Neoliberalizing Hydropower in the Mekong Basin: The Political Economy of Partial Enclosure

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บทคัดย่อ

ในอนาคตบริเวณลุ่มแม่น้ำโขงโครงการพัฒนาเขื่อนไฟฟ้าพลังน้ำขนาดใหญ่กำลังขยายตัวออกไปเป็นอย่างมาก ซึ่งในทางเศรษฐกิจและการเมืองในประเทศไทยและเวียดนามนั้นเห็นว่ามีความเป็นไปได้ในการสร้างเขื่อนขนาดใหญ่ และอาจจะลดน้อยลงมาบ้างในทางตอนบนของแม่โขง (ลานช้าง) ในแถบมณฑลยูนนานในประเทศจีน ซึ่งได้มีการใช้ประโยชน์ในพื้นที่อย่างเต็มที่แล้ว หากแต่ในประเทศลาวและกัมพูชาทรัพยากรสำหรับการผลิตกระแสไฟฟ้าจากพลังน้ำนั้นยังคงมีอยู่อย่างมากมาย ในบริบทดังกล่าวนี้แผนการณ์ในการสร้างเขื่อนไฟฟ้าพลังน้ำแห่งใหม่ในภูมิภาคเป็นไปในลักษณะของความร่วมมือระหว่างหน่วยงานภาคเอกชนและหน่วยงานของรัฐ การสร้างเขื่อนขนาดใหญ่ในภูมิภาคเกิดขึ้นท่ามกลางบริบทของการขูดรีดทางความร่วมมือทางเศรษฐกิจในระดับภูมิภาคอย่างเข้มข้น ซึ่งรวมไปถึงการซื้อขายไฟฟ้าข้ามพรมแดนซึ่งมีส่วนสนับสนุนการสร้างเขื่อนไฟฟ้าพลังน้ำเป็นอย่างยิ่ง นอกจากนี้แผนการณ์ดังกล่าวยังเป็นผลมาจากอิทธิพลที่สำคัญของกระแสเสรีนิยมใหม่ที่เชี่ยวกราก ซึ่งสะท้อนให้เห็นจากนโยบายของรัฐในเรื่องของการจัดการและพัฒนาทรัพยากรแหล่งน้ำ การสร้างความมั่นคงด้านพลังงาน ตลอดจนนโยบายด้านเศรษฐกิจมหภาคที่กว้างออกไป

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บทความนี้มุ่งสร้างความเข้าใจระบบเศรษฐกิจการเมืองแบบใหม่ในการพัฒนาไฟฟ้าพลังน้ำในลุ่มแม่น้ำโขง ซึ่งรวมไปถึงกระบวนการเสรีนิยมบางส่วน (partial-liberalization) ของประเทศไทยและเวียดนามในภาคการผลิตไฟฟ้า และกระบวนการเสรีนิยมใหม่ของการพัฒนาเขื่อนไฟฟ้าพลังน้ำในประเทศลาวและกัมพูชา เสนอแนวคิด "การปิดล้อมเพียงบางส่วน" (partial enclosure) เพื่ออธิบายร่วมผลกระทบที่เกิดขึ้นในระดับที่กว้างออกไปจากท้องถิ่นจากการสร้างเขื่อนไฟฟ้าพลังน้ำบนฐานทรัพยากรร่วมของภูมิภาคนั้นก่อให้เกิดรูปแบบของการปิดล้อมทรัพยากรได้ได้อย่างไร ภายใต้สถานการณ์ของการปิดล้อมเพียงบางส่วนนี้ ทรัพยากรร่วมของภูมิภาคอาจจะเสื่อมลง แต่ก็ไม่จำเป็นว่าจะสูญไปอย่างหมดสิ้น แต่กระนั้นการปิดล้อมเพียงบางส่วนนี้สามารถจะก่อให้เกิดผลกระทบต่อชุมชนท้องถิ่นซึ่งต้องพึ่งพาทรัพยากรดังกล่าวในการดำรงชีวิตได้ แนวคิดในเรื่อง "การปิดล้อมเพียงบางส่วน" นี้ถูกนำมาใช้ในอธิบายรูปแบบของทรัพยากรร่วมในลุ่มแม่น้ำโขงสามประการด้วยกัน นั่นคือ การขึ้นลงของพื้นที่น้ำท่วม การไหลของตะกอนแม่น้ำ และการอพยพของปลาในแม่น้ำโขง บทความนี้เสนอว่า การใช้นโยบายเสรีนิยมในการผลิตไฟฟ้าและการจัดการน้ำในส่วนภูมิภาค และภาคเอกชนได้เข้ามามีบทบาทในการจัดการทรัพยากร พัฒนาไฟฟ้าพลังน้ำมากยิ่งขึ้น แนวคิดว่าด้วยการปิดล้อมนั้นจึงเป็นแนวคิดที่มีประโยชน์ในการทำความเข้าใจปรากฏการณ์ในภูมิภาค เนื่องจากการปิดล้อมทรัพยากรร่วมของแม่น้ำนั้นกำลังดำเนินไปอย่างไม่อาจหลีกเลี่ยงได้

คำสำคัญ: เสรีนิยมใหม่, ไฟฟ้าพลังน้ำ, ลุ่มน้ำโขง, เศรษฐศาสตร์การเมือง

Abstract

Within the Mekong River basin, an extensive program of large hydropower dam construction is in progress. Whilst economic or politically feasible large hydropower dam construction in Thailand and Vietnam – and to a lesser extent the upper Mekong (Lancang) in Yunnan Province, China – is now almost fully exploited, in Laos and Cambodia significant unexploited hydropower potential remains. Here, plans for new hydropower dam construction are principally a joint endeavor between the private sector and state agencies. The region's large hydropower dam construction is taking place within a context of deepening regional economic integration, including cross-border electricity trade that facilitates hydropower dam construction, and is shaped by a degree of variegated neoliberalization (mixed neoliberal and illiberal governance forms) that is reflected in government policies on water resources development and energy security, as well as broader macroeconomic policy.

This paper first outlines the new political economy of hydropower development in the Mekong basin including the partial-liberalization of Thailand and Vietnam's electricity sectors, and of hydropower dam construction in Laos and Cambodia. The paper then proposes the concept of "partial enclosure" to

explain how non-local impacts caused by hydropower dam construction on regional commons constitute a form of enclosure. Under the condition of "partial enclosure," regional common pool resources may become degraded but not necessarily decimated which can still result in significant impacts to communities which depend upon these resources for their wellbeing. The concept of "partial enclosure" is applied to three forms of transboundary commons of the Mekong River: the temporal characteristics of Mekong River's flood pulse; sediment movements; and migratory fisheries. It is argued that given the neoliberalizing policies in the region's electricity and water sectors, and the growing role of the private sector in hydropower development that is converting resources previously held as commons to privatized ones, the notion of enclosure is particularly apt and the enclosure of the river's common pool resources is now well underway.

Keywords: Neoliberal, Hydropower, Mekong Basin, Political Economy

1. Introduction

In the Mekong Basin, a growing number of hydropower dams are in operation or under construction. Since the early 1990s, construction of a cascade of up to eight dams has been underway on the Lancang (Upper Mekong) River mainstream in Yunnan Province of China, with impacts on downstream ecosystems and communities in Northern Thailand and Laos (Osborne 2004). Since 2007, a cascade of eleven dams has been proposed for the lower Mekong River mainstream in Laos, Cambodia and Thailand (Stone 2011). Whilst holding the potential to generate up to 14,100 megawatts (MW) of electricity and thus to contribute significantly to the region's economy, by changing the river's hydrology and ecology and blocking major fish migrations and the movement of sediment, these mainstream dams could have serious repercussions throughout the entire basin and put at risk the livelihoods of millions of people (ICEM 2010). Meanwhile, on the tributaries of the Mekong River, dozens more projects are proposed, under construction or in operation with local and regional ecological and social consequences (Ziv, Baron et al. 2012). Needless to say, these plans - and the tradeoffs entailed - have drawn increasing scrutiny and considerable controversy.

