

The Interplay of Activists and Dam Developers: The Case of Myanmar's Mega-Dams

Julian Kirchherr^a, Katrina Charles^b, Matthew J Walton^c

^a *School of Geography and the Environment, University of Oxford, Oxford, United Kingdom*

^b *School of Geography and the Environment, University of Oxford, Oxford, United Kingdom*

^c *St Antony's College, University of Oxford, Oxford, United Kingdom*

Corresponding address: Julian Kirchherr, School of Geography and the Environment, University of Oxford, South Parks Road, Oxford, OX1 3QY, United Kingdom. Email: julian.kirchherr@sant.ox.ac.uk. Phone: +491753182184.

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Scholars investigating activism against large dam developments in Asia usually only focus on those campaigning, but not on those the campaigns are aimed at – the dam developers. Yet their perspective is crucial to comprehensively understand the dynamics of social and environmental activism in Southeast Asia as well as its implications for the region's energy landscape. This paper analyses the interplay of activists and Chinese dam developers in Myanmar via two case studies, the Myitsone Dam and the Mong Ton Dam. The research is based on direct scholarly interaction with both activists and dam developers. It presents evidence of change from both sides: activists have professionalized in recent years; Chinese dam developers now attempt to engage with civil society, albeit with limited success in the two cases studied. Yet, even with these changes, conflict over dam development persists and the country may soon face severe limitations to development options for improving energy security. We also discuss the case of Bhutan to illustrate the potential of developing Myanmar's hydropower resources.

Keywords: Myanmar; Myitsone Dam; Mong Ton Dam; activism; Chinese dam developers; large dams

Introduction

A major dam development boom is underway in Myanmar. The country is currently planning to build as many as 45 dams (Brennan & Doring, 2014) to provide energy for its economic development and export; 22 projects with a capacity over 10 MW are already operational, according to an energy consultancy. A database, maintained by a major NGO in Myanmar, indicates that 4 dams are currently under construction, while 11 projects are suspended and 1 has been cancelled. These suspensions and the cancellation have been attributed to massive public protests (Burma Rivers Network, 2013).

Myanmar's Myitsone Dam in Kachin State is a key example of this opposition against dam projects. Construction was suspended by the Myanmar government in 2011 in response to a widespread opposition campaign (Lynn, 2011). In 2010, 10 bombs exploded around the dam site, killing at least one Chinese worker (Hadfield, 2014). Additional examples of contested dam projects in Myanmar are the Mong Ton Dam in Shan State, currently at planning and design stage (Mang, 2015), the Upper Paunlaung Dam in Shan State, currently under construction (Peel, 2014) as well as the Tamanthi Dam in Sagaing Region, currently suspended due to opposition from local groups (Burma Rivers Network, 2013).

Scholars have recently focused on activism (including activism against large dams) in Southeast Asia. Ford (2013) – considering activism in Cambodia, Indonesia, Malaysia, Myanmar or Thailand – challenges the popular belief that the emergence and success of social activism depends on a considerable measure of democracy. Simpson (2013) echoes this notion analysing the cross-border campaign against dams to be built on the Salween River in Myanmar. Meanwhile, Yasuda (2015) describes NGO advocacy strategies chosen against Laos' Xayaburi Dam. Such campaigns have led to changes in the way hydropower is viewed by national governments and investors, resulting in novel pathways to electricity security being explored, e.g. Thailand starting to look to its neighbours for sources of electricity in the early 1990s (Hirsch, 2010).

While the value of these analyses for understanding activism against large dams in Southeast Asia is undisputed, these analyses may also be considered partial as the research has mostly investigated only those running the campaigns, but not those the campaigns are aimed at. These are usually dam developers. Chinese developers particularly dominate the industry nowadays; one of those developers, Sinohydro, claims to construct every second dam worldwide (Verhoeven, 2015, p. 178). Almost no

papers investigate the views of Chinese developers on social impact, the social impact assessments (SIAs) conducted or sub-contracted by them, or the resettlement schemes implemented in their projects (Kirchherr et al., 2016).

The few papers investigating this topic are, for the most part, not based on direct interaction with Chinese dam developers and additional relevant private sector players. For instance, Middleton et al. (2009) discuss trends and players in dam development in the Mekong River Basin. However, not a single dam developer was interviewed for their paper. Hensengerth (2015) analyses the adherence of Sinohydro to various environmental norms when constructing Cambodia's Kamchay Dam. He also did not interview the firm at question for his research. Lamb & Dao (2015) – analysing, among other things, the Chinese engagement in Myanmar's Hatgyi Dam – at least interviewed a consultant involved in the project. (Papers based on direct interaction with Chinese dam developers are Nordensvard et al. (2015) and Kirchherr et al. (2016)).

Direct scholarly interaction with both activists as well as dam developers and additional relevant private sector players is key in order to comprehensively understand the dynamics of social and environmental activism in Southeast Asia as well as its implications for the region's energy landscape. The aim of this paper is to present such research. For this purpose, the authors of this paper are drawing on more than 150 semi-structured interviews carried out during field research in Myanmar, Thailand and Singapore from June to August 2015 and in Myanmar in March 2016, interviews carried out at the 2015 World Hydropower Congress in Beijing in May 2015 as well as telephone interviews conducted from April to August 2015. These interviews may constitute the most comprehensive qualitative dataset currently available on the topic at hand. Given the sensitive nature of the topic, all interviewees were assured anonymity. Thus, all interviews are coded (see *Note* for details).

