (2002); Chapman & He (1996); "Thailand Eyes Hydropower" (2002).

As Table 1 shows, the Yunnan dams comprise a wide range of generating capacities, construction costs, and uses. The two largest, Nuozhadu and Xiaowan, are impoundment dams, while the remaining six are run-of-river dams. Impoundment dams – such as Three Gorges and Hoover – are much larger, higher, and hold back significant reservoirs, allowing for year-round electrical generation and the ability to increase or decrease output based on current needs. Run-of-river dams have smaller reservoirs and do not seriously alter the flow volume of the river. There is some debate, however, about the ecological impacts of run-of-river dams. Construction on the Xiaowan began in January 2002 and is expected to take ten years, making Xiaowan the

single largest construction investment in the history of the province (Liu, 2003). An estimated 38,000 people in Yunnan will have to be relocated from the dam area ("Work begins," 2002). As the table shows, much of the electricity from the large dams on the Lancang will be sent to industrial centers in eastern China, primarily Guangdong, as part of the "*xi dian dong song*" (Send Western Electricity East) project (see, for instance, Liu, 2003).

Domestically, such electrical power exports from Yunnan to industrial centers in Guangdong Province have been occurring for a decade. Recent investments in critical power transmission infrastructure – including a 500-kilovolt power converting station and a 500-kilovolt transmission line, and a second 500-kilovolt power transmission and converting project planned for the near future – have significantly magnified the amount of power that can be sent east for domestic use, feeding the engines of China's southeastern links to global economy ("West-to-East Power Project Pays Off," 2002). According to the Yunnan Provincial Power Group Company, a public-private venture, Yunnan exported 900,000 kilowatts to Guangdong in 2001 ("Lancang River: Energy Base," 2002). It is difficult to compare the real magnitude of this figure to that of other years due to the common tendency to report such numbers in terms of kilowatts and kilowatt-hours. The chart below, however, shows the energy production and consumption trends of Guangdong and Yunnan over the past decade and gives an idea of the domestic demand for Yunnan's electricity. These trends are reminiscent of projected increases in Thailand's electricity demand in the 1990s that turned out to be highly optimistic once the Asian financial crisis struck in 1997, so it remains to be seen how actual demand will compare to these projections.