Recent scholarly debate on "green neoliberalism" (Goldman, 2005; Barney 2012) "neoliberal natures" (Bakker 2010; Castree 2010) is highly relevant to the transformation underway in the Mekong Region. This field of research seeks to understand the interconnections between neoliberal policies and practices, and nature. Bakker (2005) highlights how recent neoliberalization of nature research has been driven by a

"concern over the consequences of the increasing involvement of private sector actors, displacement of public policy by market mechanisms, uptake of environmental valuation methodologies, and commercialization and privatization of resource management institutions." Demonstrating the conceptual challenges entailed, Bakker (2010), in a recent review article, observes how conceptualizations of neoliberalism and of nature are multifold, and on occasion divergent: neoliberalism can be understood as political doctrine, economic project, regulatory practice, or process of governmentalization; whilst nature can be seen as primary commodity, resource, ecosystem service or socio-natural assemblage. To avoid simplifications of "global hegemonic neoliberalism," Barney (2012) highlights how the concept of "variegated neoliberalization" (Brenner et al. 2010) offers a more nuanced understanding of the "...contingent, process-based, and articulated relationships of neoliberal actors, policies and processes with national to local institutions, discourses and environments." Within Southeast Asia, Barney (2012) highlights the existence of a diversity of mixed neoliberal and illiberal governance forms, pointing towards the neoliberal influenced rather than always neoliberal dominated state-society relations.

The Mekong River is a transboundary common pool resource (CPR) that remains of great importance to millions of people whose livelihoods depend upon its natural resources (Hirsch, 2000). Large hydropower dam development is taking place within a (variegated) neoliberalizing regional political economy, where the private sector takes an increasingly significant role in construction and operation, backed by supportive government policies that are liberalizing the region's electricity sector. The construction of large dams and the accompanying biophysical and ecological transformation of the region's rivers entail a redistribution of the uses and benefits of rivers away from existing riparian communities to private sector project developers and affiliated state agencies, together with industrial and residential electricity consumers. In the context of weak state capacity and oftentimes a lack of political will for regulation, the environmental and social impacts of large hydropower dams are inadequately compensated for, especially for non-local impacts further from the location of the dam. This conversion of natural resources previously held as commons from the local to the regional scale to hydroelectricity for largely private benefit is argued in this paper to be a privatization of river resources and therefore aptly described as an act of enclosure. In other words, the emergence of neoliberalizing hydropower is also leading to the neoliberalization of nature.

This paper is divided into four sections. In the next section, the new political economy of hydropower development in Southeast Asia is unpacked. The section first outlines the ongoing process of regional economic integration and

liberalization in the region, and increasingly extensive cross-border electricity trade. The privatization and partial-liberalization of the electricity sectors in Thailand and Vietnam are discussed, alongside the neoliberalization of hydropower in Cambodia and Laos. In the third section of the paper, a conceptual framework that links the concept of commons on transboundary rivers to the concept of enclosure is put forward to propose the concept of "partial enclosure." This concept aims offer insight into how dam construction that creates nonlocal impacts on regional commons are in fact a form of enclosure. The concept of "partial enclosure" is applied to three forms of transboundary commons of the Mekong River: the temporal characteristics of the flood pulse; sediment movement; and migratory fisheries. The final section concludes by arguing that in the Mekong River basin, as hydropower development has accelerated over the past two decades, water and associated ecosystem resources previously shared as common pool resources (CPRs) are increasingly enclosed through processes of exclusion and privatization.

In many localities throughout the Mekong basin, commons regimes continued to shape natural resource management practices of forests, communal lands and wetlands, and wild-capture fisheries (Hirsch 2000; Cuasay and Vaddhanaphuti 2005; Fox and Sneddon 2005; Wattayapak and Vandergeest 2010). The weak legal recognition of CPRs within the Mekong Region both locally and regionally, however, has contributed towards an undervaluing of these resources in the macro-economic calculus of development planning, in particular with regard to the benefits they provide to riparian communities' livelihoods (Ahmed and Hirsch 2000; Torell 2000). This lack of recognition weakens the ability of affected communities to negotiate for continued use or fair compensation for CPRs. Where loss of a local CPR due to a hydropower dam is clear, it is often compensated – at least in part, and often after contestation – through cash and/or livelihood programs. However, in the case of large hydropower dams with regional impacts that degrade - but don't decimate - CPRs over long distances, impacts are rarely compensated for. It is hoped, therefore, that the concept of partial enclosure proposed in this paper may help make these impacts legible and recognized, and in doing so contribute to the redress some of the environmental and social injustices associated with large hydropower dams.

2. The New Political Economy of Hydropower Development in Southeast Asia

The Mekong region is rapidly industrializing, urbanizing, and economically integrating (Kaosa-ard and Dore 2003). Since the early 1990s, the Asian Development Bank (ADB) has promoted regional economic integration

between Cambodia, Laos, Myanmar, Thailand, Vietnam, and Yunnan and Guangxi provinces of China through its Greater Mekong Subregion (GMS) program. Aiming to liberalize trade and investment, the ADB's GMS program has focused on a range of sectors including agriculture, telecommunications, and energy. Over the past two decades, a particular focus has been regional physical connectivity via large scale infrastructure construction including roads, railways and high-voltage transmission lines. The ADB argues that the GMS program has contributed to rapid economic growth, human development and poverty reduction across the region (ADB 2012). Glassman (2010), however, contests the ADB's interpretation as overly benign and highlights how "actually existing globalization" has shaped uneven development in the region built on and widening existing political-economic inequalities (Glassman 2010).

Economic growth across Southeast Asia has increased demand for electricity, especially in Thailand and Vietnam; Thailand's government estimates that the country's electricity demand will approximately double to 65,547 megawatts (MW) by 2030 (EGAT 2010), and in Vietnam the government predicts demand to triple to 75,000 MW by 2020 (Socialist Republic of Vietnam 2011). Whilst the extent of this growth in power demand and the best way to meet it is contested between government agencies and civil society (see Greacen and Greacen 2012), use of the region's remaining hydropower resources is high on governments' agenda. Much of the region's remaining exploitable hydropower is located in Laos, Myanmar and Cambodia. Thailand, which has already developed much of its hydropower potential and faces strong opposition to further large power stations domestically, plans to import approximately 12,000 MW of coal-fired and hydro-electricity from Myanmar and Laos by 2030. Vietnam plans to develop almost all of its viable domestic hydropower potential over the next 20 years, and to import hydroelectricity from Cambodia, China and Laos. The governments of Cambodia, Laos and Myanmar, meanwhile, support hydropower dam construction for electricity export and domestic consumption.

Through preparing studies, arranging inter-governmental meetings, providing technical support including on policy and institutional frameworks, and direct financing for infrastructure, the ADB has promoted cross-border power trade as part of the GMS program (ADB 2012). The program ultimately envisions a liberalized regional competitive power-pool market with most electricity generated by private-sector Independent Power Producers (IPPs). Although an "Inter-Governmental Agreement on Regional Power Trade in the GMS" was signed by the region's leaders in November 2002, in practice, even as the private sector takes a larger role in hydropower dam construction and operation and an increasing number of cross border transmission lines are built (ADB 2012), institutional progress

towards a fully competitive regional power market is slow-paced; indeed, the region's government's full commitment is doubtful given the influential role continued to be played by state-owned utilities and a relatively small number of IPPs that arguably stand to benefit more from the monopoly sale of electricity (see Greacen and Palettu 2007), alongside institutional and technical concerns about the risks of full integration amongst the utilities themselves (Garrett 2004).

Partial liberalization of the electricity sector domestically in Thailand and Vietnam facilitates the cross-border sale of private-sector generated hydroelectricity from Laos and Cambodia, where public private partnership (PPPs) and Build Operate Transfer (BOT) projects are the principle investment vehicles for large hydropower dams. In Thailand, a complex and contested process since the 1980s has shifted the electricity sector from a state-led to partially-liberalized model (Greacen and Greacen 2004; Wattana, Sharma et al. 2008). Some generation assets of the state owned utility EGAT have been privatized, including EGCO in 1994 and Ratchaburi in 2000, although EGAT maintains some shareholdings (Wattana, Sharma et al. 2008). Plans for a competitive power pool model proposed in 2000 were subsequently shelved in 2003 and replaced with the "Enhanced Single Buyer Model" (Greacen and Greacen 2004). At present, approximately half of Thailand's electricity is presently generated by IPPs, with the remainder generated by EGAT (EGAT 2010). It was, however, only in 2008 that the independent Energy Regulatory Commission was established.