Snowball sampling was employed to recruit interviewees. This approach is frequently necessary when conducting research under less than optimal conditions (Cohen & Arieli, 2011, p. 423). More formal sampling approaches were tried initially, but envisaged interviewees would not respond to any reach-outs. For instance, an e-mail reach-out to approximately a dozen Chinese dam developers yielded zero replies. The seeds of the eventual snowball sample were recruited via the professional networks of the authors, developed prior to this research, a common approach when snowball sampling (Heckathorn, 2011, p. 356 ff.; Miller & Brewer, 2003, p. 278 ff.). The sample was terminated when additional interviews yielded limited or no novel insights (thematic saturation) (O'Reilly & Parker, 2012, p. 192 ff.). The data collected was organized via NVivo 11 with all interviews coded according to a set of predefined themes, e. g. "Myitsone Dam campaign". The resulting clusters were then reviewed and analysed by the authors. Coding on additional sub-themes was conducted, if appropriate.

Via this dataset the interplay of Chinese dam developers and activists opposing large dams were analysed in two case studies: the Myitsone Dam (6,000 MW), a project suspended in 2011 after public protests with no decisions taken to date about its future; and the Mong Ton Dam (7,000 MW), currently in the Environmental and Social Impact Assessment (ESIA) phase with progress currently being interrupted by public protests. These represent the two largest dam projects in Myanmar.

The remainder of this paper is organized as follows. In the next section, the development and contestation over the Myitsone Dam project is discussed – both from the perspective of the key activists involved in the project as well as China Power Investment Corporation (CPI), the dam developer. This project is then compared to the Mong Ton Dam project. Our subsequent discussions focus on likely ramifications of the

current dynamics between Chinese dam developers and activists for Myanmar's energy landscape as well as lessons from dam development in Bhutan for Myanmar. Our argument is summarized in the final section of this paper.

The Case of Myanmar's Myitsone Dam

The Myitsone Dam project, currently suspended, is developed by China Power Investment Corporation (CPI) as well as Asia World, a Burmese dam developer, allegedly one of Myanmar's most successful construction and trading companies which is "owned by regime crony Steven Law" (U. S. Embassy, 2007, 2011). Basic information and the timeline of the project are depicted in Figure 1. The exact starting point of this project, the largest of seven dam projects to be developed in Kachin State (Figure 2), is contested. Villagers reportedly already reached out to the various Kachin ceasefire groups in January 2004 – three years prior to the signing of the MoU – asking them to stop the project (KDNG, 2007). This was rebutted by an international donor who argued that the campaign against the dam was neither initiated nor led by the resettled communities, but by local ethnic-aligned organizations in Kachin State (FI8). Yet resettlees in the Aung Myin Thair relocation camp (hosting those displaced due to the Myitsone Dam) reported to have taken part in demonstrations against the project close to the Myitsone Dam site early on (FAA1; FAA2; FAA3; FAA5).

> *Figure 1 here* <

Particularly the Kachin Development Networking Group (KDNG), the Rural Reconstruction Movement Organization (RRMO) and the Kachin Public Youth Organization (KPYO), were instrumental in the early days of the protests, according to interviews conducted for this paper (with KDNG's role particularly highlighted (FNL21)). Various international NGOs, most notably International Rivers, were

seemingly only prominent in the protests once the project was suspended (International Rivers, 2013).

The early campaign against the Myitsone Dam entailed various components – ranging from research and spiritual protests to the collecting of signatures as well as petitions. Notably, both research reports by KDNG (2007, 2009) were published while Myanmar's military regime was still in place. During these times, also "mass prayer ceremonies [were] held along the river banks and in churches up- and downstream" (KDNG, 2009, p. 1). In addition, various songs on the cultural significance of the Irrawaddy River, to be dammed because of the Myitsone Dam project, were released (FNL6). A three-day-exhibition on the beauty of the Irrawaddy River was launched in an art gallery in Yangon in 2011, and mentioned as a significant part of the campaign (FI8; FNL6); the project was suspended 6 days after the end of the exhibition (Lynn, 2011).

Activists had collected 10,000 signatures against the dam all across the country prior to its suspension (FNL3). These signatures and petitions were regularly submitted to key decision-makers such as the Chairman of the State Peace and Development Council, Myanmar's governing military regime (KDNG, 2007).

Instruments relevant in the campaign against the Myitsone Dam may sound similar to those employed by NGOs in Europe or the United States. Nevertheless, this campaign may not be comparable to most campaigns carried out by Western NGOs. There was no suggestion from interviewees that this campaign was centrally planned and coordinated. Rather, various groups undertook a variety of initiatives – sometimes complementary, sometimes overlapping – against the Myitsone Dam. The resulting campaign was disjointed, but with all groups seemingly united by a single cause: to stop the dam project.

> *Figure 2 here* <

The campaign against the Myitsone Dam was operated by local Burmese NGOs on minimal budgets and with limited staff. For instance, KDNG's annual budget varies between USD 30,000 and USD 50,000; the organization currently counts 12 employees, 10 full-time and 2 volunteers (TNL17). As a comparison: CPI, the lead developer constructing the Myitsone Dam, has already spent USD 800 million on the project, according to its calculations (Lwin, 2015), while the company has a total of approximately 140,000 employees (CPI, 2015). At first sight, one may be tempted to portray those national civil society organizations advocating against CPI as a classical David-versus-Goliath scenario. One activist interviewed suggested that CPI probably did not take their organization seriously in the beginning (FNL6). Meanwhile, it was suggested by a former employee of a Chinese dam developer that CPI acted cautiously as they "wanted to use Myitsone as their branding project to evidence they know how to do projects overseas" (TP24).

