

Private Dams, Public Interest in mainland Southeast Asia: Hydropower Governance in a Beyond-Aid Political Economy

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Introduction

Since the early 1990s, broad policy shifts promoting regional integration and economic liberalization led to the entry of the private sector into region's electricity sector that until then had been dominated by influential state-owned utilities. At the same time, the idea of Build Operate Transfer (BOT) hydropower projects, accompanied by neoliberal political theory of Public Private Partnership (PPP), appeared in the region backed by the International Financial Institutions (IFIs) the World Bank, the Asian Development Bank (ADB) and the International Monetary Fund (IMF), as well as Western bilateral donors (Wyatt 2004). In contrast to the past, when states themselves would build dams as projects for the public good, BOT and PPP invites private sector developers to partner with the state in various configurations in designing, financing, constructing and operating such projects. Nowadays, BOT projects are the principle vehicle by which new large hydropower dams are being built in the Mekong Region, principally in Laos, Cambodia and very soon in Myanmar. The proliferation of BOT agreements, including their associated financing arrangements, have redefined the role of the state, the private sector, the IFIs, and various hues of civil society in hydropower decision-making and redistributed power between them.

Despite initial interest in the early 1990s in BOT hydropower dams mostly by Western hydropower developers and international financiers, especially in Laos, these BOT projects experienced a stumbling start due to the 1997 Asian Financial Crisis. The crisis impacted both the availability of international capital and the region's electricity demand, in particular in Thailand that was the region's largest electricity market at the time and the intended export market for Laos. As the region recovered, in the 2000s suspended projects were revived. However, in the new geopolitical context of the post-Asian Financial Crisis, the region's lead hydropower developers and financiers were now from Thailand, Vietnam, and China, replacing the previous Western developers. Whilst at first the IFIs played a key role in backing BOT projects, as the regional developers, financiers and governments confidence increased, the process also redefined (and diminished) the role of the IFIs and Western bilateral donors.

With a focus on hydropower dams in Laos, this paper will evaluate whether the above transformations have heralded the region's hydropower dam governance into a "Beyond Aid" era in particular its relationship to the distribution of risks and how the "public interest" is represented. More broadly, responding to Janus et al's (2015) four critical changes in aid, the paper will ask what an analysis of the new political economy of hydropower and its governance in Southeast Asia can tell us about the "Beyond Aid" debate in terms of: diversification of actors; evolving ideas, knowledge, and norms in both policy and practice; financial mechanisms and sources; and policy coherence.

The paper shows how whilst BOT hydropower dams, framed under the concept of PPP, were first introduced into mainland Southeast Asia by the IFIs and Western donors, as geopolitical and domestic politics of the region has shifted, the model is now utilized by new or “non-traditional” aid providers, including from China, Thailand and Vietnam. However, the concept of BOT is not transferred wholesale. The paper will argue that in contrast to the earlier claims of the IFIs and Western donors that BOT hydropower projects could also be vehicles of direct poverty reduction and ‘development’, the “non-traditional” aid providers view these projects principally as economic infrastructure; if a claim for poverty reduction exists at all, then it is enfolded within broader objectives of national or regional economic growth. Thus, it will be argued that the “public interest” has largely been reduced to the interest of the private developers.

In the next section of the paper, to situate and contextualize the paper, a brief history of Laos, its geopolitics and transforming aid regimes is presented. Then, the key concepts of the paper are introduced, namely: concept of PPP and BOT; risk management in PPP and its politics; and the concept of “public” in PPP, drawing in particular on Wyatt’s (2004) emphasis on the public interest emerges from collective action. In the following section, a recent history of Laos’ hydropower sector is presented, emphasizing how the discourses surrounding PPP and BOT have evolved and their material outcomes in terms of the projects constructed and how risks were allocated. This analysis is divided into three periods, with selected case studies from each: from the late 1980s to the Asian Financial crisis, with a focus on the Houay Ho dam; the debate and approval of the Nam Theun 2 dam in the immediate recovery period until 2005; and the hydropower ‘boom’ that has occurred since the mid-2000s, with a focus on the Xayaburi Dam. The final section concludes by asking the question what insights can be gleaned from contemporary hydropower construction in Laos towards the beyond-aid debate.

Laos: Geopolitics and transforming aid regimes

Laos is a mountainous land-locked country located in the center of mainland Southeast Asia. It is bordered by Vietnam to the East, Cambodia to the South, Thailand to the West, and also China to the North and Myanmar to the Northwest in the so-called Golden Triangle. Reflecting Laos’ turbulent political history, the country has seen a number of aid regimes over the past six decades. Recognizing these geopolitical dynamics serves to place current “beyond aid” debates with a historical context.

The French occupation of Laos began in 1893 and it was not until 1953 that Laos declared full independence with a constitutional monarchy and the creation of the Royal Lao Government (RLG) (Stuart-Fox 1997). According to Viliam Phraxayavong, author of the book “*History of Aid to Laos: Motivations and Impacts*” up until 1955 France remained the most important aid provider, but as the Lao Issara (Free Lao) movement briefly emerged, a growing volume of aid also began to arrive from the United States (US).

In the mid-1950s, as communism spread through Southeast Asia, the RLG became increasingly allied with and dependent upon aid from the US to fight the Viet Minh backed Pathet Lao. By the 1960s, this aid was mainly in the form of military aid, for both the Royal Lao Army (RLA) and the CIA backed Hmong Clandestine Army. These forces fought the escalating Laotian Civil War (also known as the Secret War), that was in turn tied to the Second Indochina war.

In 1975, the communist Pathet Lao assumed political power of the country as the Lao People's Revolutionary Party (LPRP), which remains the only legal political party in the country to this day. During this period, as a member of the 'communist bloc,' until the end of the 1980s, Laos maintained a close relationship with the Soviet Union, including for economic and financial support. Meanwhile, the Pathet Lao also maintained a close relationship with Vietnam for its "ideologies, organizational, and logistical support" (Stuart-Fox, 1997:79).

In 1986, the Lao Government introduced the New Economic Mechanism (NEM), which signaled a transition from a centralized economy towards a socialist-orientated market economy. The country lifted barriers to international trade and began implementing market mechanisms (see Rigg, 2005). In 1988, a liberal foreign investment law signaled that "Laos was open for business"¹ (Lintner 2016). With this transition, as well as the Soviet Union's collapse, the IFIs (World Bank, ADB, IMF), UN and Japan and Western bilateral donors emerged as the principle aid providers promoting a neoliberal economic agenda, which later partly softened in to a post-Washington consensus economic agenda.

With the backing in particular of the ADB's GMS program, Laos increasingly integrated into the regional economy. The Lao government held five priority development initiatives with a stated aim of alleviating national poverty: hydroelectric power, mining, construction materials, agriculture, and ecotourism (Stuart-Fox 2009). By the mid-2000s, as bilateral relations with Thailand, Vietnam and especially China strengthened, there was growing trade and flows of investment into Laos, especially in natural resource extraction (logging and mining), land concessions (rubber and other cash crops), and hydropower dams.