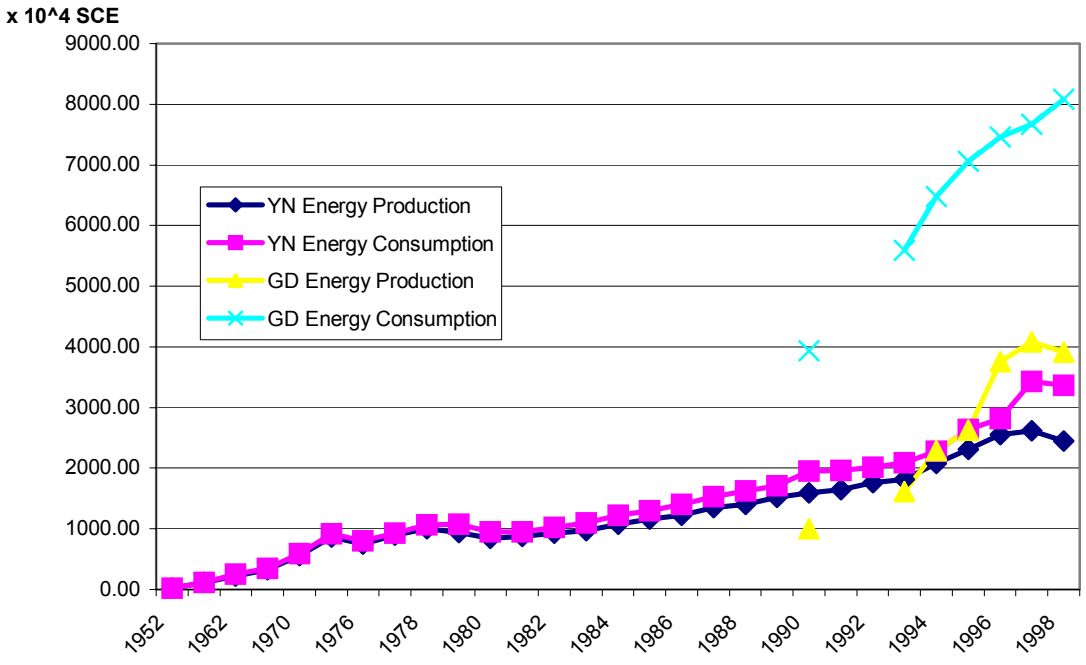


Chart 1 Energy Trends in Yunnan and Guangdong

Source: (Guangdong tongji nianjian [Guangdong Statistical Yearbook], 1999; Yunnan tongji nianjian [Yunnan Statistical Yearbook], 1999)

Yunnan has been lauded as an "energy depot not only for China, but also for Southeast Asian countries," ("Lancang River: Energy Base," 2002) and official discourse about the dams has tended, not surprisingly, to focus on the positive outcomes in terms of abundant electrical energy production while downplaying the negative social, economic, and ecological impacts. Since China is not a member of the Mekong River Commission, and is not receiving funding from international lending institutions for actual dam construction (as compared to some ADB funding for feasibility studies, grid infrastructure, and related projects) information regarding the details of the dams is not readily available outside China. To date, impact studies on the Yunnan dams have been limited. The next section of the paper details one of the first such studies and

draws attention to key questions that need to be addressed in light of the literature on the negative impacts of dams elsewhere.

III. The Costs of Dams

"The potential benefits…from the dams on the mainstream in Yunnan and on tributaries in Thailand and Laos, inevitably come with costs." - He Daming, with E. C. Chapman (1996)[3]

"The experience of building power stations on international rivers has proved that they exert no negative influences on the environment." – He Daming, Director of the Asian International Rivers Center at Yunnan University, Kunming (2002)[4]

Official Chinese discourse regarding the Lancang dams has tended to "package" them as beneficial not only to Yunnan and China's industrial provinces, but also to the whole of the Mekong region. These benefits are said to come from improved flood control and seasonal water flow regulation, abundant and efficient electrical energy production, easier navigation, and even greater fisheries yields (Akatsuka & Asaeda, 1996; "China to Build Huge Power Station," 2002). Yet a substantial body of literature offering an opposing view of the costs of dams outweighing the benefits has thus far not been brought into the debates about impacts and potential problems of the Lancang dams. One example is Patrick McCully's *Silenced Rivers: The Ecology and Politics of Large Dams* (2001), which provides a thorough historical analysis of the myriad problems related to large dams. These include: greenhouse-gas emission due to rotting submerged vegetation; threats to fish and other wildlife; overly optimistic output and efficiency projections coupled with tremendous (financed) expense; problems related to human relocation; increased seismic activity, and siltation, among others. McCully painstakingly traces the human and ecological consequences of numerous examples from around the world – the Colorado River

[3] Chapman, E. C., & He, D. (1996). Downstream Implications of China's Dams on the Lancang Jiang (Upper Mekong) and their Potential Significance for Greater Regional Cooperation, Basin-Wide. Sydney: Australian National Mekong Resource Center.
[4] "China to Build Huge Power Station on Lancang-Mekong River" (2002, January 20). *Xinhua News Agency.*

that no longer reaches the sea due to damming and diversions, the Nile and Mississippi that no longer deposit rich silt on Egypt's farmlands, Surinam's Brokopondo reservoir whose acidity from rotting submerged vegetation damaged generating turbines – and draws attention to the power relations that have been instrumental in many hydropower decisions. Cynically, he refers to dams as "huge, long-term and largely irreversible environmental experiment[s] without a control" (31). Similarly, the World Commission on Dams issued a report offering five points which could no longer "be any justifiable doubt" (World Commission on Dams, 2000). Among those points were a criticism of the "unacceptable and often unnecessary price" paid to secure the benefits of hydroelectric power, and a "lack of equity in the distribution of those benefits."