Meanwhile, in Vietnam, a new Electricity Law in 2005 has led towards a partial-privatization of the electricity sector. According to the law, Vietnam's SOE utility, Vietnam Electricity (EVN), which had fully operated Vietnam's electricity sector until then, would transform into a private holding company structure limited to power transmission, national load dispatch and operating strategically important large power plants (the Hoa Binh, Son La, and Yali hydropower dams), whilst the private sector power would be responsible for electricity distribution and non-strategic power generation (Nguyen 2012). At present, whilst plans for privatization of EVN's own generation units appear to be on hold, 40% of Vietnam's installed capacity are IPP or Build Operate Transfer (BOT) projects and the remainder is generated by EVN (Nguyen 2012). A roadmap for establishing a competitive power market, launched in 2006, as of 2012 remains at the pilot project stage (Nguyen 2012). According to Vietnam's Seventh Power Development Plan (2011-2020), proposed hydropower projects until 2020 will be developed by EVN, other State Owned Enterprises (for example, Song Da Corporation), and by Independent Power Producers (IPPs).

With regard to inter-governmental cooperation on the Mekong River, on 5 April 1995, the four lower Mekong River countries, Cambodia,

Laos, Thailand and Vietnam committed "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, hydropower, navigation, flood control, fisheries, timber floating, recreation and tourism..." (MRC 1995) through the formation of the Mekong River Commission (MRC), reviving the earlier Mekong Committee created in 1957 but that had dissolved in the mid-1970s. The two upper Mekong countries, China and Myanmar, remain outside the agreement, and maintain a "dialogue partners" status. Much has been written about the benefits and challenges of the MRC (see section 3 below and also Dore and Lazarus, 2009). Of particular significance to the above discussion, however, is that the GMS program has been generally privileged over the MRC, even as several projects under the GMS impinge upon the MRC's mandate, such as tributary hydropower dams in Laos for power export (e.g. Nam Theun 2, Theun Hinboun) and partially completed plans for rapids blasting for improved navigation in the upper stretches of the Mekong River (Ratner 2003). At the same time, the very existence of the MRC has allowed the ADB GMS program to focus on economic growth, leaving the "protection" of the Mekong River to the relatively disempowered MRC.

The following two sections discuss the recent trajectory of hydropower development in Laos and Cambodia. In contrast to Thailand and Vietnam, where hydropower development since the 1960s has principally been state-led in planning, design and operation, rapid construction of hydropower dams in Laos and Cambodia is underway with a strong involvement of the private sector facilitated by government policies that are neoliberalizing hydropower development in these countries.

Neoliberalizing Hydropower in Laos

In Laos, the introduction of the New Economic Mechanism policy in 1986 led the country's single-party communist government towards a neoliberalizing market economy under which export-orientated agribusiness, hydropower and mining has accelerated, as has economic growth accompanied by a range of environmental and social costs (Rutherford, Lazarus et al. 2008). Laos' mountainous topography holds a significant hydropower potential of approximately 26,500 MW. Through the construction of large hydropower dams for electricity exports primarily to neighboring Thailand and Vietnam, the Government of Laos (GoL) aspires to become the "battery of Southeast Asia." These plans for power exports have gradually materialized since the late 1990s, with

the support of the ADB and World Bank, and accelerated since the Nam Theun 2 dam was approved for construction in 2005 (Middleton, Garcia et al. 2009).

Whilst smaller hydropower dams for domestic supply are generally operated by Laos' state owned electricity utility, Electricit du Laos (EDL)[3], larger projects for power export have been increasingly developed as PPPs under BOT investment vehicle agreements. Under a PPP/ BOT agreement, private sector developers and their financiers enter into a partnership with either EDL or Laos Holding State Enterprises (LHSE) – another state owned enterprise (SOE) - to build and operate a hydropower project for a specified concession period, typically of between 25 and 30 years, before transferring full ownership to the state. Prior to the 1997 Asian financial crisis many private sector developers seeking to build hydropower projects were from Western countries, in particular France and Norway, although many projects were subsequently cancelled due to reduced electricity demand in the region (RN 1998). However, since Southeast Asia's economic recovery, it has principally been private sector developers from Asia, including Thailand, Vietnam, China, Malaysia, Japan and South Korea, amongst others, that have competed to secure project development rights (Middleton, Garcia et al. 2009). Furthermore, in December 2010, Laos' first public company, EDL Generation Public Company (EDL-Gen), was created and in January 2011 was listed on the newly established Lao Securities Exchange.[4] EDL-Gen is a vehicle that has enabled EDL to sell as shares 25% of its generation capacity on the newly created Laos stock market.[5]

As of March 2013, twelve large hydropower dams (over 30 megawatts) are in operation (GoL 2013). A further eleven large hydropower dams are under construction, and 24 and 29 large hydropower dams are at an advanced stage of planning and feasibility study stage

[3] With the exception of Nam-Lik 1-2, a 100 MW project commission in 2010 owned and operated as a PPP between Edl, (10%) and China Water Energy (90%); and Nam Ngum 5, a 120 MW project commission in 2012 owned and operated as a PPP between Edl, (15%) and Sinohydro (85%)

[4] As of December 2013, the Lao Securities Exchange has only two companies listed, namely EDL-Gen and Banque Pour Le Commerce Exterieur Lao Public (http://www.lsx.com.la/market/stock/daily.do?lang=en last accessed 7.12.13)

[5] Shares in the generation capacity of the following EDL-owned plants were initially incorporated into EDL-GEN: Nam Ngeum 1, Nam Mang 3, Nam Leuk, Xe Set 1, Xe Set 2, Xe Labam and Nam Song. Installed power totals 357MW (1,923.5 million KWH) (http://www.edlgen.com.la/page_en.php?post_id=1 last accessed 7.12.13). In June 2012, the transfer of shares in four independent Power Producers owned by EDL to EDL-Gen was approved, increased EDL-GEN's capacity to 881 MW, namely: 60% of shares in Theun-Hinboun (300 MW); 10% of shares in Nam Leuk 1-3 (10 MW); 25% of shares in Nam Ngum 2 (153.75 MW); and 20% of shares in Houay Ho (60 MW). (http://en.wikipedia.org/wiki/Electricite_du_Laos last accessed 7.12.13)

respectively (GoL 2013). Table 1 categorizes the form of project ownership as state, PPP or private for domestic and power export projects in operation, under construction, and at an advanced state of planning. Significantly, and indicative of Laos' hydropower sector's neoliberalizing tendency, whilst for projects until present a significant number have been state owned, for projects under construction or at an advanced stage of planning, no projects are proposed to be state owned. Instead, they are to be developed either as PPP or as privately owned under a BOT agreement.

Table 1: Large hydropower development in Laos according to project ownership

	Projects in operation			Under construction			At advanced planning stage*		
Power market	State owned	PPP	Private developer	State owned	PPP	Private developer	State owned	PPP	Private developer
Domestic only	1	1	0	0	3	2	0	3	2
Thailand and domestic	5	5	0	0	2	0	0	5	4
Vietnam and domestic	0	0	0	0	2	0	0	0	6
Unknown	-	-	-	0	0	2	0	3	1
Total	6	6	0	0	7	4	0	11	13

Data from GoL (2013); * For projects at an "advanced stage of development," the project developer consortium may be subject to change, including transformation to a PPP.