Initially, CPI believed their key stakeholder would be the Burmese government in Naypyidaw, the capital of Myanmar. "The Chinese just spectacularly miscalculated the entire situation. They did not understand that those folks in Naypyidaw have no legitimacy whatsoever in Kachin State", an international donor told us (TI7). "It is a key habit of Chinese enterprises to always follow the government's instruction", a former employee of a Chinese dam developer tried to explain the company's approach (TP24). This was also confirmed by a Chinese dam developer involved in a project in Laos (OP3).

The Burmese government did not only lack legitimacy in Kachin State, but would also not provide any definitive instructions on environmental and social safeguards. Indeed, definitive requirements on conducting an ESIA in Myanmar were

only introduced in January 2016 (ADB, 2016). Myanmar's legislative environment upon the start of the project was novel to CPI. China has multiple ESIA requirements in place including "relatively strong laws governing resettlement" (International Rivers, 2012, p. 25); impact mitigation in China is solely the responsibility of the provincial and district level government, though, while the dam developer bears significant responsibility in Myanmar (TN11).

CPI involved two institutions in the ESIA, a Burmese NGO, the Biodiversity and Nature Conservation Association (BANCA), and the Changjiang Institute of Survey, Planning, Design and Research (CISPDR), a Chinese high-tech state-owned enterprise (SOE) (Mang, 2011). Dam developers frequently hire local players – including NGOs – to compensate for the lack of local networks in the new countries they are operating in, a seasoned management consultant explained (TP18). The lead contractor for the ESIA was CISPDR. The combination of CISPDR and BANCA could not fend off criticism, though, possibly due to the quality of the ESIA. When the ESIA was reviewed in 2013 by a panel of Burmese and international experts, initiated by International Rivers, the panel found "serious deficiencies and flawed conclusions" in the report (International Rivers, 2013, p. 1).

An alleged deficiency during the ESIA process was that no involvement of local communities took place (KDNG, 2007; FG7); the resettlement process was reportedly even carried out using intimidation by military authorities (KDNG, 2009, p. 5; FAA3; FAA5). These statements were partly contradicted by a former employee of a Chinese dam developer. "They [CPI] had consultations with the villagers telling them what compensation they would get. But they did not reach out to the media or civil society" (TP24).

It is difficult to ascertain the factual basis for these events. The Myitsone Project remains non-transparent on various dimensions, but particularly opaque is the contractual arrangements between CPI and the Burmese government on financial agreements regarding the sale of electricity. Once completed, 90 percent of the electricity generated via the Myitsone Dam is supposed to be exported to China's Yunnan Province (Deetes & Mang, 2015) – in exchange for an estimated USD 500 million annually (KDNG, 2007). However, the contract between the government and CPI has not been published (FNL4; TP21).

Both activists (FNL3) as well as observers (TI7) were surprised by the decision to suspend the Myitsone Dam on September 30th 2011. The managing director of a consultancy in Yangon observed that "Myanmar had been nothing but China's client state. The suspension just did not fit into this picture" (FP19).

The majority of those interviewed view the suspension as a symbolic gesture, "the visible starting point of Myanmar's change process", according to an international donor (TI7). This change process has been comprehensively discussed by Bhattacharjee (2014), Cheesman et al. (2012) and Southwick (2014). An activist we interviewed argued that the government "wanted to give evidence that they are now listening to the people" (FNL12). "The new government had only been in power in eight months. The decision to suspend the Myitsone project unleashed a wave of sympathy. It was the first time in many decades that those in power responded to the people", an international donor said (FI8). This narrative was largely endorsed by a former employee of a Chinese dam developer. "The government wanted to set a signal. The Myitsone Dam project suspension was a scapegoat" (TP24).

It was suggested that as a result of the public protests and resulting suspension CPI changed its approach to managing stakeholders. "They used to only talk to the

central government. Now they are inviting us to discuss", an activist in Kachin State acknowledged (TNL17). "You need to address also civil society when developing dams. We need to explain to the public that these projects are for Myanmar", a spokesperson of a Chinese dam developer said (TP21).

To institutionalize this altered stakeholder management approach, CPI established a public relations (PR) unit in Myitkyina upon the suspension of the dam (FNL4), providing an opportunity to build and maintain relations with various relevant players. "It is not very professional, though. There is no evaluation system to monitor what their PR work has achieved ", a former employee of a Chinese dam developer said (TP24).

CPI also claims it would now adhere to the most ambitious environmental and social safeguard policies. The standards of the World Bank and the Asian Development Bank serve as a reference for the various Chinese-led dam projects in Kachin State, a spokesperson of a Chinese dam developer said (TP21). This would include significant benefit-sharing – a claim that was contested by a Burmese dam developer (TP26).

"Only upon the suspension of the Myitsone Dam, CPI understood that there is a public opinion with influence in Myanmar ", a former employee of a Chinese dam developer told us (TP24). Doubts remain, though, whether CPI has truly changed more than its approach to public relations. A Chinese scholar researching the Myitsone Dam project told us that "you should not listen to what the Chinese say, you should look at what the Chinese do" (FA6). Indeed, no evidence was found that the compensation scheme for those resettled was improved upon the suspension of the Myitsone Dam project. Rather, resettleds suggested that compensation payments are irregular (FAA2; FAA5). Furthermore, no additional information on arrangements regarding the purchasing of power by China were shared. "CPI is still among the worst companies

operating in Myanmar from a corporate social responsibility perspective", an activist claimed (FNI13).