One of the earliest English-language studies of the Lancang dams (Chapman & He, 1996) offers a preliminary assessment of potential impacts of the Lancang dams on the lower Mekong. The study was brief, limited in scope, and decidedly in favor of the dams. The two quotes at the beginning of this section from He, six years apart, indicate the difficulty of any attempt to assess such large-scale international hydroelectric projects. Unfortunately, because so little primary research has been done on the Lancang dams, the Chapman and He study has been cited in numerous subsequent studies of China's role in hydroelectric development in the region. While the paucity of primary data may partially explain the limited scope of the Chapman and He study, their conclusions bear some examination.

To begin with, the authors take the view that the primary motivation for China's construction of the dams was to seize the opportunity presented by Yunnan's physical geography to build the dam cascade for the benefit of China and the downstream countries as part of a strategic regional economic cooperation plan. "Basin-wide cooperative research and planning are clearly imperative" for such a cooperative plan to succeed, they argue, claiming rather self-

assuredly both in their abstract and conclusion that "Yunnan authorities are initiating research on the downstream effects of the Lancang Jiang dams. Will the Lower Mekong countries be equal to the challenge?" Chapman and He assert that the main goal of their paper is to counter the "publication of misinformation" that had supposedly characterized Lancang-related scholarship outside China, yet they provide only one example from a *Bangkok Post* article in 1996 citing "local authorities" who apparently misrepresented the situation of dams in Lancang. This is hardly an indictment of academics, and to dismiss non-Chinese scholarship on the Mekong as a result seems extreme, especially given the lack of alternatives at the time.

The bulk of their analysis is based on studies of downstream flow rate changes following construction of the Manwan dam, and estimates of such changes that would follow completion of the Dachaoshan, Xiaowan, and Jinghong dams. They point out several benefits that will likely accrue to downstream countries as a result (primarily) of increased dry-season flows due to releases from the impoundments, while hypothesizing (citing third party studies) that the costs will likely be 'limited' to declines in fish populations, the likelihood of which they question as being based on anecdotal evidence alone. Further, they suggest that such declines, if they are real, may just be a fact of life as the region develops: "The ultimate question may be 'what matters most? ... sustaining [sic] the fish population and greater bio-diversity, or providing a better life for the human population (now and in the future) in two of the world's poorest countries, Laos and Cambodia?'" This question ignores the direct role that sustaining fish populations in the Mekong region plays in "providing a better life for the human population" – fish from Mekong-related fisheries constitute the major protein source for some 50 million people living in the lower Mekong region (Jensen, 2001). Chapman and He also appear to ignore

the copious literature documenting the negative social and ecological effects of large-scale dam projects.

Given the high rate of erosion in Yunnan Province (Edmonds, 1994, Ch. 4; Fullen et al., 1999; Wang & Yao, 2000), and the documented high levels of silt in the Mekong, it is surprising that Chapman and He did not acknowledge this problem. The same is true for seismic activity. Yunnan sits atop the Red River and Xiaojiang faults, is highly earthquake prone, and extreme care (and expense) will have to be taken to try to insure that the Lancang dams can withstand tremors and potential large quakes. Other problems glossed over in the study include the historic difficulty of constructing "dual-use" dams for hydroelectric generation *and* flood control, since demands for decreasing outflow in times of flooding may not coincide with electricity demands requiring an increased discharge (Edmonds, 1992; Jacobs, 1994). The Lancang dams, however, continue to be cited as providing both types of benefit to China and its downstream neighbors ("Hydrology works on Lancang," 2002).

A final yet important question not considered by Chapman and He, especially important in terms of the differential benefits of globalization, concerns the social impacts of the dams on riparian communities in China and along the lower Mekong. Aside from the direct impact of forced relocation of tens of thousands people away from the dam construction sites, there is also the question of those individuals downstream whose livelihoods may be threatened by upstream development. Such impacts cannot simply be written off as the cost of progress, but should be addressed carefully by conducting impact assessments involving various actors. In an early assessment of the Mekong Committee leading up to its reincarnation as the Mekong River Commission (see below), Jacobs (1994) noted that the Committee had "learned from its past

mistakes" since its new plans included increased attention to social and environmental issues. Planning is only half the battle, however; implementation is the other, more difficult half.