In a recent review of Laos' hydropower policy and institutional arrangements, Suhardiman et al. (2011) highlight how high-level policies, such as the Seventh National Socio-Economic

Development Plan (2011-2015) and the National Growth and Poverty Eradication Strategy emphasize the central role that large hydropower dams should take in attaining goals for economic growth, revenue collection and poverty reduction. Suhardiman et al.'s assessment, however, also reveals that the linkages between attaining these goals – for example investing revenues generated into poverty reduction via "development funds" - remain unclear across policies and between ministries of divergent mandates. The assessment describes how Laos' legal and policy framework, for example the 1997 Law on Electricity (revised in 2010), heavily promotes and facilitates private foreign and domestic investment in the hydropower sector on the rationale that it is "a means to address the problem of inadequate, unpredictable revenue collection and high reliance on foreign aid..." (Suhardiman et al. 2011:9). The current dependence on foreign private investors and project developers, however, weakens the government's ability to regulate the environment and social impacts of hydropower development, and its ability to prioritize projects according to a national water resources development plan rather than the investment priorities of individual developers.

Neoliberalizing Hydropower in Cambodia

Electricity infrastructure in Cambodia is rudimentary due to decades of political instability and underinvestment, and electricity is undependable and costly. Cambodia's electrification rate is amongst the lowest in Southeast Asia and access to electricity is concentrated in urban areas (Chea 2009). Electricity prices are high due to a heavy dependence on generators fuelled by expensive imported diesel that generates 90% of the domestic power supply (Chea 2009). Given this situation, ensuring a nation-wide stable and cheap supply of electricity is a policy priority of the Cambodian government (RGC 2010). Hydropower development has been placed centrally to power development plans together with the construction of a high-voltage transmission network linking urban centers. Cambodia's hydropower potential is estimated to be 10,000 MW, of which 50% is located on the Mekong River's mainstream, 40% on the Mekong River's tributaries, and the remaining 10% in the south-western coastal area (Jona 2011). According to Cambodia's Electricity Law (2001), the development of Cambodia's electricity generation capacity and transmission and distribution infrastructure is to be led by private sector investment.

Since its transition to a multi-party democracy and a market economy in the early 1990s, Cambodia has received substantial Western development aid (RGC 2010). Western bilateral donors, the ADB, the World Bank, and private-sector Western hydropower developers, however, have been reluctant to support large hydropower development in Cambodia, including due to the

environmental and social impacts and the country's weak governance. Since the early-2000s, meanwhile, long-term diplomatic ties maintained between Cambodia and China have grown notably closer, accompanied by growing volumes of trade, aid and foreign direct investment (Rutherford, Lazarus et al. 2008; Burgos and Ear 2010). Filling this gap, therefore, Chinese developers have led the majority of hydropower projects under construction and in planning in Cambodia (Middleton 2008; Urban, Nordensvrd et al. 2013).

In December 2011, Cambodia inaugurated its first large hydropower dam, the 193 MW Kamchay Dam, developed by Sinohydro Corporation. Whilst lauded by the Cambodian Government for increasing electricity supply and reducing electricity prices, civil society groups have criticized the project for its construction in a national park, the limited public consultation and an overall lack of transparency in the decision-making process (Grimsditch 2012). Four more large hydropower dams located in Southwest Cambodia are presently under construction, all by Chinese companies (Grimsditch 2012). At least a further twelve large hydropower projects hold Memorandum of Understanding (MoU) for feasibility studies in Cambodia; of these, four are from Chinese companies, six are from South Korean companies, and one each from Russia and Vietnam (Jona 2011).

All hydropower dams constructed to date have been BOT projects developed principally as commercial projects, even as some companies are Chinese SOEs that have received support from the state-owned China Export-Import Bank, for example, the Kamchay Dam. On the other hand, this mode of investment also cements the two countries' diplomatic ties (Hirsch 2010).

3. Partial Enclosure of the Mekong Commons Defining the Commons on Transboundary Rivers

Common Pool Resources (CPRs) are most conventionally viewed as resources that are needed by many but whose productivity is diffuse, is low or unpredictable in yield, low in unit value, to which a large number of people have access, and where one person's use diminishes the potential for use by another (Dietz, Dolsak et al. 2002). Whilst Garret Hardin famously predicted a 'tragedy of the commons' in the absence of clearly defined property rights, either of the state or private ownership (Hardin 1968), this outcome is now widely viewed as a possibility but not an inevitability; there are innumerable examples globally of the sustainable use of CPRs – water, fisheries, forests – for many generations that are held under forms of communal common property arrangements (Ostrom, Burger et al. 1999).

Contradictions and challenges of a nation-centric approach to transboundary rivers as common property resources are well documented (Fox and Sneddon 2005; Hirsch and Jensen 2006; Sneddon and Fox 2006). As in the case of the Mekong River, nation state boundaries often don't follow watershed boundaries, and thereby no one party controls all of the river's water resources. Furthermore, ecosystem services are also produced at multiple scales and rarely match nation state boundaries (Berkes 2002; Geores 2003). Management of transborder river basins, therefore, requires cooperation by multiple stakeholders across scales, including national governments. Nation-centric decision-making by states, however, that reflects their "national interest" has tended to promote large river infrastructure projects in the Mekong Region, despite the potential for transborder impacts, and that the "national interest" does not represent the interests of all within a nation state (Hirsch and Jensen 2006).

The problems of scale, position and place are also inherently central to the concept of the commons (Lebel, Garden et al. 2005; Hirsch 2006; Sneddon and Fox 2006). Giordano (2003) develops a typology of commons resources categorized as private, open access, fugitive and migratory based on the spatial relationship between resource domains and resource users and their rights domain (Figure 1). Giodano (2003) also emphasizes how scale is important in defining "commons problems" and that scale (individual, household, and village, to the nation-state and beyond) is a sociopolitical construction:

Case A) Private resources are resources available only to one resource using party, who enjoys all benefits and pays all costs (i.e. The "rights domain" of A is coincident with the "resource domain," whilst B is excluded)

Case B) Open access resources are resources openly available to all resource users (i.e. the rights domain of A and B intersect within the resource domain)

Case C) Fugitive resources flow unidirectionally across borders, for example polluted river water flowing from upstream to downstream. Resource user domain rights of A and B are separated by these borders, but still overlap due to the movement of resources across the border;

Case D) Migratory resources are a circular movement between places over time, for example migratory fish species movement between habitats. Again, resource user rights are separated by these borders, but still overlap due to the movement of resources across the border.