Characterizing the contemporary political system of Laos, Barney (2012) observes that it contains a mixture of liberal and illiberal forms. He writes (2012:25):

"In Lao PDR, examples of illiberal or quasi-neoliberal institutions include the military; most institutions of the Lao bureaucracy; elites connected to the Lao People's Revolutionary Party (LPRP); as well as private entities whose primary mode of profit generation is organized through patronage and rent seeking as opposed to market-based competition. There exists an internal tension in what, in the case of Indonesia, Hadiz and Robison (2005) have called "neoliberal reform and illiberal consolidation,"

In other words, Laos at best be considered a neo-liberal *influenced* state. With regard to freedoms and human rights, Lintner (2016) refers to the governments performance as "dismal." He cites that there are persistent restrictions on "fundamental rights including freedom of speech, association and assembly," as well as arbitrary arrest, detention and forced disappearance. The latter was brought to the World's attention when in 2012 the Ramon Magsaysay award winner Sombath Somphone was detained and disappeared. Meanwhile Laos' constitution forbids mass media activities that are contrary to "national interests" or "traditional culture and dignity" (Lintner 2016).

Over the past decade, economic growth has been strong at approximately 7%. With the growing trade, investment and aid from China, Vietnam and Thailand, the political influence of the IFIs

¹ Superseded by the 1994 Law on the Promotion and Management of Foreign Investment

and Western bilateral donors began to weaken. Their financial leverage has become less significant relative to other sources available to the Lao government, whilst the government's capacity to manage this investment has somewhat grown. Needless to say, it is also less willing to be challenged by the conditionalities of the IFIs on issues related to human rights and 'good governance.'

Public Private Partnership and BOT in Hydropower

As introduced above, many of the hydropower dams that the government considers a key priority for the country's national economic growth are being pursued under a BOT/PPP model. In this section, therefore, concepts are introduced, namely: PPP and BOT; Risk "management" in PPP, and its politics; and a discussion on the notion of "public" in PPP.²

- **The Concept of PPP**

There are many definitions of what constitutes a PPP. The World Bank's PPP Knowledge Lab³ currently defines it as:

"a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance"

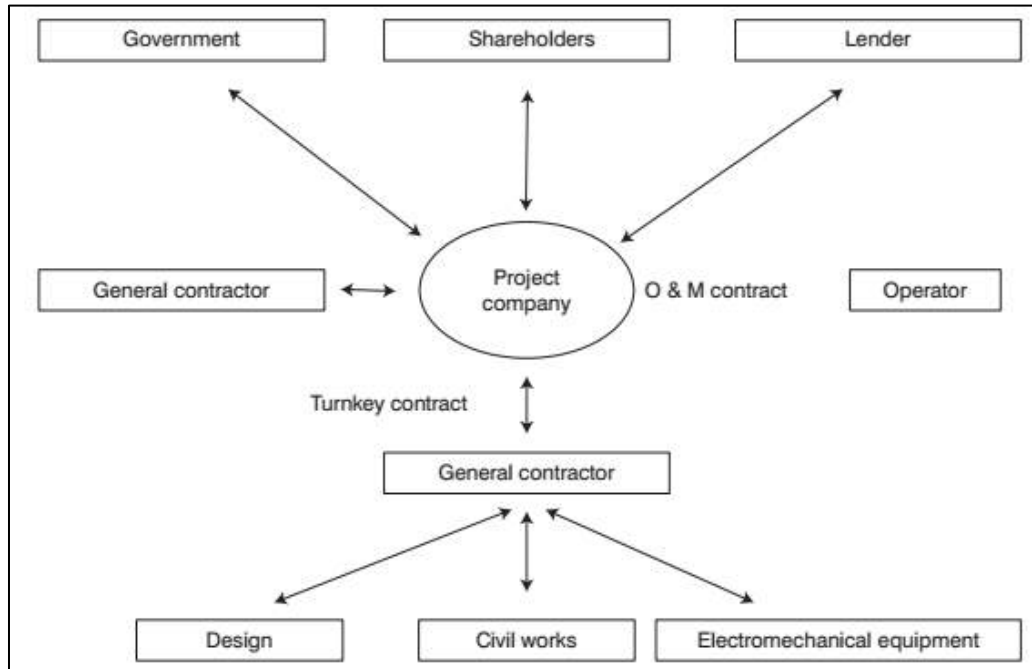
In other words, the private sector commits via contract to deliver an economic or social infrastructure project to the government, or to a community on behalf of the government. Thus, under a PPP, for the duration of the contract, the government becomes the buyer rather than the provider of a service.

Building infrastructure under a PPP structure is often associated with a form of project financing called Build Operate Transfer (BOT). Under this arrangement, a private-sector actor receives a concession agreement usually of between 20-50 years from a public sector agency to build and operate an infrastructure for the concession period, before transferring ownership of the asset to the state at no cost. A generalized BOT structure for a hydropower project is given in figure 1. Here, within a project company which is a "special purpose vehicle" created for the project, contracting partners including the government, the general contractor, lenders and shareholders partnered.

² These themes echo the interests of Wyatt (2004) who examines "the nexus" between BOT, risk and the public good in Laos and Vietnam.

³ <http://ppp.worldbank.org/public-private-partnership/overview/what-are-public-private-partnerships> [Last accessed 23.5.16]

Figure 1: General BOT project structure for a hydropower dam



Reproduced from Forouzbakhsh et al (2007)

The original rationale of PPP was for governments to lever private capital, as well as expertise and efficiencies in finance, design, construction, and operation. This would replace other government means of funding infrastructure, including raising tax or increasing government borrowing. Other rationales by advocates of PPP include (Zen and Regan, 2014): risk transfer from the government to the private sector; innovation through competition and efficiency incentives with the private sector; predictability of costs, due to whole-of-project costing; and provision of services tied to contracted, resulting in accountability of the private actor to the government.

PPP has been closely associated with the political agenda of neoliberalization since the late 1970s until the 1990s, which targeted, amongst other things, the state's redefinition from "rowing to steering" (i.e. New Public Management administration), the shrinking of service provision directly by the state, and a concomitant expanded role for the private sector. In combining together the public and private, PPPs in essence are intended to utilize private initiative towards the "public good", which in principle is the concern of the state (Wyatt 2004). PPPs first emerged in industrialized countries where neoliberalization was most embedded, including the UK, Australia, Canada, Japan and Germany, and then became increasingly common in lower income countries as policies were diffused via the IFIs, often in the form of structural adjustment programs.

In Southeast Asia, during successive waves of economic crisis, neoliberal policies were heavily promoted by the World Bank Group, the IMF, and the ADB. Whilst initially during the 1980s

full privatization through divestiture of the state was proposed⁴, in the 1990s as norms shifted towards the post-Washington consensus, a more measured approach of PPPs were promoted instead.

- Risk “management” in PPP, and its politics

Proponents of PPP have concluded that the essence of PPP is risk management (Akintoye, Beck et al. 2003), whereby the basic principle is that “risk is borne by the party that is best able to manage it or to absorb it” (Zen and Regan, 2014:38).⁵

Wyatt (2004:55) explains: “The discourse on BOOT [BOT] is dominated by ideas of risk shedding (from public to private) and risk sharing (between public and private).” Regarding large hydropower dams, this focus on risk is of particular significance. As Wyatt (2004:29) writes: “Whilst traditionally constructed public infrastructure similarly create and contend with such risks, risks were rarely explicitly addressed or assessed or at best were partially assessed and remained on the periphery. It was assumed that public ownership effectively socialised risk.”

The World Bank categorizes the major types of PPP risk as: Site; Design, construction and commissioning; Operation; Demand, and other commercial risk; Regulatory or political; Change in legal framework; Sponsor, or default; Economic or financial; Force Majeure; and Asset ownership (full details in Appendix 1) (World Bank 2012). These risks emphasize financial, economic, and some forms of political risks that are largely those to be divided between the project partners, including the project developer, lenders, shareholders and government. Risks are identified and evaluated through a so-called “due diligence” process of the actors involved. Thus, the science of risk calculation has become integral to the brokering of PPP deals.