The Case of Myanmar's Mong Ton Dam

The contrasting case in this analysis is the Mong Ton Dam, a project that is currently being delayed by public protests in the ESIA phase. Basic information and the timeline of the Mong Tom project are depicted in Figure 3. The project is the largest of seven dam projects to be developed on the Salween River in Myanmar (Figure 4) and the largest ever planned dam project in mainland Southeast Asia (Mang, 2015). The reputation of IGE, the Burmese dam developer within the project, may be as questionable as Asia World's (FNL14). A US diplomatic cable, published by WikiLeaks, states that those running IGE "use their family connections and close ties to the regime to amass great wealth" (Martov, 2012). China Three Gorges Corporation (CTGC), a major Chinese state-owned dam developer (IHA, 2016) and the lead developer of the Mong Ton project, likely teamed up with IGE to fulfill legal obligations; a Burmese partner is still required for foreign companies in most business endeavours (Turnell, 2014, p. 185 ff.). However, finding solid business partners remains a challenge in Myanmar (Stevens, 2013). CTGC, in turn, was hired for this project since only Chinese dam developers would be able to develop projects of such a scale, a consultant noted (FP28).

A comparison of the approaches chosen by activists and the dam developers of the Myitsone and Mong Ton projects is provided in Table 1.

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Instruments employed in the campaign against the Mong Ton Dam – e. g. research, spiritual protests or the collecting of signatures and petitions – seem to be

similar to those of the Myitsone Dam Campaign. However, international players have been involved since the early days of the campaign, likely a consequence of Myanmar's opening-up since 2011 and the resulting multiplication of networks between local and international NGOs (Ghoshal, 2013, p. 117 ff.). For instance, a scholarship program has been launched, facilitated by a researcher at a Thai university and a German foundation, through which (inter alia) staff in NGOs based in Myanmar collect data regarding the Mong Ton project (TA4; FNI17). Prayer ceremonies to stop the dam development have been taking place since April 2015 (Save the Salween Network, 2015).

Those leading the current campaign against the Mong Ton Dam have professionalized compared to the Myitsone Dam campaign. 131 civil society organizations in Myanmar have signed a pledge to stop the Mong Ton Dam project. In addition, Burma Rivers Network (2015) claims that 61,000 signatures have been collected, compared to 10,000 signatures for the Myitsone Dam project (FNL3). An appeal to stop the project has been sent to the Chinese and Thai government as well as Myanmar Electric Power (Burma Rivers Network, 2015). Such professionalization is a key trend among local NGOs in Myanmar's these days; it is fuelled by capacity-building efforts and additional funding provided by international NGOs, according to Bächtold (2015, p. 1978 ff.). No figures regarding campaign budget or staff could be obtained for comparison with the Myitsone Dam campaign as a collective, not just a single organization, is involved in the Mong Ton campaign. Due to the multitude of players involved and additional funding available from international NGOs, it is assumed that the Mong Ton Dam campaign is on a sound financial footing, compared to the Myitsone Dam campaign.

> *Figure 3 here* <

Activists have been able to significantly disrupt the project already during the ESIA process, possibly a result of the professionalization. No such interruptions were reported at this stage of the Myitsone Dam project. SMEC, a professional services firm carrying out the ESIA for the Mong Ton Dam project, argued it would be too dangerous to return to the villages at question since the United Wa State Army, an ethnic minority army, clashed with government troops in Mong Ton in June 2015 (mizzima, 2015; SMEC, 2016; OP15). These fights are related to the project, according to the Shan Human Rights Foundation (2015). SMEC's ESIA report was supposed to be submitted in the third quarter of 2015. No press articles could be identified, though, that indicated that the ESIA report has been submitted. The latest news on the project website date from April 2015 when the ESIA scoping meeting was held (CTGC, 2016).

> *Figure 4 here* <

The campaign against the Mong Ton Dam may be somewhat detached from the impacted communities – just as the campaign against the Myitsone Dam eventually became. "The regular people could not raise their voices during these [consultation] meetings. The civil society organizations hijacked them", a Burmese staff working in an international NGO claimed (FNL9). A consultant involved in the project confirmed this (OP15).

"Anti-dam civil society groups are very experienced [now]. They have very good experts for lobbying, working with the media and public consultation. They are much better organized than dam developers in Myanmar", a former employee of a Chinese dam developer argued (TP24). However, the approach of Chinese dam developers has also evolved in recent years to include not just the government, but impacted communities and civil society.

These changes may be (at least partly) seen as a response to the suspension of the Myitsone Dam. "This suspension was a really painful punch in the stomach [for the Chinese dam industry]. They learnt it the hard way", senior staff in an international NGO said (TNI3). A former employee of a Chinese dam developer (TP24) and an international donor (TI7) confirmed this reasoning. As a consequence of the Myitsone Dam suspension, Chinese SOEs overall would now look at investments in Myanmar from a risk management perspective, an NGO activist explained (TNL1); the developer's assumption would be that communication with various players reduces the likelihood of significant anti-dam-protests. Indeed, a Chinese dam developer argued that communication would be key in order to overcome public opposition (OP10).

This novel approach has not mitigated protests, though. Indeed, SMEC issued a press release in July 2015 regarding the Mong Ton project admitting that its "participative, inclusive and transparent consultation process with civil society organizations [has had] limited success" (mizzima, 2015).

A key reason for this limited success may be the goal uniting those players opposing the Mong Ton Dam project. "SMEC can do the very best public consultations in the world. We actually don't care. We just don't want this dam to be built", a leading activist of the campaign said (FNL12).