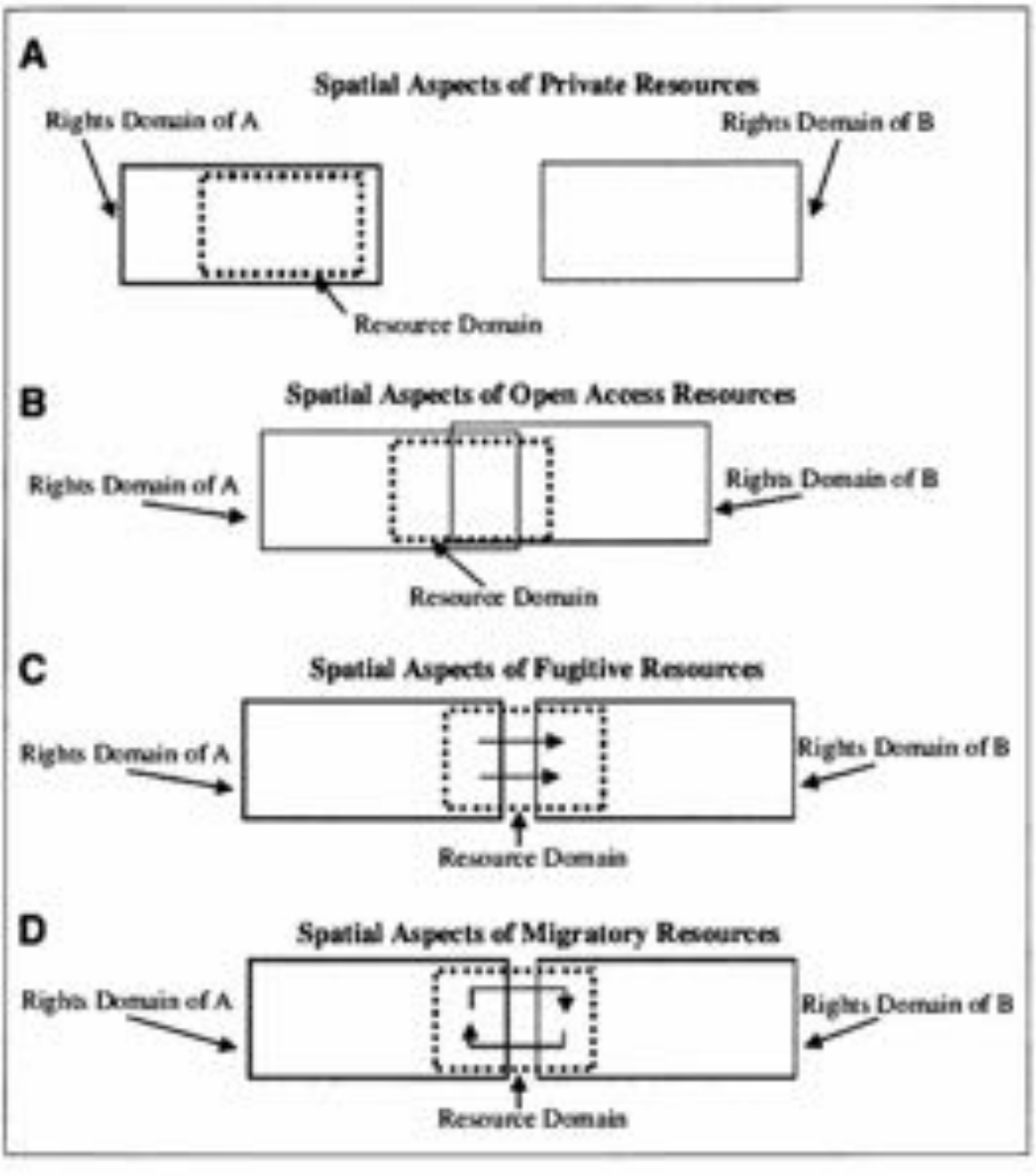

Figure 1: Spatial aspects of (A) private, (B) open access, (C) fugitive and (D) migratory resources (Reproduced from Giordano, 2003).

In the latter three cases, an incentive for over-exploitation exists (i.e. a commons problem) since rights domains overlap and one resource using party may capture exclusive benefits whilst the costs are shared by all resource users (i.e. Gardin's tragedy of the commons). For natural resources within a nation-state, commons problems may be managed by the state allocating clearer access rights – understood as a bundle of property rights that can vary by resource, place, and time - to resource users either as group (i.e. common property) or an individual (i.e. private property).[7] These rights define the rules of resource use including restrictions on who can use a CPR (and thereby who is excluded), how much and when a resource may be used, and the means of monitoring and enforcement. In the case of transboundary resources, however, as the particular resource leaves the sovereign territory of one resource user and moves to another, sharing these transboundary resources requires creating use rights, regardless of resource location, typically by international treaty between national governments (Giordano 2003).

Given the dynamic nature of ecosystems, Giordano (2003) also notes that it is important to consider how their properties change over time and how this influences the politics of scale, place, and position.

Enclosure of the Commons

Enclosure is defined as the transformation of resources previously held as open access or common property into a form that is held as private property (i.e. privatization) (Evans, 2012: 128). Enclosure was first used to describe the conversion of common agriculture land in to privately held land in England in the 18th and 19th century, but has since been extend to numerous resource enclosures ranging from water to wild capture fisheries to atmosphere to genes (Bakker 2005). Bakker (2005) distinguishes processes of enclosure (privatization) of an natural resource from its commodification, the latter of which requires the creation of a market and thereby also the conversion of the resource into units that are fungible (i.e. interchangeable and equivalent to one another; see also Evans 2012: 129).[8]

[7] Ribot and Peluso, differentiating between ability and right to access resources, more accurately ascribe "bundle of rights" as a "bundle of powers" Ribot, J. C. and N. L. Peluso (2003). "A Theory of Access." Rural Sociology 68(2): 153-181.

[8] Bakker (2005) states: "Privatization entails a change of ownership, or a handover of management, from the public to the private sector. Commercialization entails changes in resource management practices that introduce commercial principles (such as efficiency), methods (such as cost-benefit assessment), and objectives (such as profit-maximization)... Commodification entails the creation of an economic good through the application of mechanisms intended to appropriate and standardize a class of goods or services, enabling these goods or services to be sold at a price determined through market exchange."

Hall (2012) highlights how the terms enclosure, primitive accumulation, commodification/ commoditization, accumulation by dispossession, the double movement, and neoliberalization have often been conceptually conflated or used loosely within the literature; in an article that reviews these concepts, with a particular focus on primitive accumulation, Hall (2012) takes primitive accumulation to broadly refer to "the way in which capitalist social relations are created and reproduced." The definition of primitive accumulation, therefore also depends upon the definition of capitalism itself[8] and who/ what is subject to its (re)production.

In the context of rural livelihoods in a neoliberalizing (e.g. see Nevins and Peluso, 2008) and deagrarianizing (Rigg, 2006) Southeast Asia, defining who or what is considered to be "inside" and "outside" of capitalism is a difficult proposition; Hall (2012) demonstrates how smallholder agriculture's relationship to capitalism is complex, including, for example, rural land relations and commodity production such as boom crops (shrimp, coffee...). Hall (2012) argues that research still holding the assumption that rural livelihoods in Southeast Asia constitute direct producers "engaged in peasant-type production and in direct, common possession of land..., [and] assumed to produce for subsistence and to avoid markets unless forced to participate in them" is highly problematic (see also Hall, Hirsch and Li, 2011). The same analysis equally applies to rural communities' relationship to river resources, for example wild capture fisheries or aquaculture, which are both a resource for subsistence but also a commodity incorporated into market social relations.

This current paper focuses in particular on the process of enclosure, but recognizes the significance of the critiques of Bakker (2005) and Hall (2012). Whilst beyond the scope of the current paper, further analysis of the processes of primitive accumulation and commodification would be a worthwhile future step (see, for example, Sneddon 2007).

Santasombat (2011: 6-7) suggests that "To some extent, the Mekong is an open-pool resource to which a large number of people have access." He identifies how resource overuse, in particular for hydroelectric dams and commercial navigation, is linked to an expanding regional market economy, has led to the transnational enclosure of the Mekong Basin's resources.

[8] According to the classical definition, capitalism is defined to exist "when direct producers are separated from the means of production and proletarianized, while the means of production are held by capitalists as private property." Hall (2012) highlights how commodities and markets both long predate capitalism, and thereby capitalism is not conceptually coterminous with commodification, marketization or enclosure.

Santasombat defines the concept of transnational enclosure as "an increasingly centralized decision-making process which enables the state and commercial interests to gain control of territories that have traditionally been cherished by local peoples..." (Santasombat, 2011: 8). These transnational enclosures hold serious consequences for local practices, traditions, systems of knowledge, cultures and beliefs. Other scholars have referred to the process of transboundary water enclosure as "water grabbing" (Matthews 2012; Mehta, Veldwisch et al. 2012).

A large hydropower dam is a technology that generates electricity – a marketable commodity in the context of the region's (variegated) neoliberalizing economy – at the expense of previously existing natural resources in the locality. The construction of a large hydropower dam, in other words, equates to an act of enclosure as access to local resources (land, water and forest), including those held as commons, are lost, to a lesser or greater degree, by existing resource users. There are many examples across the region of local impacts from dams, although not always named as an act of enclosure, including the Pak Mun dam in Thailand (Foran and Manorom 2009), the Theun Hinboun dam in Laos (FIVAS 2007), and the Ha Binh dam in Vietnam (Dao 2011). Whilst increasing livelihood recovery and benefit sharing programs (MRC 2011) are put in place, on the whole these have a poor track record to date in the region (Missingham 2003; International Rivers 2008; Dao 2010), as well as globally (WCD 2000; Scudder 2005). Furthermore, when investment, expertise and electricity markets cross borders, these local enclosures encompass a transnational dimension. If impacts are created that cross borders, then these become truly transnational enclosures. As highlighted in section 2, the growing role of the private sector in new dam development across the region makes the description of "enclosure" particularly apt.