There is an inevitable politics within the representation and calculation of risk, and in particular who experiences risk. As Slovic (2000:xxxvi, cited in Wyatt 2004) observes, “Defining risk is ... an exercise in power”; experts in risk in particular can be instrumental in defining and distributing risks, as well as rendering some risk invisible. Risk, here, is thus socially constructed (see also Leach et al, 2010).

Proponents of PPP and BOT suggest that they were a means by which the government could shed risk to the private sector. However, critics have claimed that in fact governments have ended up shouldering significant risk, some of which has been hidden from them (IRN 1999). Wyatt (2004) suggests that in part this emerges from knowledge asymmetries between the government and the private sector, with the former less familiar with the tools of risk assessment and management. Other mechanisms of risk transfer from the private sector to the government includes via committing to various guarantees on liabilities, such as protection from changes in the law, “take or pay” electricity purchase contracts (transferring demand risk ultimately to the electricity consumer), tax breaks, and shouldering responsibility for mitigating various environmental and social harms that may emerge. In practice, however, these social and

⁴ In privatization, ownership of assets are transferred permanently from the public to private sector, whereas under PPP the asset is ultimately transferred to the public sector’s ownership.

⁵ The concepts of hazard, risk and uncertainty have been extensively discussed, are inter-related, and are bound together by politics. A *hazard* can be defined as “an object, condition, or process that threatens individuals or society in terms of production or reproduction.” A *risk* is the known (or estimated) probability that a hazard will result in a negative consequence (Robbins et al., 2010: 81).

environmental risks are regularly externalized onto affected communities. Furthermore, for cross-border power trade projects, there is also the possibility that the power importing government transfers risks to the project host country government.

- The “public” in PPP

From an economist’s perspective, the “public” in public private partnership refers to the provision of a “public good”, which is fundamentally different from the concept of “public interest.” In economics, as defined by the World Bank’s flagship World Development Report in 1994, a “pure public good” produced within a market economy is an economic good that which is considered non-excludable and non-rival⁶ (World Bank 1994). They include infrastructure such as flood defense and rural roads. Traditionally, these goods have been provided by the state, funded through taxes.⁷

Before this report, electricity had also been understood to have monopolistic properties, and to require economies of scale in investment. Therefore electricity had traditionally been provided by the state, and thus treat as a “public good.” However, the 1994 World Development Report proposed that electricity has high excludability and rivalry of use, and therefore is actually a “private good” rather than a public one. This opened the door to a contested global trend to “unbundle” and privatize electricity systems (and other networked goods), although in practice only partial-privatization has occurred especially in emerging economies, including Thailand (Greacen and Greacen 2004, Victor and Heller 2007).

Neoliberal economists argued that deregulated and competitive markets were a more effective means of generating public policy (including on infrastructure) than allowing the politically motivated, messy collective action of the public to determine public policy. Yet, whilst under PPPs private capital may substitute the state in terms of *the provision of public goods*, private capital and the state are not equivalent in terms of rationale, interests and priorities. Simply put, the former’s primary interest is profit, whilst the latter is generally expected to consider a wider array of public interest concerns in its decision making and actions. Hence, allowing markets to determine public policy and the “public interest” is problematic, especially when the market itself is understood to be socially constructed. Akintoye and Beck (2009:49), paraphrasing Kerr (1998), suggests it can be argued that “PPP is actively depoliticizing state-sponsored service provision and subjecting it to the rule of money. This depoliticisation, according to Kerr, is part of an effort by the state to disengage from investment while simulating capital accumulation.”

Wyatt (2004) argues the need to bring back the political into a normative conception of Public Goods in Southeast Asia. Wyatt (2004:51) highlights that goods have both instrumental and intrinsic properties, with the former referring to the desired end in terms of use, and the latter widening the definition to the desired end *from the provision of instrumental goods* in a societal sense (i.e. the Public Good). Wyatt (2004) argues, therefore, that collective political action – as has often emerged in various forms around plans for hydropower construction in Southeast Asia locally, nationally and transnationally – is a legitimate and necessary part of understanding - and

⁶ A good is rival if consumption by one user reduces supply availability for another; A good is excludable if a user can be prevented from consuming it

⁷ According to market logic there is little incentive for individuals to provide such public goods when they could free-ride if another individual was to provide them instead

indeed theorising Public Goods. Such political action can occur in both formal and informal political arenas⁸ – to the extent that political space permits – ranging from public protest, to court rooms, as well as through “everyday acts of resistance.”

The arrival, hiatus and boom of hydropower in Laos

The first large hydropower dams built in mainland Southeast Asia were since the 1960s in Thailand and Vietnam. They were principally conceived, built and operated by state agencies, typically with funding from the World Bank or the United States, and the Soviet Union respectively (Hirsch 2010). In these early projects, many environmental and social risks of the projects were shouldered by displaced or otherwise affected people with limited recourse to compensation or access to justice. Such projects and their distributional injustices were typically justified as in the name of the need for “national development” (Sneddon 2003).

Since the early 1990s, partial-liberalization of the region’s power sector in Thailand and Vietnam, alongside regional economic integration and regional power trade steered by the ADB’s Greater Mekong Subregion (GMS) program, has increased the role of private sector energy companies and commercial financiers (Middleton et al 2009). Whereas in Thailand and Vietnam, at present, almost all of the largest hydropower dam projects have been developed already as state-led projects (although Vietnam is now corporatizing these projects), in Laos and Cambodia, which are both presently undergoing extensive and rapid hydropower development, PPP and BOT are the principle investment vehicles. National policies and laws have facilitated this transition, promoted by the World Bank, the International Finance Corporation, and the ADB (Middleton and Dore 2015).

With a focus on Laos, this section briefly maps the emergence of PPP and BOT in hydropower dams. It focuses in particular on the role of the IFIs, and how risk and the public interest has been defined. It argues that the first BOT in Laos, the Houay Ho dam, set a particularly poor precedent for both managing financial risks, and distributing environmental and social risks, and was widely criticized, including with regard to the BOT model itself. Subsequent BOT projects, financed directly by the IFIs, including the Theun Hinboun dam and Nam Theun 2 dams increasingly tied hydropower to a wider notion of poverty reduction rather than as economic infrastructure alone. The Asian Financial Crisis was a key geopolitical event that resulted in a hiatus in the construction of new hydropower dams, and subsequently reconfigured the actors engaged in hydropower PPP. Since then, it has been developers and financiers from Thailand, Vietnam and China who have led the construction of large dams in Laos.

- **Inception of BOT hydropower**

The BOT hydropower model was promoted in Laos since the early 1990s by the World Bank, the ADB, the UNDP and various Western donors. It was rationalized on the basis that the Laos government did not have the finance or the expertise to construct such large dam projects alone (Wyatt 2004). In addition, it reflected the IFIs’ broader neo-liberal agenda for economic growth

⁸ Nancy Fraser, paraphrasing Jürgen Habermas, takes the public sphere from where arise the “Public Interest” to be: *“the space in which citizens deliberate about their common affairs, hence, an institutionalized arena of discursive interaction. This arena is conceptually distinct from the state; it is a site for the production and circulation of discourses that can in principle be critical of the state... it is not an arena of market relations but rather one of discursive relations, a theater for debating and deliberating rather than for buying and selling.”*

and poverty reduction in Laos through growing the role of the private sector, expanding the market, and linking with plans for regional economic integration under the ADB's GMS program.