A second reason for this limited success may be inadequate consultation processes. "SMEC's consultations are entirely insufficient. The first consultation was only two hours. You cannot discuss anything in two hours. And they announced this consultation via a tiny ad in one of the last pages of the newspaper" (FNL12). The activist also reported that military authorities in Shan State sent a tank through the villages "to remind them to participate in the consultations" (FNL12). Pictures of the tank were shown to one of the authors of this paper. This is again a parallel to the

Myitsone Dam project which reportedly also relied upon intimidation by military authorities (KDNG, 2009, p. 5).

Criticism regarding the ESIA process was not only raised by activists, but also by a competitor claiming that SMEC would not contextualize its ESIA approach to Myanmar (FP23). It was stated by a consultant that SMEC complies with World Bank standards (OP15).

Until now SMEC is the player taking most of the public heat in the Mong Ton Dam project. "This is very much the approach these [Chinese dam developer] players take nowadays. They try to outsource as much as possible, especially when it comes to ESIA's. They hire an international player, they give him a stack of cash and then they say: 'Now you go and deal with this ESIA topic'", an environmental lawyer said (FP16). This delegation is also a necessity, though, in order to gain credibility, a management consultant noted (TP18); activists would probably not acknowledge an ESIA which was not carried out by an (presumably) independent consultancy, but by the project's developer.

Myanmar's Future Energy Landscape

"Back in 2010 even the most outspoken environmentalists were afraid to say what they think when in Myanmar", an activist told us (FNL7). However, the country has transformed in only a few years. "Myanmar has a vibrant civil society today. You can't tell anyone to shut up", an interviewee from a German foundation in Myanmar told us (FNI12). Many of those interviewed reported that civil society in the country would not be very constructive or compromising, though. "NGOs in this country are just opposing anything – particularly when it comes to dams", the director of an NGO in Myanmar said (FNL10). Staff from a German NGO in Myanmar agreed with this judgement, but argued that local NGOs' attitude would be understandable due to the repression activists

suffered from under the military regime (FNI17).

The position of civil society is likely to be further strengthened in the near future. A novel association law was adopted in 2015 outlining registration procedures for NGOs as well as rules regarding membership (FNL23). "This is the most liberal association law in all of Southeast Asia, maybe even all of Asia", an interviewee from a German foundation in Myanmar claimed (FNI12). The legislation introduced providing a legal framework regarding environmental and social safeguards for dam construction in Myanmar was called "not complete, but a good start" by a Burmese dam developer (TP26). The legislation's focus is on environmental safeguards. More on social safeguards will be added upon the first iteration, a SIA consultant claimed (FP23).

Due to these developments many activists interviewed were confident regarding the impact of their campaigns. "I think many more dams will be suspended in the near future", a Burmese activist told us (TNL5). "It has certainly been a trend for the last two years that the population was shouting very loudly against hydropower", a Chinese dam developer (TP21). Nevertheless, the dam developer remains optimistic indicating that he believed that the seven dam projects in Kachin State would be completed within the next 15 years. "Opposition has started to weaken again" (TP21). A former employee of a Chinese dam developer argued, though, that this optimism may only be pretended. "CPI has pulled most of their employees out of Myanmar. All they are trying to do is to get their money back" (TP24). An investor confirmed that CPI may exit the Burmese market (TP25). Indeed, there is a standstill of Chinese investments in Myanmar's power sector ever since the suspension of the Myitsone Dam (Lamb & Dao, 2015, p. 11).

Policy-makers from Myanmar's previous government were keen to develop hydropower, although very little is known about the incoming National League for Democracy (NDL) government's stance on the issue. Seemingly, the previous

government was looking for partners beyond China regarding hydropower development. In a presentation at the World Hydropower Congress in May 2015 in Beijing Min Khaing from Myanmar's Ministry of Electric Power called upon dam developers interested in Myanmar to "bring the best hydropower development practice" (Khaing, 2015, p. 10). This would mean to "commit to acceptable environmental and social impact". No Chinese (or Thai) investor was explicitly mentioned in the presentation, only names of several European investors (e. g. Andritz or EDF) that had just launched projects in Myanmar (Khaing, 2015, p. 9). Whether projects implemented by European players adopting benchmark environmental and social safeguard standards truly face less public opposition than Chinese-led projects remains yet to be seen, and this research has not attempted to answer this question, focusing only on dam projects led by Chinese players.

Myanmar needs to develop more sources of electricity to meet the growing demand. Only 49 percent of households currently have electricity connections, with urban areas at 89 percent compared to 28 percent in rural areas (FP30). The country's electricity demand currently grows at 12 percent annually (FP30) with Myanmar's maximum demand forecast to increase from 2.4 GW in 2014 to up to 14.5 GW in 2030 (Khaing, 2015, p. 5). Development of hydropower may be one avenue to satisfy this demand as Myanmar's hydropower potential is tremendous, with 108 GW of hydropower potential (FP30). These estimates have been significantly corrected upwards in recent years, from only 40 GW six years ago (Middleton et al. (2009, p. 39). The Irrawaddy River is considered to have the most hydropower potential (47 percent), followed by the Salween River (38 percent) (FP30).