IV. Dams and Institutions

A second component of globalization as defined in this paper involves increased and intensified relations among individuals and organizations across national boundaries. In this regard, the Lancang dams provide an example of China's resistance to certain processes of globalization its leaders deem threatening to national sovereignty or economic self-interest. Moreover, they reflect a further contention by Samuel Kim and others that the benefits of globalization are far from universal or evenly distributed. To date, there have been two primary regional institutions developed around the goal of encouraging cooperative development of the Lancang-Mekong: the Mekong River Commission and the Asian Development Bank's Greater Mekong Subregion program. China's participation at the national level in these organizations has been limited. This section details the organizations and the extent of China's involvement.

The Mekong River Commission (MRC) traces its origins to the Mekong Committee, formed with assistance from the United Nations in 1957.[5] Civil and political unrest throughout the Indochina region led to the effective dismantling of the Commission due to Cambodia's absence between 1975 and 1978, at which point the Interim Mekong Committee, consisting of Lao PDR, Thailand, and Vietnam, was formed. Cambodia applied for readmission in 1991. Following a lengthy process of restructuring, the Mekong River Commission was formed with the signing by the governments of Thailand, Lao PDR, Vietnam, and Cambodia of the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin.

[5] For a more detailed history of the MRC, see the Commission's website, http://www.mrcmekong.org. Miller (1996) also provides a thorough account of the MRC's history and future prospects for regional cooperative development.

From the start, China's participation in the Committee/Commission has been minimal, though early on the Chinese national government did indicate a willingness to consider membership in the MRC (Miller, 1996). China's reluctance persists today, despite repeated invitations from the MRC for China[6] to join (Sine, 2002). Such reluctance turns upon China's wariness of regional development agreements that might conflict with its own aspirations (Acker, 2001), and also China's recognition that the MRC is more a coordinator of publicly funded research projects than a provider of private development funds (Chaiphiphat, Tangwisutthichit, & Pathan, 1996). Nevertheless, provincial and national officials have recently indicated a willingness to increase cooperation with lower Mekong countries with respect to Lancang-Mekong issues (*Yunnan shuili quan*, 2003), particularly on a project-by-project basis (Mi & Lei, 2002). Such cooperation in the form of joint research projects might offer a point of departure for increased trans-border cooperation, for they are less likely to be construed as threatening to China's sovereignty.

The second important regional development institution is the Asian Development Bank's Greater Mekong Subregion program, initiated in 1992. In contrast to the MRC, the ADB-GMS is openly project-oriented, and despite its stated unwillingness to fund dams on the main channel of the Lancang-Mekong, it has provided funding for grid infrastructure related to those projects in China (Asian Development Bank, 1998). China's high level of financial engagement with the ADB-GMS, coupled with the fact that engagement is limited to economic development rather than broader goals of cooperation and sustainability, helps explain why the ADB-GMS can count China (Yunnan in particular) as a member whereas the MRC cannot. Nevertheless, a recent ADB report to the World Commission on Dams noted that the Bank's policy on large dams was to

[6] Invitations have also been extended to Myanmar.

"give financial support when requested to do so by member governments within the GMS and elsewhere to projects which have been shown to be the least-cost means of providing power under the prevailing circumstance" (paragraph 32) but also to "educate, advise, (or even withhold funding) and otherwise persuade project owners to abide by their commitments" (paragraph 33), suggesting perhaps an increased recognition of the interconnectedness of supposedly discreet projects within the region (Bristol, 2000). The question remaining is to what extent the ADB-GMS and the MRC can coordinate their efforts in a way that encourages the greatest level of participation and cooperation among various actors in the region.