To these ends, the IFIs heavily promoted hydropower electricity exports as a key development strategy to the GoL (IRN 1999). Many of these plans, however, have existed since the 1950s when they were first conceived under the Western-backed Mekong Committee, but were shelved as conflict in the region escalated (Bakker 1999). Under the Greater Mekong Subregion (GMS) program, the ADB envisioned that large hydropower dams would export power to neighboring Thailand and Vietnam where demand was greater, in exchange for currency to be invested in Laos development (Middleton, Garcia et al. 2009, ADB 2012). Governmental support was affirmed for this plan with the signing of the Intergovernmental Agreement on Regional Power Trade by the region's leaders in 2002 at the First GMS Summit. Thus, during its early stages, the technical studies, advice and financing of the ADB, World Bank, and Western bilateral donors fundamentally shaped the region's plans for regional power trade, reflecting also the strategic turn within the World Bank itself towards becoming a "global knowledge bank" (Middleton, Garcia et al. 2009).

In Laos, smaller projects to meet domestic demand, the IFIs advised, could be built using concessional loans and bilateral aid, and owned and operated by the Laos' state-owned electricity utility, Electricité du Laos (EdL). Meanwhile, larger projects for power export should be developed as BOT projects involving private capital (Middleton, Garcia et al. 2009). The government, concerned about resource sovereignty, could take an equity share in the BOT projects (Wyatt 2004); to this end, in 2004 the government established the Lao State Holding Enterprise (LSHE) for some of the larger projects, starting with Nam Theun 2 (below).⁹ It was argued that the BOT model would generate revenue for the government from concession royalties, taxes and revenues from power sales, and could be used for funding Laos' further development.

For international hydropower construction companies and operators, Laos mountainous terrain with almost 21,000 MW of hydropower potential (MRC, 2010:185), at the time largely untapped, proved highly appealing. International hydropower developers mostly from OECD countries including South Korea, Australia, Europe and North America were the first to pursue MoUs with the Laos government for large power export hydropower projects under BOT contracts. By 1995, MoUs on 23 feasibility studies had been signed for dams with a combined capacity of 6,676 MW (Phonekeo 1996). However, by the time of the Asian Financial Crisis hit in 1997, only two BOT projects had actually been built: the 150MW Houay Ho Dam and the 210MW Theun-Hinboun Dam. Both projects export their power to Thailand, and both externalized severe environmental and social costs on to nearby communities. These projects were developed in the absence of environmental legislation in Laos, which was only passed in 1999.

The 150 MW Houay Ho dam, which is located in Attapeau province, Southern Laos, was the first BOT project to be built in Laos, and unusually was fully financed by the developer's private

⁹ <http://www.laoholding.com/index.html> [Last accessed 25.2.16]

capital.¹⁰ In 1993, the Houay Ho Power Company (HHPC) was created to develop the project, which had share holdings by: Daewoo Engineering and Construction Company (60%), the state-owned Electricité du Laos (EdL) (20%); and Loxely PLC (a Thai development firm) (20%). According to Wyatt (2004), Loxely was bought into the consortium mid-negotiation due to the perception both of the Laos government and Daewoo of its close connection to EGAT, and thus to facilitate the project's Power Purchase Agreement, as well as its experience with BOT already in Thailand (i.e. to reduce project development risk). The project was completed in 1998, although its environmental impact assessment (EIA) was completed only in 2000 (Khamin 2008). In a complex series of purchases and reflecting mis-judged financial risks amongst the developers, including the impact of the unanticipated Asian Financial Crisis, the project's ownership has been sold four times and is currently owned by EdL together with two Thai companies.¹¹ The government appeared to also have significantly misjudged the financial risks of the project¹²; The project did not produce any royalties for EdL until 2010 although the Government was required to make annual interest payments of US\$1.8 million on its \$10 million dollar equity from 2000 (Delang and Toro 2011).

At the Houay Ho dam, impacts and risks from the project were initially shouldered by 2,500 Heuny and Jrou ethnic minority people from eleven villages who were resettled with inadequate compensation.¹³ For example, only 20% of the land originally allocated for compensation turned out to be available, as the remainder was already in use by other villages. This resulted in serious food security impacts for the resettled people (Khamin, 2008). Meanwhile, the burden of addressing these issues were left with the government, as in the details of the Concession Agreement, Daewoo had agreed to make only a single payment of US\$230,000 for social and environmental impacts (Delang and Toro, 2011). Another controversy related to the involvement of the INGO World Vision, which between 1994 and 1997 contributed US\$112,000 in support of resettlement, which INGOs accused of subsidizing the private developers (IRN, 1999 cited in Wyatt, 2004:154).

In 2001, the Belgium company Tractebel S.A. purchased Daewoo's share in the project using export credits of the Belgium government. Given the outstanding social issues, in 2004 a Belgium NGO – Proyecto Gato – submitted the case to Belgium's National Contact Point on OECD Guidelines on Multinational Corporations (a non-binding transboundary accountability mechanism) in an attempt hold the company to account for the project's impacts. Whilst the case itself was not successful, it did initiate Tractebel S.A. to undertake some further improvement for affected people, but as of 2012 many issues were still outstanding (Middleton, Matthews et al. 2015).

¹⁰ See Wyatt 2004 for greater detail on both Houay Ho and the Theun Hinboun dam. For Theun Hinboun dam, see also FIVAS (2007). For the company's perspective see: www.houayho.com ; and www.thpclaos.com.

¹¹ The current ownership is: Glow Energy (Thailand) (67.25%); EdL (20%); and Hemaraj Land and Development (Thailand) (12.75%).

¹² Wyatt (2004:147) suggests that at first EdL was a reluctant investor in the project, but that domestic political pressure resulted in them joining the consortium.

¹³ Wyatt (2004) explains that not all of the villagers were directly affected by the project's infrastructure, but that the Laos government took the opportunity to resettle them from upland to lowland areas under their controversial Shifting Cultivation Stabilisation Program.

Regarding the developers' rationale for the project, unlike later projects of Western developers (in particular the Theun Hinboun and Nam Theun 2 dams), the Houay Ho dam made no claims to be a development project, but rather an investment strictly for profit (Wyatt, 2004:146). Hence, here the "public" in PPP, very much aligns with the private developer's interests over wider societal interests.

More briefly, the first large BOT project to be backed by an IFI was the 210MW Theun Hinboun dam, commissioned in 1998. Although beyond the scope of this paper to discuss in detail, it is noteworthy as in contrast to the Houay Ho Dam, it was partly funded by the ADB. The project exports 95% of its electricity to Thailand. While initially lauded by the ADB as a project with 'little for the environmental lobby to criticize', widespread impacts soon emerged that the ADB later reluctantly acknowledged, including declining fisheries, riverbank erosion and downstream flooding affecting over 30,000 people (FIVAS 2007). After sustained pressure from INGOs, the project's owners released a Mitigation and Compensation Programme in 2000, which on implementation met some of the material needs, such as building wells, but struggled to replace lost livelihoods.