Many activists interviewed do not absolutely oppose hydropower. However, they prefer small dams with allegedly limited impacts powering Myanmar over large

dams with significant impacts powering neighbouring countries (TNL17). Some scholars argue, though, that small dams may not be as sustainable as large dams. First, environmental impacts from a river basin perspective may exceed those of large dams, particularly with regard to habitat and hydrologic change (Kibler & Tullos, 2013). In addition, in order to produce significant amounts of power, a series of small dams will submerge more land than a single large dam (OA9). This may also imply significant resettlement. Awareness regarding the negative impacts of small dams is limited both among scholars and practitioners nowadays (FA8); a lack of knowledge regarding the social impact of small dams was corroborated by a recent meta-synthesis (Kirchherr et al., 2016).

Furthermore, the ability of small dams to provide adequate sources of energy is not supported by Myanmar's Ministry of Electric Power. They have identified 210 potential sites with a capacity of less than 10 MW each. However, the combined installed capacity of these sites would only amount to 232.5 MW, 0.2 percent of the country's total large hydropower potential (Oo, 2012). Myanmar needs to add up to 1,000 MW of capacity each year until 2030 if current demand growth trends continue (TI9). Even if all small hydropower potential would be developed, this would not be sufficient to power Myanmar's economy (Figure 5).

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The veracity of the estimates provided by the Myanmar's Ministry of Electric Power may be questionable, though. "Of course, you can divert parts of a large river via a run-of-the-river plant to generate electricity. I would call this small hydropower", an engineer said (FA7). These vast discrepancies of Myanmar's small and large hydropower potentials (0.2 GW versus 108 GW) may indicate that the potential for small hydropower on Myanmar's large rivers may not be accounted for yet. Definitional

confusion regarding small hydropower may also explain this gap. An independent study would answer questions that could help verify Myanmar's overall small hydropower potential. Even if small hydropower potential is found to be vast, questions regarding its sustainability remain, though, and a public policy discussion is needed as to whether the country wishes to take this route.

Alternative forms of energy to meet Myanmar's needs are limited. Myanmar's proven fossil fuel potential is "modest" (The Economist, 2014): 50 million barrels of oil, 283 billion cubic meters of natural gas and 540 million tons of coal of low calorific value (FP30). Myanmar's renewable energy potential beyond hydropower is also limited. For instance, only 3,400 km² (0.5% of the country's total area) feature wind speeds high enough for modern wind turbines (ADB, 2015, p. 59 ff.). Furthermore, 96 sites with geothermal potential have been identified – the total potential remains unknown. Similarly, its biomass potential is unknown. Yet solar may offer significant potential. Initial studies suggest that Myanmar's solar potential may stand at 52,000 TWh/year – 5,000 times the current annual energy demand (FP30). A forthcoming study by an international NGO particularly highlights Myanmar's solar potential (FNI19). Investors interested in energy in Myanmar these days are already most keen to explore its solar resources (TP17). However, more detailed studies are needed to verify this assumed potential.

Myanmar's Dams: Lessons from Bhutan

Large hydropower remains Myanmar's only verified significant potential source for energy. The case of Bhutan may offer valuable lessons to Myanmar on how to reap this potential. 25 years ago, Bhutan was a subsistence economy with one of the lowest GDP per capita, one of the shortest life expectancy as well as the smallest per capita electricity consumption in the world (Dhakal, 1990, p. 291). Today, its GDP per capita

is twice as high as Myanmar's (World Bank, 2015b), its average life expectancy has risen by 15 years to 68 years (World Bank, 2015c) and three-quarter of its population have access to electricity (World Bank, 2015a).

Hydropower has been recognized as the key driving force for the economic development of the country (Tshering & Tamang, 2004, p. 1). 99% of Bhutan's electricity is from large hydroelectric plants (CIA, 2015) and revenue from the sale of electricity to India contributes to 40% of the country's fiscal revenues (Singh, 2013, p. 460). Furthermore, hydropower accounts for 25% of Bhutan's GDP, hydropower infrastructure development another 25% (Ogino & Hamanaka, 2011, p. 1).

Bhutan has commissioned 5 large hydroelectric plants so far with a total capacity of 1,480 MW as well as 21 small run-of-the-river hydroelectric projects (up to 10 MW) with a total capacity of 8.8 MW (UNIDO/ICSHP, 2013) (as a comparison: Myanmar has a developed hydropower capacity of 3,151 MW (Khaing, 2015, p. 3)). Bhutan's largest dam, the 1,020 MW Tala Dam, was completed in 2007. This dam helped to raise Bhutan's GDP per capita from USD 1,346 in 2006 to USD 1,755 in 2007, a 30% increase (Figure 6). Only surplus power is exported to India because the Tala Dam is required to meet all domestic energy demands first (International Rivers, 2015) – not all of Bhutan is electrified yet because of a lack of grid development (UNIDO/ICSHP, 2013). More step change projects will be completed in Bhutan soon. For instance, the 1,200 MW Punatsangchhu-I ought to start operations in 2018 (International Rivers, 2015). Overall, 6 more hydroelectric plants are under construction in Bhutan, 5 more are proposed. Bhutan's overall technically exploitable hydropower potential stands at 24 GW (22% of Myanmar's total potential), of which only 6% is currently exploited (Ulmasova, 2013, p. 6). If all ongoing projects are completed on

time, the hydropower sector is expected to contribute 75% of Bhutan's fiscal revenues by 2020 (Bisht, 2012, p. 788).