Concept of partial enclosure

There are many cases in the Mekong region where dam construction, in addition to creating local impacts in the vicinity of the dam, have also created non-local impacts, including across borders. These impacts at further distances are less readily recognized or acknowledged, especially by project operators and often by the State, although can also be substantial, and include the loss of wild capture fisheries, ecosystem degradation, changes in river hydrology and water quality, and increased riverbank erosion resulting in loss of land. Examples include the transboundary impacts of dam construction on the Sesan River in Vietnam with downstream impacts in Cambodia (Hirsch and Wyatt 2004), and on the Lancang-Mekong River in China with downstream impacts on Northern Thailand and Laos (Osborne 2004). More broadly, the consequences of increasingly extensive basin-wide dam construction within the

Mekong Basin is now recognized to have widespread ecosystem and social impacts across the basin (MRC 2011).

This paper, therefore, proposes the concept of "partial-enclosure" where the consequences of a direct enclosure in one locality (due in this case to a dam) can degrade but not necessarily decimate CPRs in other distant localities. In other words, partial enclosure results in partial loss of utility of a CPR to existing resource users in one place due to a more complete enclosure in another locality, reflecting the interconnectedness of the river ecosystems.

The concept of partial enclosure presented below adapts the concept of enclosure described in the preceding section to different types of transborder commons as defined above by Giordano (2003), namely: open access, fugitive and migratory. Crucially, as demonstrated in the cases to follow, partial enclosure does not necessarily result in the appropriation of a resource (i.e. the reallocation of a particular resource, such as wild capture fisheries, from one user to another, for example via privatization), but instead refers to the loss of the means by which that resource is (re)produced due to the properties of a river being converted from one use (ecosystem healthy/ wild capture fisheries production) to another (hydropower production).

The following analysis seeks to apply the concept of partial enclosure to the transformation underway in the Mekong Basin.[16] In particular, it explores the environmental and social impacts of increasingly extensive hydropower development upon: the Mekong River's flood pulse as a temporal open-access commons; sediment movement as a fugitive commons; and wild capture fisheries as a migratory commons. These biophysical/ ecological properties of the Mekong River (flood pulse, sediment, fisheries) have been selected as they are at present important regional CPRs of the river that are important to the livelihoods of riparian communities at the local level. Through investigating in detail these properties, the analysis will demonstrate both the relationship between region-wide hydropower development and changes in the properties of these CPRs at the regional and local level, and how this constitutes an act of partial enclosure as the benefits of the river's resources are redistributed from existing users (riparian communities) to

[16]Whilst this paper is not the place to provide a detailed state-of-knowledge review of the biophysical and ecological status of the Mekong River basin, of which many are available (see, for example, MRC, 2010 and Campbell, 2009), it draws upon this knowledge to explore the concept of partial enclosure. Furthermore, whilst there has been extensive analysis of the institutional arrangements and governance of the Mekong River basin, in particular the MRC (see, Hirsch and Jensen 2006, and Dore et al. 2012), this paper highlights only the most salient of these.

new users (hydropower developers). The analysis also highlights how CPRs in various places are co-dependent upon each other, given that the Mekong River is an integrated socio-ecological transboundary system.[11] As discussed in section 2, the process of partial enclosure is facilitated by the neoliberalizing water and energy policies of the governments in the Mekong region.

Open access commons: Temporal characteristics of Mekong River flood pulse

The hydrology of the Mekong River is defined by its flood pulse system driven by a tropical monsoonal climate regime (MRC 2010). Each country's catchment area within the Mekong Basin and contribution to total water discharge is detailed in Table 2. On average, 80% of the Mekong River's total flow occurs during the rainy season between June and November (MRC 2005). However, not all sub-basin catchment areas contribute flow equally throughout the year; whilst China's stretch of the river basin, for example, contributes 16% of the average total annual river flow, 40% of the Mekong River's dry season flow as far downstream as Kratie in Cambodia originates from China, but only 15% of the wet season flow (MRC 2005).

Table 2: Contribution to annual flow rate of Mekong River by country

	China	Myanmar	Lao PDR	Thailand	Cambodia	Vietnam	Total
Area in Basin (km2)	165,000	24,000	202,000	184,000	155,000	65,000	795,000
Catchment as % of Mekong River Basin	21	3	25	23	20	8	100
Discharge as % of Mekong River basin	16	2	35	18	18	11	100

From (MRC 2005)

[11] In the analysis, whilst individual properties are considered in turn (flood pulse, water quality, migratory fisheries) as a heuristic device, it is well-acknowledged that there are symbiotic properties that arise through interaction of these different component parts.

The water, ecosystems and wider terrestrial watershed of the Mekong Basin, shaped by the annual cyclical patterns of flooding and recession, is a highly integrated system (Sneddon and Fox 2006; MRC 2010). The major floods of the river, for example, are an important trigger fish migrations, and fulfill numerous other ecosystems functions (see MRC 2006, and Middleton 2012). Ecosystem productivity is linked to the range of river flows of the annual cycle of the flood pulse, both minimum and maximum, together with other flood pulse characteristics such as timing, duration, height, extent, continuity of flooding, and number of peaks (Lamberts 2008; Nikula 2008).

Increasingly extensive hydropower development throughout the basin will delay the onset of the flood pulse as initial rainfall is used to replenish depleted reservoirs at the beginning of the rainy season, and dry season flow will also increase as stored water is released for power production. The MRC has prepared scenarios for various extents of dam construction within the Mekong basin within its "Basin Development Plan." Figure 2 reveals the significant anticipated changes to the flood pulse under several different scenarios (see MRC, 2011, and also Middleton 2012). These changes to the temporal properties of the flood pulse (onset of the wet and dry

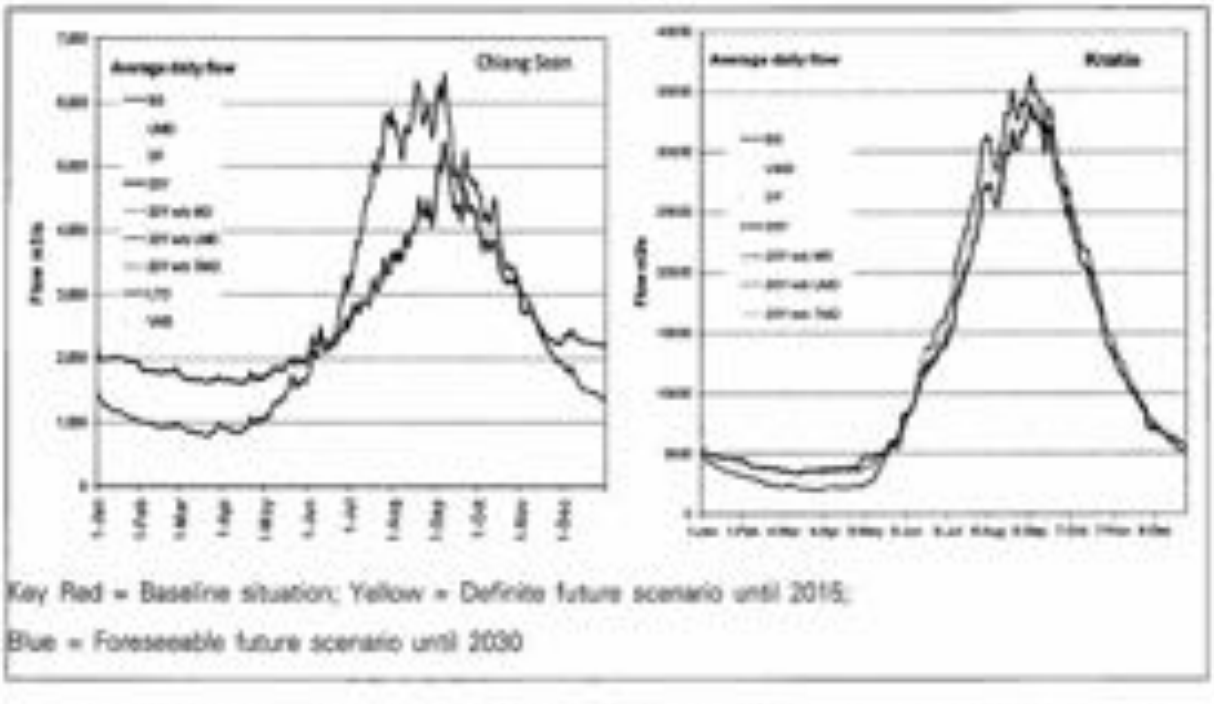

Figure 2: Modeled Hydrograph Changes Under BDP II Scenarios for Chiang Saen, Northern Thailand and Kratie, Cambodia (MRC, 2011)

seasons, minimum and maximum river levels etc.) are a partial enclosure of the flood pulse when these temporal characteristics are considered as an "open access" commons. These changes to the flood pulse, in turn, will impact the river's ecosystem of CPRs and livelihoods dependent upon them.