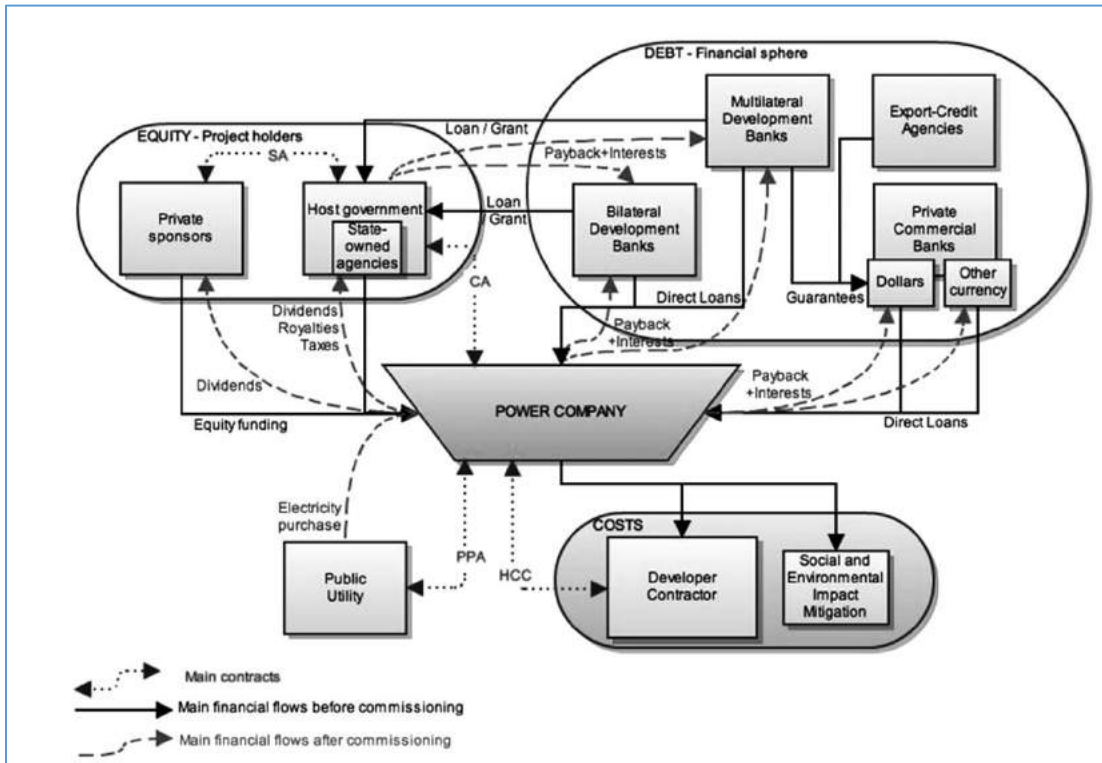
- [Nam Theun 2: A watershed moment in Laos hydropower](#)

Although Nam Theun 2 (NT2) was not the first BOT hydropower project built in Laos, it was the first *proposed* to the Laos government in 1991 by two Australian companies: Transfield and the Snowy Mountains Engineering Corporation (SMEC) (Wyatt, 2004). The original consortium, however, withdrew their plans during the Asian Financial Crisis, as Thailand's economy entered into turmoil and electricity demand declined. This despite their aggressive effort to have the project pushed through quickly (Wyatt, 2004).

By the early 2000s, as Thailand's economy recovered, its electricity utility, EGAT, looked once again to power imports from Laos. The Nam Theun 2 Power Company (NTPC) was established, formed of the following consortium: Electricité de France (35%; a French SOE); the Electricity Generating Public Company of Thailand (EGCO) (25%; a Thai power company 45% owned by EGAT), Lao Holding State Enterprises (25%; a Laos SOE), and Ital-Thai Development Company¹⁴ (15%; a Thai private construction company). Financial closure on the US\$1,581 million, NT2 dam was completed in 2005 with a 25 year BOT concession period. The project was commissioned in February 2010. Whilst the dam itself is only 39 m high, it created a reservoir of 450 km². The project generates 1,090 MW, 90% of which is exported to Thailand mainly to meet peak power demand (Baird and Quastel 2015). At the time of its construction, NT2 was the largest internationally-financed Independent Power Producer (IPP) in Asia since the financial crisis, and the largest single foreign investment ever in Laos. The NT2 project would be handed from NTPC to the Laos Government after a 25 year concession period. The project was financed by shareholder equity and loans from: five multilateral agencies (including WB, ADB and MIGA), four export credit agencies, two bilateral governmental agencies, nine international commercial banks, and seven Thai commercial banks. Political risk guarantees from the World Bank, MIGA and ADB were crucial to reducing the project's risk profile sufficiently to confirm international commercial bank financing (Merme, Ahlers et al. 2014).

¹⁴ After the NT2 project was commissioned, Ital-Thai Company, who had also been the lead contractor, divested its shares to the remaining three shareholders. It could be speculated that having made its profit in construction, it actually had little interest in the long term operation of the NT2 itself.

Figure 2: The finance arrangement of the NT2



Reproduced from Merme et al (2014)

The NT2 dam is a significant project on many counts. It was the first World Bank funded dam since the World Commission on Dams report, published in 2000, that questioned the development credentials of the hydropower industry as a whole, including past projects supported by the World Bank such as the Pak Mun Dam in Thailand in 1994 (WCD 2000). The World Bank thus sought to demonstrate it could “do a dam better,” and learn from past mistakes (Porter and Shivakumar 2010). The project was also placed as the center piece of the ADB’s and World Bank’s Laos country program, intended as an example of how a PPP could build economic infrastructure whilst bring local development through resettlement, livelihood and conservation programs as well as generate revenues for the government’s national coffers. For the Laos government, besides from the future revenue from the project, it was the project that was intended to show the world that it could handle a BOT of such complexity. In other words, for the ADB, World Bank and Laos Government, a lot was at stake. In many ways, the NT2 was the first test case for the assessment and regulation of financial, socio-economic and environmental considerations of large-scale hydropower projects in Laos (Middleton, Matthews et al. 2015).

Much has been written about NT2, and the “public interest” value of the project extensively debated. Since the project was first proposed in the 1990s, a large number of INGOs - and to some extent NGOs in Laos where political space is more constrained - were active challenging its rationale, and its proponents also actively advocating the project’s benefits (Wyatt, 2004:88). The recognized environmental and social impacts from the project in planning included: 6,200 indigenous peoples resettled from reservoir area on Nakai Plateau, and elephant and other

wildlife and wetlands habitat flooded; 120,000 downstream villagers affected by increased water flows on the Xe Bang Fai River, creating fisheries losses, erosion, and flooding; and 2,000 households affected by construction activities. There were some improvements at NT2 in contrast to past projects, including (Lawrence 2009): reasonable resettlement infrastructure; improved (but imperfect) discussions with resettlers (see Singh , 2009, and Mirumachi and Torriti , 2012); the creation of independent external monitoring panels; better project information disclosure; and inclusion of revenue management framework. In practice, however, although resettled villagers on the Nakai plateau appreciate the physical infrastructure (houses, roads etc) provided, it is still not clear how they can make a living in the long term given land shortages (Lawrence 2009); compensation and land for villagers affected by construction was often delayed; and on the Xe Bang Fai River many impacts to livelihoods remain unaddressed (Baird, Shoemaker et al. 2015).

Thus, in contrast to the detailed design of the project's financial risks, it seemed that environmental and social risks were given lower priority, despite claims of the projects "development" credentials. In an analysis of the risks carried by different actors within the project, Merme et al (2014:20) conclude:

*"Because hydropower financing involves opaque processes and confidential documents public accountability is severely limited. **While the private sector benefits from relatively short term returns, the public sector is left responsible for long term impacts.** [emphasis added]"*

Furthermore, NT2's transboundary governance regime in many ways replaced the role of national law to regulate the project with what Baird and Quastel (2015) call "regulation by contract." In an insightful analysis that leads the authors to conclude that the private interest is privileged over the public interest, Baird and Quastel (2015:14) explain:

*"In the face of growing civil society concern over environmental and social standards, ... the World Bank emphasized transferring decision-making authority and environmental and social risk management away from the national state and toward project proponents The World Bank has thus worked to devalue background regulatory frameworks (which might threaten foreign direct investment) and instead emphasizes project and firm-level environmental assessment and forms of regulatory self-management. **The justification for regulation had to be found not in broad notions of the public interest but in the self-interest of participants.** [emphasis added]"*

In other example of "regulation by contract", where private risks are transferred to the public, the Laos government also agreed to a stabilization clause in the Concession Agreement that the government "will not increase the cost of doing business by applying fresh law or regulation to the project and will compensate NTPC if any new law does affect profits" (Baird and Quastel, 2015:15). Meanwhile, any arbitration is referred to a commercial arbitration tribunal in Singapore, rather than to Laos' courts.