V. Conclusion – Asking questions and building institutions

The purpose of this paper has been to show how hydroelectric development on the Lancang Jiang in Yunnan Province embodies complex, independent and interrelated, and often conflicting processes that connect local natural resource development issues to the global economic system. On the one hand, China's current focus on dam-building in Yunnan reflects its desire to meet energy needs in eastern China's export-driven provinces, and also to become an electricity export leader in Southeast Asia, providing electrical power to urban and industrial centers hundreds of miles away and across international borders from the dam sites. These processes can be seen as evidence of China's increasing engagement with globalization. On the other hand, China's reluctance to fully engage in regional cooperative development dialogue and institutions is reminiscent of accusations of China's half-hearted compliance with other international institutions such as the World Trade Organization. With economic development in a stable international system the primary goal of the Chinese leadership, one might assume that those leaders and others at the provincial level will work to create opportunities for cooperation rather than conflict over trans-border water management issues such as in the Lancang-Mekong

case. The primary question is how to promote such cooperation in a situation of underlying mistrust of China's motives on the part of the Lower Mekong countries, and a suspicion of binding international agreements on the part of the Chinese authorities.

Promoting collaborative studies might be one way to increase the effectiveness of the institutions of regional eco-governance. Michael Goldman (2001) suggests this is the case for World Bank interventions in the Mekong region. As mentioned before, studies of the regional impacts of the Lancang dams are extremely limited in number and scope, whereas studies focusing on the political ecology of development in the lower riparians are much more comprehensive (Acker, 2001; Bakker, 1999; Ryder, 1996). Frameworks such as the Mekong River Commission, the Greater Mekong Subregion program and the newer ASEAN Mekong forum (see, for instance, *Dongmeng si guo*, 2002) offer diverse possibilities for coordinating and funding such studies on a variety of topics in different institutional settings. Recent statements from Chinese provincial and national leaders reflecting a desire for increased cooperation (see above) also give some cause for optimism. Further integration of diverse actors at various scales in Yunnan province into discussions about development, and reducing the focus on whether or not "China" as a nation-state is a member of the Mekong River Commission, might lead to a more productive cooperative management framework.

Finally, many questions have yet to be answered regarding the Lancang dams. These are central to improving understanding among governmental and non-governmental entities and individuals in the region, and to promoting confidence-building measures (CBM) that may increase the effectiveness of existing organizational frameworks. Such questions include:

- How are the Lancang dams being financed?
  - The Manwan was publicly funded, while the Dachaoshan was funded by a public-private consortium ("New Power-Generating Unit," 2002). Construction of the Jinghong dam will be funded by a Sino-Thai partnership involving public and private funders on both sides ("China to Build Huge Power Station," 2002; "Thailand Eyes Hydropower," 2002). One recent Chinese source notes the growing competitiveness of Chinese hydropower investment companies (Peng, 2003). How will the remaining dams be financed?
- How are the benefits of the dams distributed spatially and socially?
  - What investments in infrastructure for rural power distribution have been made?
  - Currently, it is unclear how electrical power generated by most of the dams will be distributed to urban and rural populations in Yunnan, and what proportion will go to other parts of China.
- What is the role of the Yunnan authorities in negotiating agreements such as the joint development of Jinghong and subsequent export of 100% of its electricity to Thailand?
  - What does this reveal about processes of 'statemaking' at the provincial scale? Might a better understanding of such processes be helpful in furthering dialogue?
- Why has China thus far resisted taking a more active role in the Mekong River Commission?
- What changes might be necessary in the MRC's mission, goals, and/or governance in order to make full participation more attractive to China? Are such changes feasible?
- What evidence is there of participation on the part of Yunnan actors (provincial officials, financial entities, non-governmental organizations, media, etc.) in regional discourse that might alter the dynamics of interaction among states in the region?

- Might accusations that China is "going it alone," based on the unwillingness thus far of China as a *nation-state* to participate in the Mekong River Commission, overlook participation at different scales (provincial in particular) in negotiations over cooperative management of the river? Is it helpful (or possible) to envision a role in the MRC other than observer for the Yunnan government?