For example, the ongoing construction of a cascade of up to eight hydropower dams in the Upper Mekong (Lancang) basin has already significantly changed the hydrology of the lower Mekong Basin (Lu, Wang et al. 2008; MRC 2010). China holds an observer status to the MRC rather than full membership and these dams were developed without consultation with downstream countries (Osborne 2004). Räsänen et al. (2012) estimate that once the first six projects are fully commissioned by 2014 river discharge in Chiang Saen, Northern Thailand will increase between 34% and 155% from December and May, and decrease between 29% and 36% from July and September, and that changes will be significant even as far downstream as Kratie in Cambodia. The impacts on local CPRs and livelihoods in Northern Thailand and Northern Laos, including wild capture fisheries, river bank gardens and other local ecosystems, is well documented (Santasombat 2011). Kummu and Varis (2007) suggest that even as these hydrological changes may negatively impact ecosystems, they may also reduce saline intrusion in Mekong delta, facilitate navigation, and increase irrigation opportunities during the dry season.

With regard to inter-governmental cooperation on sharing water, the MRC's 1995 Mekong Agreement's overarching recognition of the need to share the Mekong River's water implicitly acknowledges water as a regional CPR (Hirsch 2000). At the same time, Article 4 of the 1995 Mekong Agreement[10], which provides for sovereign equality and territorial integrity, emphasizes the decision-making power of the member states over water resources, thereby legitimizing Member states to act in their "national interest" (Hirsch and Jensen 2006). With reference to Figure 1B and the concept of open access commons, all states have an overlapping "rights domain" over the temporal properties of thei flood pulse as a "resource domain."

Fox and Sneddon (2006) highlight how Article 5 of the 1995 Mekong Agreement[11], which outlines the principles of "reasonable and equitable" use of water resources, and Article 6

[10] Article 4: "(The parties agree) To cooperate on the basis of sovereign equality and territorial integrity in the utilization and protection of the water resources of the Mekong River Basin."

[11] Article 5: "(The parties agree) To utilize the waters of the Mekong River system in a reasonable and equitable manner in their respective territories, pursuant to all relevant factors and circumstances, the Rules for Water Utilization and Inter-basin Diversion provided for under Article 26.

which focuses on maintaining minimum water flows in the mainstream[14], whilst designed to avoid inter-state conflict over water shortages, fails to recognize the wider importance of the range of flows of the flood pulse to vitality of the ecological system; this "paradoxically, undermine[s] the foundations of ecological and social sustainability at the local scale, thereby threatening long-term stability" (Fox and Sneddon 2006). In other words, the MRC's institutional arrangement fails to adequately address the ecological necessity of maintaining the temporal characteristics of the flood pulse, and hence recognize and protect against the environmental and social impacts of its partial enclosure.

Fugitive commons: Sediment movement

Transboundary sediment movement within the Mekong basin, which are carried by the river from upstream to downstream, is an example of a fugitive commons (see Figure 1, case C). The Mekong River's sediment flows are increasingly recognized as important to the river's ecological productivity (Kummu and Varis 2007), including for wild-capture fisheries, riverbank agriculture and the replenishment of the delta. Two sub-areas of the river basin contribute 90% of the river's total sediment load: approximately 50% of the total sediment load originates from the upper Mekong (Lancang) in China, which constitutes less than 20% of the total basin area; and approximately 40% originates from the Sesan-Srepok-Sekong (3S) basin within Vietnam's central highlands, Southern Laos, and Northwestern Cambodia that constitutes 10% of the total basin area (Clift et al 2004 cited in MRC, 2010). Sediment concentration varies seasonally with water discharge, with sediment concentration approximately shadowing discharge rate, and thus is also in part shaped by the flood pulse and its temporal characteristics (MRC 2010).

Increasingly extensive hydropower development within the Mekong Basin has raised concerns on changes to sediment movement, which becomes trapped behind dams. Sediment trapping reduces the life-span of hydropower dams themselves by reducing storage capacity. Furthermore, water released from the dam thus contains relatively little sediment and leads to the phenomenon of "hungry water," whereby – seeking to regain its sediment load – the water will increase river bed and bank erosion downstream with consequences for riparian communities' agricultural land, houses and other riverside infrastructure. This has been documented at a number of projects across the region, for example the Theun Hinboun dam in Laos (FIWAS 2007). More broadly, an overall reduction of

[14] Article 6: "(The parties agree) To cooperate in the maintenance of the flows on the mainstream from diversions, storage releases, or other actions of a permanent nature, except in the cases of historically severe droughts and/or floods..."

sediment load could also impact ecosystem and hydro-geomorphologic functions, such as the replenishment of the Mekong Delta thus making the area more vulnerable to the impacts of coastal erosion.

Given that extensive hydropower development is underway in both the Lancang and the 3S basins, the impact on sediment transport has emerged as a particularly important issue (MRC 2010:72). Lu and Siew (2006) have shown how there was a significant drop in sediment transport since the construction of the Manwan Dam in 1993 measured 660 km. downstream of the dam at Chiang Saen, Northern Thailand. Revealing the extent of its sediment trapping, in its first 10 years of operation the Manwan Dam lost 20% of its storage capacity (MRC 2010:73). Kummu and Varis (2007) estimate that the complete eight dam hydropower cascade may trap over 90% of the sediment originating from the upper Mekong (Lancang) area. Likewise, extensive hydropower development now underway in the 3S basin may also trap significant amounts of sediment (Grimaldi 2012).

Within the 1995 Mekong Agreement, in contrast to maintaining minimum water flows discussed above, specific reference is not made to maintaining the movement of sediment within the basin. Article 3 refers more generally to the "protection of the environment and ecological balance,"[14] although its definition is open to interpretation. Whilst sediment movement is incorporated into various assessments of the river basin, including the Basin Development Plan (MRC 2011) and dam design guidelines (MRC 2009), this is not equivalent to institutionalized inter-governmental arrangements for cooperation on protecting this fugitive CPR now increasingly partially enclosed by large hydropower dams.

Migratory commons: Fisheries

The transboundary migratory fisheries within the Mekong basin are an example of a migratory CPR (see Figure 1, case D). The Mekong River basin is exceptionally biodiverse, with an estimated 1,500 freshwater species, of which at least 120 are harvested commercially (Coates 2006; AMRC 2008). Of the commercial fish catch, around 70% migrate long distances, including across borders (Dugan 2008). The Mekong River basin is also one of the most productive inland fisheries in the world, and is important to the livelihoods and food security of millions of people (Baran, Jantunen et al. 2007); an estimated 2.2 million tons of wild fish are caught per year, worth between US$2.2 and 3.9 thousand million at first sale and US$4.3 and US$7.8 thousand million at final retail (Hortle 2009).

[14] Article 3: "[The parties agree] To protect the environment, natural resources, aquatic life and conditions, and ecological balance of the Mekong River Basin from pollution or other harmful effects resulting from many development plans and uses of water and related resources in the Basin."

Although basic migration patterns vary by specific species and habitat, the importance of fish migrations between and within the region's wetlands and deep pools is well established (MRC 2002; MRC 2006). There are three major fish migration systems, each of which span national borders: the Lower Mekong spanning Cambodia and Vietnam; the Middle Mekong spanning Northeast Thailand and central Laos; and the Upper Mekong spanning Northern Thailand and northern Lao (see figure 3). Major fish migrations coincide with the Mekong River's flood-pulse, whilst other triggers include water turbidity and lunar cycles.