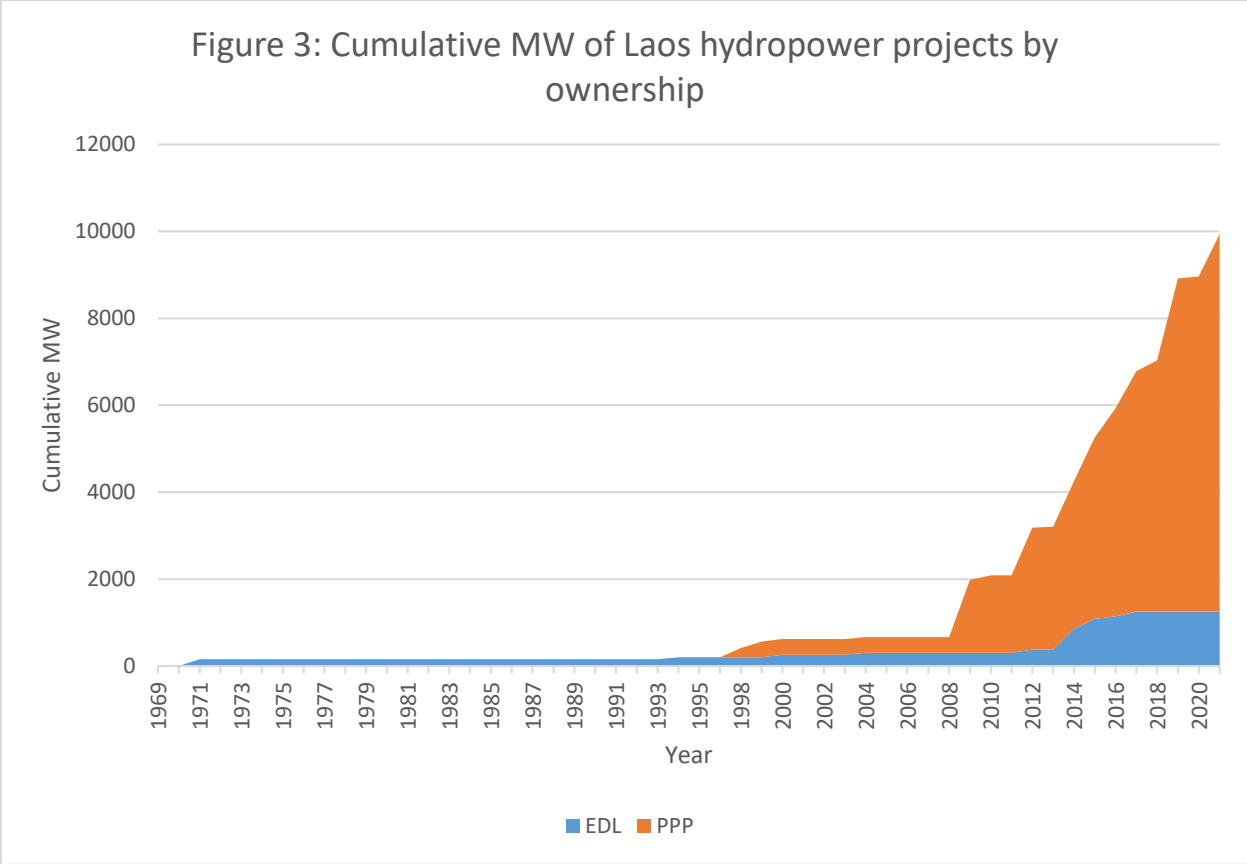
Despite this "regulation by contract," some national policy frameworks were created in Laos – mainly by consultants – before the World Bank and ADB would agree to support the project, and

in particular approve the political risk guarantee. Whilst Laos' Environmental Protection Law was passed in 1999, others social protections were passed in 2005 at the same time as the project's approval including the *Decree on Compensation and Resettlement of the Development Project* and the *National Policy on the Environmental and Social Sustainability of the Hydropower Sector*. However, it soon became apparent that there was little government buy in to these policies, and they have since been left aside by the Government with a new found confidence in developing BOT projects, now without the finance and conditionalities of the IFIs (Johns 2015).

- **Laos' Hydropower boom**

Following financial closure of Nam Theun 2, Laos experience a hydropower boom. Figure 3 (below) shows the cumulative MW of hydropower in Laos since the first project, divided by project ownership (either EdL or a PPP) (see Appendix 2). Some milestones are:

- Laos first power export project to Thailand was the Nam Ngum 1, commissioned in 1971 and owned and operated as a state-owned project. The unique circumstances around this geopolitical anomaly are beyond the scope of this paper (see Hirsch, 1998)
- The Houay Ho and Theun Hinboun dam, discussed above, which were commissioned in 1998 and 1999 respectively and Laos first two BOT hydropower projects
- Nam Theun 2's financial closure was 2005 and commissioning in 2010, during which period several more project were agreed
- The Xayaburi Dam on the Mekong River's mainstream in Northern Laos, for which construction started in 2012 and is scheduled to be commission in 2019



Data compiled by author from www.poweringprogress.org and RPTCC (2015)

Figure 3 reveals the extensive use of PPP-BOT arrangements since the commissioning of Nam Theun 2, and thus the rapid momentum of the hydropower industry. This despite the fact that overall Zen and Regan (2014), who are proponents of PPP in ASEAN, assess that the current policy and legal framework on PPP in Laos as “limited.” The figure only details projects that are stated as having signed a Concession Agreement and in operation or under construction on the government’s Ministry of Energy and Mines website.¹⁵ As of November 2015, a further 39 projects are stated as having signed an MoU including three massive projects on the Mekong River’s mainstream (table 1). This is in addition to the two Mekong mainstream projects (Xayaburi and Don Sahong) already under construction.

¹⁵ <http://www.poweringprogress.org/new/> [Last accessed 24.5.16]

Table 1: Mekong mainstream dams in Laos status¹⁶

<i>Project name</i>	<i>Capacity (MW)</i>	<i>Location</i>	<i>Investors</i>	<i>Status</i>
Xayaburi	1285	Xayabouri and Luang Prabang	* EDL (Laos) 20% * Ch.Kanchang (Thailand) 30% * EGCO (Thailand) 12.5% * Natee Synergy (Thailand) 25% * Bang Kik Expressway (Thailand) 7.5% * PT (Thailand) 5%	Under construction (commission 2019)
Don Sahong	240	Champasak	* Government of Laos 20% * Mega First (Malaysia) 80%	Under construction (no date for commission)
Pak Lay	1,320	Xayabouri and Vientiane	CIEC (China) Sinohydro (China)	Feasibility study
Luang Prabang	1,410	Luang Prabang	PetroVietnam (Vietnam)	?
Ban Koum	1,872	Champasak	Italian-Thai (Thailand) Asia Crop Holdings Limited	Feasibility study

* Note, Pak Beng (1300 MW; Datang International Power Corporation) is not include

The Nam Theun 2 marked a milestone in Laos in terms of BOT projects. In contrast to the early 1990s, which were dominated by hydropower developers from OECD countries, the lead project developers and financiers are now principally from Thailand, China, and Vietnam (see appendix 2). Companies from other countries include from Norway, France, USA, Hong Kong, Malaysia, Japan, and South Korea. Whilst the IFIs have remained involved in the sector in a limited number of actual projects (for example ADB is supporting the Nam Ngiep 1 dan), the majority are now designed, built and financed as BOT by the private sector with IFI’s involvement. ADB and World Bank are, however, involved in several transmission line projects, as well as some policy and “capacity building” work.