> *Figure 6 here* <

India is Bhutan's key partner in its hydropower development (Bisht, 2012). If more steps are taken towards an integrated Southeast Asian electricity market, India, Thailand and China could become Myanmar's key partners in its hydropower development. Indeed, Myanmar's tremendous hydropower potential could also become a significant source of revenue for the Burmese government if exported to its neighbouring countries. Admittedly, the hydropower development Myanmar would need to undertake in order to establish hydropower as a significant source of governmental revenue is much more massive than any developments to be undertaken in Bhutan. After all, Bhutan is a much smaller country with a population of only 0.8 million – compared to a population of 53.4 million in Myanmar (World Bank, 2015d).

The question of utilizing Myanmar's hydropower potential as an engine for development must be a public policy issue, to be debated and decided by the political representatives and the people of Myanmar. If this potential is developed, dam development contracts must be transparent and making resettled communities as well as those upstream and downstream whose livelihoods are impacted by large-scale hydropower development the first project beneficiaries is mandatory; it is the golden rule of sustainable large dam development. Hence, projects such as the Myitsone Dam and the Mong Ton Dam must be renegotiated and (possibly) eventually abandoned. Adhering to international best practice environmental and social safeguard standards is likely not enough to follow this golden rule of sustainable large dam development. "It is not about standards, it is about local language. You need to understand: What is the life of those you are impacting? How do they feel and think about their future? It is all about

contextualization", a Burmese dam developer told us (TP26). It is this contextualization that is so often missing in the development of, contestation over, and analysis on large-scale hydropower in Myanmar.

Conclusion

"Until the 1970s, it was generally assumed that large dams overwhelmingly contributed more benefits to the society [than] costs" (Biswas, 2012, p. 5). Indeed, "fifty years ago, the main challenges to large infrastructure projects were technical or scientific. Today, the greatest hurdles faced by such projects are almost always social" (McAdam et al., 2010, p. 401). Public protests delay large infrastructure projects all around the world. This seems to hold true particularly for hydropower, "perhaps the first sector impacted by the trend" (McAdam et al., 2010, p. 402). According to Plummer (2013), extensive resettlement issues are now the second greatest concern of dam developers regarding possible cost and schedule overruns.

Scholars have investigated those advocating against dam projects, but usually not those the campaigns are aimed at – the dam developers. However, understanding their perspective and approach is crucial to illustrate the interplay of activists and dam developers and its implications regarding the future developments of a country's and region's energy landscape. Investigating this interplay has been the key aim of this paper. For this purpose, two case studies were analysed – the Myitsone Dam project and the Mong Ton Dam project, Myanmar's two largest projects. Myanmar is a particularly interesting country to study – it has a hydropower potential of 108 GW of which less than 3 GW (< 3%) are currently developed (FP30).

We find evidence that Myanmar's activists have professionalized in recent years. The campaign against the Myitsone Dam in 2010 was rather chaotic. Meanwhile, the current campaign against the Mong Ton Dam is more centrally planned and already

supported by 131 civil society organizations. International players have been involved in the campaign against the Mong Ton Dam from the very beginning. The activists are united by the single goal to stop the project and have been able to already significantly disrupt it during the ESIA process. Meanwhile, CTGC hired an international player, SMEC, to help with the ESIA process – which was carried out adhering to international standards, especially prioritizing engagement with civil society, according to SMEC (2015). However, the success of this engagement has been limited so far. A reason may be that the consultation process was insufficient (according to some activists). Other activists were found to fundamentally oppose the dam project irrespective of the safeguards in place.

Activists in Myanmar are likely to continue professionalizing, while some may remain non-compromising in their opposition against large dam projects. This may lead to a large-dam-deadlock for Myanmar. According to the interviews conducted for this paper, CPI, responsible for the Myitsone Dam project, is considering exiting the Burmese market. Western players may step in, but it remains yet to be seen if their projects will face less public opposition. Myanmar is confronted with an energy deficit. Many activists call for the development of small hydropower to meet this gap, however, additional analyses are needed to quantify the potential of small hydropower and its environmental and social impacts. Besides hydropower and solar power, Myanmar does not seem to hold significant energy resources.

Hence, considering the development of Myanmar's large hydropower resources remains necessary. The case of Bhutan illustrates the potential of developing these resources. Hydropower contributes to 40% of Bhutan's annual fiscal revenues. Electricity export revenues could also contribute significantly to Myanmar's governmental budget if its excess capacity was developed.

The negative social and environmental impacts of large dams can be significantly mitigated “given the present knowledge and experience on planning and management practices” (Tortajada, 2015, p. 405). However, implementing these practices remains a major challenge (Leung et al., 2013, p. 2). If more large dams are to be built in Myanmar, dam developers, activists, political leaders and local communities must collaborate in order to minimize adverse social impacts on local communities. International safeguards must be in place. Schemes are needed that make those resettled as well as those upstream and downstream that are also adversely impacted by the project the first beneficiaries of a project. This is the golden rule of sustainable dam development – a rule which could bring together all stakeholders in Myanmar to find responsible and mutually acceptable energy solutions.

Note

This paper is part of a larger research project investigating various socio-economic impacts of dams which has been reviewed and approved by the University of Oxford’s ethics committee. More than 150 semi-structured interviews have been carried out for this project to date. Interview partners are international donors, policy-makers, scholars, consultants, dam developers (including Chinese dam developers), NGOs as well as adversely-affected communities. Only those interviews used in this paper are listed in the table below (Table 2).

Interviews were carried out during field research in Myanmar, Thailand and Singapore from June to August 2015 as well as in Myanmar in March 2016, at the 2015 World Hydropower Congress in Beijing in May 2015 and via telephone from April to August 2015. Given the sensitive nature of the topic, all interviewees were assured anonymity. Thus, all interviews are coded with the first letter indicating the mode of interviews (T for telephone, F for face-to-face, O for online survey/e-mail), the second

letter indicating the type (A for academia, AA for adversely-affected people, G for government, I for international donor, NI for international NGO, NL for local NGO, P for private sector) and the sequence of numbers indicating the overall interview number within a type.