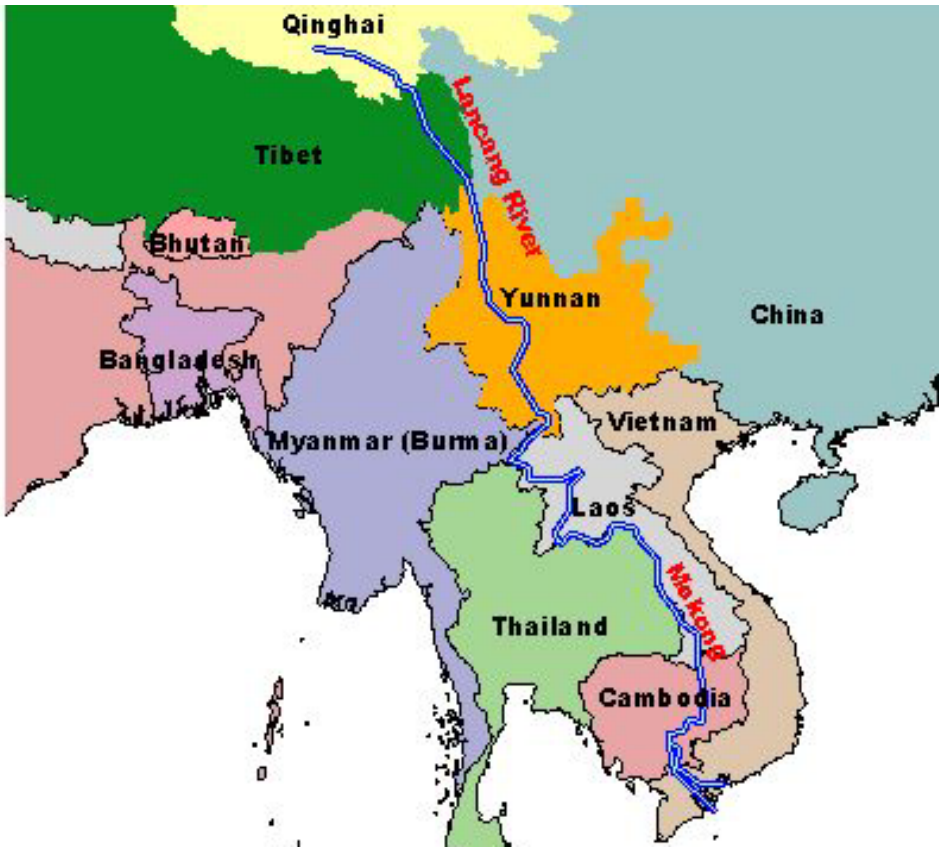
- What are the sources within Yunnan of support for and opposition to the Lancang dams?
  - Anecdotal evidence from relocated farmers, for instance, offers conflicting perspectives. More detailed ethnographic research is needed to provide a comprehensive picture.
- What are the regional and global sources of support for and resistance to the Lancang dams?

Although studies focused on China have failed to address these issues, many of the same questions have been considered for hydroelectric dam projects in downstream countries. Karen Bakker (1999) has analyzed the various discursive instruments that have framed the debate around hydroelectric dam development on the Mekong. Her work focused on the Lao dams, where infusions of rapidly mobilized private capital into hydroelectric projects, frequently through Build-Own-Transfer (BOT) agreements, allow governments to avoid heavy debt burdens and inherit potentially valuable infrastructure. However, they significantly alter the power dynamics of development, and may lead to reprioritization of projects in favor of private interests rather than public goals. Bakker also questions the independence of the Mekong River Commission, given the Commission's dependence on donors for its funds and since there is some evidence that donors are increasingly able to influence initiatives based on neoliberal economic rationality. A second study of the Lao dams was conducted for a master's thesis and focused on the uncertainty inherent in the country's national economic development plans based

on hydroelectric development (Ryder, 1996). Taking a different tack, Robert Acker (2001) conducted a detailed doctoral research project on the geography of political challenges that come with regional development, focusing on the potential for hydropower development to serve as a new nexus for regional political and economic cooperation among lower Mekong countries.