In general, it can be observed that consortiums involving Thai companies export to Thailand’s electricity market, and for Vietnamese companies to Vietnam. This arguably reflects the semi-monopolistic and oligarchic political economy of each country’s respective energy sector (Middleton in press). Meanwhile, the situation is less clear for Chinese companies, although it is known that China plans to import from Laos in the near future (RPTCC 2015).

Up until Nam Theun 2, the government considered itself inexperienced with BOT, but after NT2 was commissioned and constructed both investor risk perception of the Laos government, and the confidence of the government itself had increased markedly. Johns (2015:364) in an

¹⁶ From www.poweringprogress.org

interview with Mr. Xaypaseuth Phomsoupha, Director-General of the Department of Energy Business in the Ministry of Energy and Mines in Laos, writes:

[he] referred to the Nam Theun 2 Concession Agreement as a “second generation” agreement, the scope of which had been expanded well beyond that agreed in the Theun Hinboun project, to meet the “requirement[s] of international private funders.”

“After the success of Nam Theun 2,” the official continued, “we move[d] to the third generation [that is, the Xayaburi Concession Agreement]. . . . The concession of Nam Theun 2 is too complicated and it is very difficult, even for well trained lawyers to understand. We have to make it easy.”

Such a move is clearly in the interest of the private sector proponents of hydropower, alongside the state agencies that partner with them.

The degree of public scrutiny is uneven across the contemporary hydropower projects in Laos. Some projects, such as the Xayaburi Dam on the Mekong River’s mainstream, have received much public attention in Laos, regionally and internationally. Indeed, despite being a BOT whose consortium and financiers are almost wholly Thai, the Xayaburi Dam has been subject to multiple governance processes, including: an environmental impact assessment; strategic environmental assessment; a transboundary decision making process called the Procedures for Notification, Prior Consultation and Agreement (PNPCA) facilitated by the Mekong River Commission (MRC); two cases submitted to the OECD Guidelines on Multinational Enterprises; and a national court case in Thailand (Middleton and Pritchard, *in press*). Indeed, Western bilateral aid was highly relevant in this case, given that Australia funded the PNPCA process, and a wider array of donors have supported the MRC. Whilst certainly not perfect, it does reveal that in some cases hydropower is “*highly juridified in various ways*” via both soft and hard laws (Boer et al, 2016: 60). In this sense, a significant public discussion has taken place on the multiple values of the Mekong River and whether there is a public interest in building the project. Ultimately, however, despite strong transnational civil society opposition to this particular project in Thailand, regionally and internationally, the alliance between the private interests of the developer and state agencies pushed the project through revealing in turn the significant power asymmetries within hydropower’s regional political economy (Matthews 2012, Hensengerth 2015).

Given the diversity of investors and projects, together with the limited information in the public domain, a detailed assessment of the current status of many of the projects in Laos is not possible. Many tributary hydropower projects are located in remote areas, away from general public scrutiny. However, there is enough evidence that they often shift the environmental and social risks on to local communities, with limited access to justice for the communities themselves given that political space and a free media in Laos is limited (International Rivers 2008).¹⁷ Tributary projects, furthermore, are also less subject to the transnational governance mechanisms of the MRC. Meanwhile, benefit sharing mechanisms between project developer

¹⁷ Civil society space in Laos has particularly closed since the forced disappearance of Sombath Somphone in December 2012 (<http://www.sombath.org/en/video/>)

and an affected community, where they exist at all, are often flawed (Suhardiman, Wichelns et al. 2014).

Overall, in contrast with a project such as Nam Theun 2, the projects now underway by Thai, Vietnamese and Chinese developers, with financial backing from commercial sources in their own countries, and also often governmental backing too, are principally economic projects rather than poverty reduction projects. Under these circumstances, the “public” in PPP is foremost of a form aligned with the interest of the private sector rather than emerging from a collective political decision making process. Under these conditions, there is a significant likelihood that environmental and social risks will be transferred to affected communities rather than be internalized into the PPP consortium itself.

Conclusion: Hydropower governance in a Beyond Aid political economy

This paper has sought to further the debate of “beyond aid” by considering how hydropower constructors, operators, financiers, shareholders, government, civil society and community actors are entangled within PPP hydropower projects in Laos. In particular, within a context of various past aid regimes in Laos, the paper has considered the implications of the arrival of BOT/ PPP in Laos as a neoliberal-rooted pathway to hydropower development. In presenting a brief history and overview of the contemporary hydropower sector, it has drawn out the implications of projects in terms of risk distribution, especially those borne by affected communities and the state – in other words “the public” in PPP. It has also reflected on arenas where the public interest has emerged as collective political action regarding these projects.¹⁸

Hydropower in Laos as a case study is significant to the Beyond Aid debate because it reveals how the BOT/PPP policies of the IFIs, who in the 1990s were particularly influential in Laos, have formed the context for contemporary hydropower construction where new actors from China, Thailand and Vietnam are now most influential. Whilst proponents of PPP hydropower argue that the industry brings development to Laos, the paper has sought to reveal that the meaning of “public” in PPP is a contested notion, discursively and materially. Discursively, it relates to whether the “public” in PPP hydropower should be understood as a direct poverty reduction project (if indeed this is possible, given the short-comings of Nam Theun 2), or if it should be taken as economic infrastructure alone as has been largely the case amongst Thai, Vietnamese and Chinese hydropower developers post-Asian Financial Crisis. The latter case is arguably what Levien (2012) refers to as “the privatization of development,” when the public interest becomes increasingly coopted to support the agendas of private capital.

Materially, these discourses have significant implications for how project risks and impacts are being apportioned and decided upon. There is very limited corporate accountability amongst hydropower developers directly in Laos, and limited avenues for access to justice for affected

¹⁸ This paper has focused principally on individual projects. A further area of research should be how PPP in individual projects relate to the wider institutional frameworks within which they are embedded. These include various hydropower assessment tools, such as the hydropower sustainability assessment protocol (HSAP) and the Rapid Sustainability Assessment Tool (RSAT) (Dore et al 2012), as well as the numerous overlapping regional water governance initiatives (Sunchindah, 2013). Relatedly, new norms such as “sustainable hydropower” have emerged from some actors within the private sector, government and civil society if not having been widely adopted in practice. Principle advocates have been the International Hydropower Association, together with the IFC, World Bank, ADB and the WWF.

communities given the authoritarian-character of the government. Whilst there are particular high-profile cases where civil society and affected communities have been able to challenge and cancel projects, or at least improve them, the new “Beyond Aid” political economy of hydropower and its governance has enabled a significantly larger number of projects to privilege the interests of the private sector over communities affected by them.