> Table 2 here <

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No potential conflict of interest was reported by the authors.

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Tables

Table 1: The Myitsone and Mong Ton Dam projects – Comparing approaches of activists and Chinese dam developers

	Myitsone Dam project	Mong Ton Dam project	Change
Acti- vists	No centrally planned and coordinated campaign, various overlapping activities	Centrally planned and coordinated campaign, supported by 131 civil society organizations	Major
	Limited campaign budget and staff	Currently sufficient campaign budget and staff	Major
	Research on project carried out by CSOs, spiritual activities, petitions, collection of 10,000 signatures	Research on project carried out by CSOs, spiritual activities, petitions, collection of 61,000 signatures	Some
	Campaign overall possibly somewhat detached from impacted local communities, at least at later stages of the protests	Campaign overall possibly somewhat detached from impacted local communities	None
	Involvement of international players only upon suspension of the project	Involvement of international players already during early stages of project	Major
	Activists united by the single goal to stop the project	Activists united by the single goal to stop the project	None
	Project disrupted significantly only upon beginning of construction	Project disrupted significantly already during the ESIA process	Major
Chi- nese dam de- ve- loper	Hiring Chinese player (CISPDR) and Burmese NGO (BANCA) to carry out ESIA	Hiring international player (SMEC) to carry out ESIA	Some
	Partnering with a Burmese dam developer of questionable reputation (Asia World)	Partnering with a Burmese dam developer of questionable reputation (IGE) Also partnering with Thai dam developer (EGAT)	Some
	Initially only engaging with relevant government officials, attempting to engage with civil society only upon suspension of the project	Attempting to engage with relevant government officials and civil society from the very beginning	Major
	World Bank and Asian Development Bank ESIA standards supposedly now reference point for project	World Bank ESIA standards adopted during ESIA process, according to SMEC	None
	Contested if consultation process was carried out at all	Consultation process is carried out, but process severely criticized	Some
	Contractual arrangements regarding project not published	Contractual arrangements regarding project not published	None

Note: The column 'Change' summarizes the authors' assessment regarding changes in the activist campaign or dam developer project management approaches (from the Myitsone to the Mong Ton Dam project). This assessment has been conducted for various elements of these approaches, as outlined in the table above.

Table 2: Interview Overview

#	Interviewee	Organization	Code
1	Scholar	Thai university	TA4
2	Doctoral researcher	Major Chinese university	FA6
3	Scholar	University in the United Kingdom	FA7
4	Scholar	University in the United States	FA8
5	Scholar	University in Asia	OA9
6	Pastor	Aung Myin Thair relocation camp	FAA1
7	Resettlee	Aung Myin Thair relocation camp	FAA2
8	Resettlee	Aung Myin Thair relocation camp	FAA3
9	Resettlee	Aung Myin Thair relocation camp	FAA5
10	Senior official	Kachin Independence Organization (KIO)	FG7
11	Senior official	International donor	TI7
12	Senior official	International donor	FI8
13	Senior official	International donor	TI9
14	Senior staff	International NGO	TNI1
15	Senior staff	International NGO	TNI3
16	Managing director	German foundation in Myanmar	FNI12
17	Staff	International NGO in Myanmar	FNI13
18	Director	German foundation in Myanmar	FNI17
19	Staff	International NGO in Myanmar	FNI19
20	Environmental activist	Southeast Asian NGO	TNL1
21	Leading activist	Burmese NGO	FNL3
22	Activist	Involved in various anti-dam movements in Myanmar, especially the Myitsone Dam	FNL4

23	Activist	Burmese NGO	TNL5
24	Activist	Involved in anti-Myitsone-dam protests, now working for international NGO	FNL6
25	Activist	Involved in various anti-dam protests in Indonesia	FNL7
26	Staff	International NGO operating in Myanmar	FNL9
27	Managing director	International NGO operating in Myanmar	FNL10
28	Leading activist	Major Burmese NGO	FNL12
29	Managing director	Major NGO in Myanmar	FNL14
30	Leading activist	Kachin NGO	TNL17
31	Activist	Kachin NGO	FNL21
32	Activist	Kachin NGO	FNL23
33	Staff	Chinese dam developer	OP3
34	Senior leader	Chinese dam developer	OP10
35	Staff	Major ESIA consultancy	OP15
36	Environmental lawyer	Freelancer	FP16
37	Consultant	Engineering firm	TP17
38	Managing partner	Major global strategy consulting firm	TP18
39	Manager	Consulting firm in Myanmar	FP19
40	Spokesperson	Chinese dam developer	TP21
41	Managing director	Competitor of SMEC in Myanmar	FP23
42	Former employee	Chinese dam developer	TP24
43	Managing director	Investment firm in Myanmar	TP25
44	Managing director	Major Burmese dam developer	TP26

45	Consultant	Involved in various dam projects in Myanmar	FP28
46	Consultant	Energy consultancy	FP30

Figure captions

Figure 1: Basic information and timeline of Myitsone Dam Project

Figure 2: Major planned dams in Kachin State

Figure 3: Basic information and timeline of Mong Ton Dam Project

Figure 4: Major planned dams in Shan and Karen State

Figure 5: Small hydropower in Myanmar

Figure 6: Economic impact of Bhutan's Tala Dam