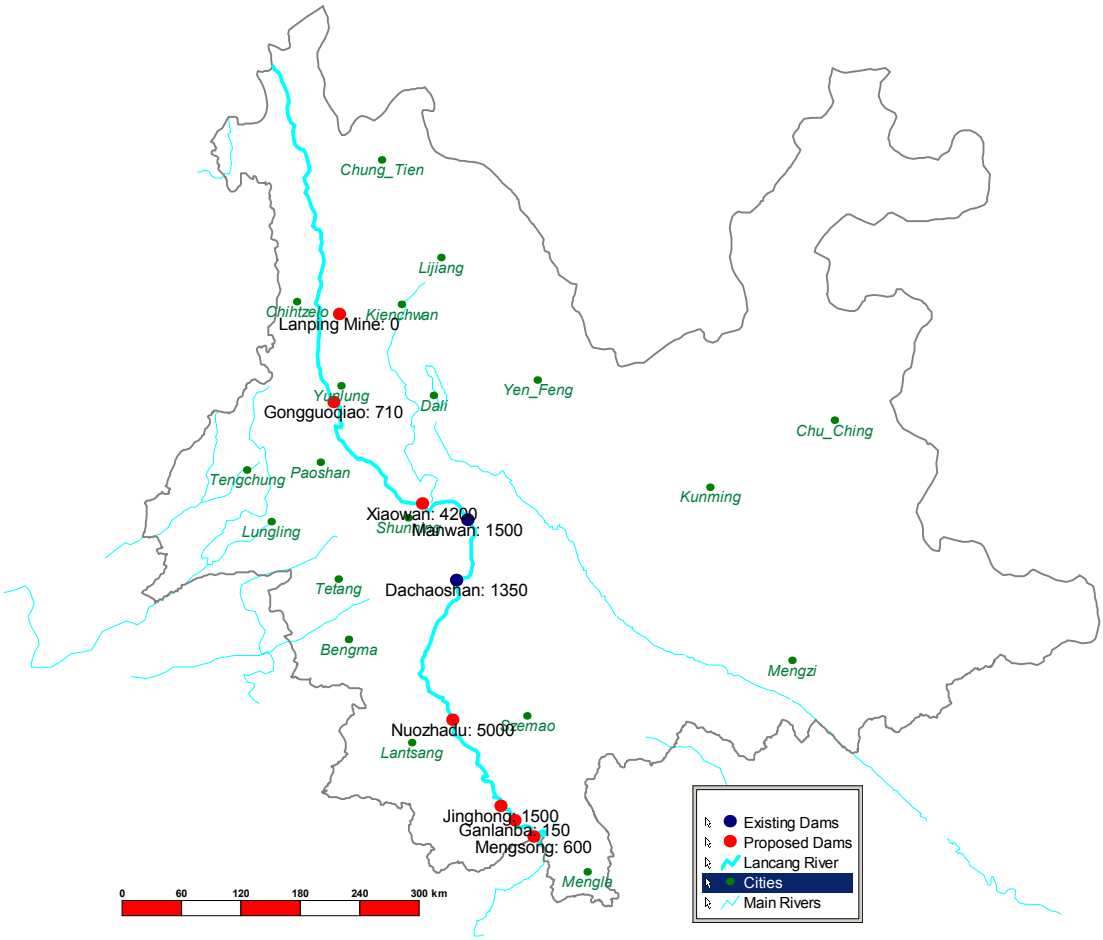
If the rationale for China's approach to the Lancang dams rests on neoliberal economic logic, then a political ecology approach would draw attention to the ways in which various interests are served and denied, intentionally and unintentionally, according to different scenarios of resource development and management in Yunnan and the region. Studies that attend to such dynamics at a range of scales – including local and provincial rather than simply national and regional – may provide unexpected insights into new areas of cooperation, as well as clues about how to more clearly delineate the responsibilities and roles of the Mekong River Commission and other regional frameworks. Given China's geopolitical and economic importance to the management of the Lancang-Mekong basin, it is imperative that a sound mechanism that engages China alongside the lower Mekong countries in negotiating regional development be established. It is also clear that cooperation rather than conflict benefits the Chinese authorities in Yunnan and at the national level, and that responsibility for developing a cooperative and durable framework lies in the land of the Lancang as well as the land of the Mekong.

Figure 1: Lancang-Mekong Region



Map Source: Diamond Bay Research, http://www.dbr.nu

Figure 2: Lancang dams in Yunnan Province



Map data source: Mekong River Commission; Strategic Environmental Framework for the Greater Mekong Subregion (SEF).

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