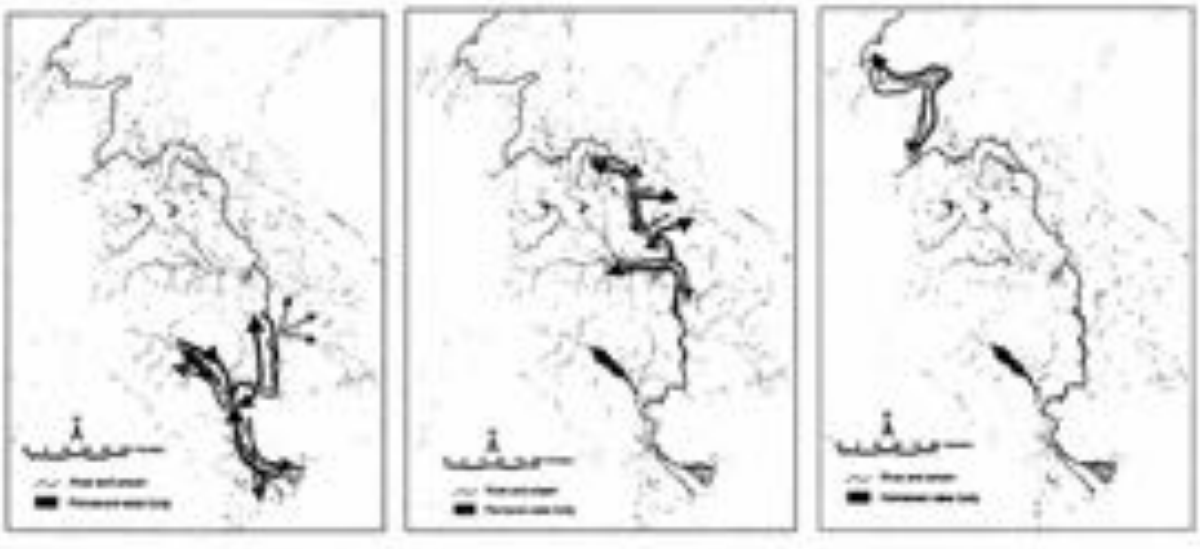

Figure 3: Fish migration systems of the Lower Mekong Basin (MRC 2002)

The impacts of extensive hydropower dam construction on wild capture fisheries are one of the most contested issues with regard to these plans (Stone, 2011). Large hydropower dams act as barriers to fish migration, blocking established migration routes that are essential for fish to complete their life cycles and thus "fragmenting" river basins (McCully 2001). Changes in water quality (temperature, turbidity) and flow rates caused by dams can also affect fish migration and fish habitat, with implications for biodiversity, fish production and livelihoods. Changes to the flood pulse due to large reservoir operation, meanwhile, can affect the triggers that initiate migrations, and also affect fish production by changing the extent and duration of submersion of wetland habitats, such as the flooded forests around the Tonle Sap Lake (Lamberts 2008).

An extensive research literature has emerged describing the anticipated impacts to migratory fisheries from mainstream and tributary

dam development in the Mekong Basin (e.g Dugan et al. 2010), as well as official reports by the MRC (e.g. MRC 2002, 2010, 2011). A strategic environmental assessment report in 2010, for example, revealed that plans for 11 dams on the Mekong mainstream would result in significant impacts on migratory fisheries (ICEM 2010). Ziv et al. (2012), meanwhile, revealed that a number of tributary dams may also have significant impacts on migratory fisheries - some of them greater than the proposed 6 mainstream dams in Northern Laos - with the highest impact project being the proposed Lower Sesan 2 dam on the Sesan River in Cambodia that if built could result in a 9.3% drop in fish production basin wide. Researchers have also highlighted how existing technologies are unable to mitigate the impacts to fish migrations (Dugan, Barlow et al. 2010).

Other researchers have examined the implications for food security of reduced wild capture fisheries. Orr et al. (2012) analysis shows how shifting the protein consumption of the millions of households affected by the construction of mainstream and tributary dams from a river-based (fish diet) to land-based (non-fish meat and milk diet) food production will prove challenging in practice due to the additional land area and water consumption that would be required. Under the greatest future dam construction scenario, the construction of 88 dams could result in a net loss of fish resources of between 495,000 to 792,000 tons (23% to 39%), which to replace with non-fish meat and milk would require an increase in water use of 6 to 17% and increase in land use of 19 to 63%.

Similar to sediments, migratory fisheries are not formally addressed in the 1995 Mekong Agreement, although have been very present in public debates, scientific analysis and official assessment processes (ICEM 2010; MRC 2011). However, as Arthur and Friend (2011) argue, policy narratives presently misrepresent the Mekong's fisheries as "doomed" in order to downplay their importance and to further justify hydropower development. Given the overwhelming evidence that plans for extensive hydropower development are proceeding, the river's wild capture fisheries – a vital CPR for the food security and local economy of millions of rural people – are under threat and increasingly partially enclosed.

4. Conclusion

A range of economic, social and environmental changes are underway in the Mekong Region (Kirby, Krittasudthacheewa et al. 2010). Without doubt, for the Mekong River basin it is the plans for extensive hydropower development that will result in some of the most profound changes. Whilst as recently as the late 1990s, the Mekong River was claimed to be "almost completely uncommodified" (Bakker,

1999), this paper has demonstrated that just over a decade later enclosure of the region's water resources is now well underway. Energy and water policies promoted by governments that tend towards variegated neoliberalization – where the region's new neoliberalizing political economy builds upon the old largely illiberal one – and the growing role of private sector actors is resulting in the partial enclosure of the Mekong River and the expanding scope of neoliberalization of nature in the region.

Hydropower development is often promoted in Laos and Cambodia as generating revenues for government for reinvestment into development, which in turn could compensate communities for the loss of natural resources, or even benefit them. Yet, benefits, costs and risks are often apportioned unevenly, despite whatever benefit-sharing or compensation packages may be offered. Ensuring good governance has proven a serious challenge, and in too many cases has resulted in significant risks and impacts for affected communities previously dependent upon river resources that were often held and managed as a CPRs that are now increasingly partially enclosed.

Within the circumstances of "green neoliberalism" (Goldman 2005, and Barney, 2012) and in the context of weak state capacity and oftentimes a lack of political will for regulation of the environmental and social impacts of large hydropower dams, a variety of new voluntary neoliberal global governance mechanisms have been promoted in the region, including the Equator Principles for commercial financiers and the Hydropower Sustainability Assessment Protocol (HSAP) for private-sector hydropower developers (Foran, Wong et al. 2010). Because these mechanisms are ultimately voluntary, however, greater transparency, accountability and environmental and social justice are not guaranteed and these new governance mechanisms have not yet proven a substitute for improved state regulation accompanied by rule of law.

Whilst the partial enclosure of the Mekong River's resources relates to the overarching logic of the development trajectory of the Mekong Region towards variegated neoliberalization of water and energy and that promotes rapid industrialization and a deepening and expanding market economy, some measures might be taken within this context. Legislation for the use of planning and assessment tools of greater breadth and depth, such as Cumulative Impact Assessment (CIA) and Strategic Environmental Assessment (SIA), could make more legible within planning processes the regional scale impacts associated with basin-wide hydropower development (Keskinen and Kummu, 2010). Peoples' right to participation within these processes could lead to a more deliberative and

democratic form of decision-making on projects with regional implications. With regard to the accountability of the private sector, a key challenge is addressing uneven governance across the region and ensuring corporate accountability even where rule of law and access to justice is weak (Middleton and Pritchard, 2013). Whilst deepening economic integration in the region facilitates both investment and electricity to flow across borders with increasing ease, responsibility for the environmental and social impacts of investment does not flow so readily, and for affected communities access to justice remains territorially bound, circumscribed by principles of sovereignty and non-interference. Recognizing and legislating at the national and regional levels on cross-border investment[19] and strengthening regional accountability mechanisms, such as the ASEAN Intergovernmental Commission on Human Rights (AICHR), will be crucial towards addressing the greatest of environmental and social injustices that emerge.

[19] See Middleton and Pritchard (2013), and the "Maastricht Principles on Extraterritorial Obligations of States in the Area of Economic, Social and Cultural Rights" (www.etoconsortium.org last accessed 7.12.13)

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