The political economic shifts in hydropower governance represented by the proliferation of PPP hydropower projects in Laos should be more fully understood discursively and materially, including its implications for the public interest and the distribution of risk. This is relevant, for example, as China’s new and influential regional initiative the “Lancang Mekong Cooperation Framework” gathers momentum, given that it has a strong economic orientation, backing from the new Asian Infrastructure Investment Bank, and can be anticipated to further support energy infrastructure including hydropower. It is also relevant in evaluating the future role of the IFIs, including the World Bank, IMF and ADB, including because they now seek to transfer and replicate their work in Laos to Myanmar.

Appendix 1

Risks managed in a PPP (from World Bank, 2012)	
<i>Risk</i>	<i>Description</i>
Site	Risks associated with the availability and quality of the project site, such as the cost and timing of acquiring the site, needed permits or assuring rights of way for a road, the effect of geological or other site conditions, and the cost of meeting environmental standards
Design, construction and commissioning	The risk that construction takes longer or costs more than expected, or that the design or construction quality means the asset is not adequate to meet project requirements
Operation	Risks to successful operations, including the risk of interruption in service or asset availability, the risk that any network interface does not work as expected, or that the cost of operating and maintaining the asset is different to what was expected
Demand, and other commercial risk	The risk that usage of the service is different to what was expected, or that revenues are not collected as expected
Regulatory or Political	The risk of regulatory or political decisions, or changes in the sector regulatory framework, that adversely affect the project. For example, this could include failure to renew approvals appropriately, unjustifiably harsh regulatory decisions, or in the extreme, breach of contract or expropriation
Change in legal framework	The risk that a change in general law or regulation adversely affects the project, such as changes in general corporate taxation, or in rules governing currency convertibility, or repatriation of profits
Sponsor, or default	The risk that the private party to the PPP contract turns out not to be financially or technically capable to implement the project
Economic or financial	The risk that changes in interest rates, exchange rates or inflation adversely affect project outcomes
Force Majeure	The risk that external events beyond the control of the parties to the contract, such as natural disasters, war or civil disturbance, affect the project
Asset ownership	Risks associated with ownership of the assets, including the risk that the technology becomes obsolete or that the value of the assets at the end of the contract is different from what was expected.

Appendix 2

Projects built or stated as “under construction” with a signed concession agreement				
Year	Project	Investors	Market	Installed capacity
1971	Nam Ngum 1	* EDL (Laos) 100%	Laos/Thailand	149
1994	Xeset 1	* EDL (Laos) 100%	Laos/Thailand	45
1998	Theun-Hinboun	* EDL (Laos) 60% * Nordic Group (Norway) 20% * GSM (Thailand) 20%	Thailand	210
1999	Houay Ho	* EDL (Laos) 20 * HemarajLand & Development (Thailand) 12.75% * Glow Co., Ltd (Thailand) 67.25%	Thailand	150
2000	Nam Leuk	* EDL (Laos) 100%	Laos	60
2004	Nam Mang 3	* EDL (Laos) 100%	Laos	40
2009	Nam Theun 2	* LHSE (Laos) 25% * EDF (France) 40% * EGCO (Thailand) 35%	Thailand/Laos	1075
2009	Xakaman 3	* EDL (Laos) 15% * VLPC (Vietnam) 85%	Vietnam	250
2010	Nam Lik 2 (Nam Lik 1-2)	* EDL (Laos) 20% * CWE (China) 80%	Laos	100
2012	Xeset 2	* EDL (Laos) 100%	Laos/Thailand	76
2012	Nam Ngum 2	* EDL (Laos) 25% * Shlapak Group (USA) 4% * Ch. Kanchang (Thailand) 28.5% * PT Construction & Irrigation Co., (Laos) 4% * Ratchburi (Thailand) 25% * Bangkok Expressway PCL (Thailand) 12.5% * TEAM Consulting Engineering (Thailand) 1%	Thailand	615
2012	Nam Ngum 5	* EDL (Laos) 15% * Sinohydro (China) 85%	Laos	120
2012	Theun hinboun exp	* EDL (Laos) 60% * Nordic Group (Norway) 20% * GSM (Thailand) 20%	Thailand/Laos	280
2014	Nam Ngum 3	* EdL (Construction is by Sinohydro; Loan is from a "Chinese bank")	?	480
2014	Nam Theun 1	* Lao Holding State Enterprise (LHSE) 20%, * Gamuda (Malaysia) 40%, * EGCO (Thailand) 40%	Thailand/Laos	523
2015	Nam Ou 2	* EDL (Laos) 15% * Sinohydro (China) 85%	Laos	120
2015	Nam Ou 5	* EDL (Laos) 15% * Sinohydro (China) 85%	Laos	240
2015	Nam Ou 6	* EDL (Laos) 15% * Sinohydro (China) 85%	Laos	180
2015	Nam Khan 2	* EdL;	???	140
2015	Nam Ngiep 1	* EDL (Laos) 20% * CWE (China) 80%	Laos	180
2015	Nam Nguang 8	* Owned by IPP(d)	???	60
2016	Xaekaman 1	* VLP (Vietnam) 100%	Vietnam	322
2016	Xekaman-Sanxay	?	Vietnam	32
2016	Nam Khan 3	* EdL		60

2016	Nam Ngiep 2	* Owned by IPP(d)	???	180
2017	Xe Kong 3up	??	Vietnam	145
2017	Xe Kong 3d	??	Vietnam	91
2017	Nam Lik 1	* EDL (Laos) 20% * Hydro Engineering Co. (Thailand) 80%	Laos	64
2017	Xe Kaman 4A	?	Vietnam	96
2017	Xe Kaman 4B	?	Vietnam	74
2017	Nam Mang 1	* EDL (Laos) 15 % * Far-East Industrial Co.,Ltd (Hong Kong) 85%	Laos	57
2017	Nam Chian	EdL	???	104
2017	Nam Kong 2	* Hoang Anh Gai Lai Mineral Joint Stock Company 100%	Laos	66
2017	Nam Sane 3A	* Phongxubthavi bridge-road construction company 100%	Laos	69
2017	Nam Sane 3B	* Phongxubthavi bridge-road construction company 100%	laos	45
2017	Nam Kong 3	Owned by IPP(d)	???	45
2018	Nam Tha 1	* EDL (Laos) 25% * China Southern Grid Co.75%	Laos	168
2018	Nam Pha (Phai)	* AP Bizlink Group (Malaysia) 100%	Laos	86
2019	Nam Ngiep 1	* LHSE 25% * Kansai Electric (Japan) 45% * EGAT Inter 30%	Thailand/Laos	269
2019	Xipian-Xenamnoy	* LLHSE 24% * SK Engineering & Construction (Korea) 26% * Korea Western Power Co., Ltd. 25% * Ratchaburi Electric Generating Holding Public Company Limited 25%	Thailand/Laos	354
2019	Xayabuly	* EDL (Laos) 20% * Ch.Kanchang (Thailand) 30% * EGCO (Thailand) 12.5% * Natee Synergy (Thailand) 25% * Bang Kik Expressway (Thailand) 7.5% * PT (Thailand) 5%	Thailand/Laos	1260
2020	Nam Phak	* EDL (Laos) 20% * Kobe Green Power Co.,Ltd (Japan) 40% * Investors yet to be found 20%	Laos	45
2021	Don Sahong	* Government of Laos 20% * Mega First (Malaysia) 80%	Laos	240
2021	Nam Ou 1	* Sinohydro: 85%, EDL: 15%	Laos	180
2021	Nam Ou 3	* Sinohydro: 85%, EDL: 15%	Laos	300
2021	Nam Ou 4	* Sinohydro: 85%, EDL: 15%	Laos	75
2021	Nam Ou 7	* Sinohydro: 85%, EDL: 15%	Laos	180

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