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What drives safeguarding for China's hydropower projects in LDCs?

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China has a leading role in building large hydropower dams in developing nations, partly in the name of sustainable development. Rather than debating whether or not large hydropower truly offers clean green energy, this paper explores how to engage constructively with improving dam projects' sustainable development impacts via social and environmental safeguarding practices. Focusing primarily on Chinese investments in the Least Developed Countries, we examine the practices of hydropower companies and their financiers, and what drives these activities. We discuss the mechanisms underpinning companies' adoption of social and environmental safeguarding, and how these might be influenced so that safeguarding is strengthened.

Contents

Summary

China now funds and builds many large hydropower dams internationally, especially within lower-income countries. Pre-2000 there were six Chinese-built dams outside China. Now reports estimate 320 in over 140 countries, totalling 81GW. This expansion builds on China's huge domestic hydropower sector. China frames hydropower as low-carbon, pro-development and pro-poor. With most of China's own rivers fully dammed, hydropower companies are looking abroad, encouraged by the huge Belt and Road Initiative (BRI).

However, despite hydropower's potential for reliable and renewable power, large hydropower schemes have caused well-documented social and environmental damage. In the late twentieth century, multilateral development banks, particularly the World Bank, faced intense pressure from global civil and political society to evolve norms and standards for social and environmental 'safeguarding policies' designed to identify, avoid and minimise harm to people and the environment arising from hydropower investments.

But China's recent expansion into overseas hydropower has largely bypassed this pressure, and **Chinese investments, and their governance dynamics, are now driving global practice**. This parallels a general shift from multilateral to bilateral financing structures, which offer recipient countries many advantages, including speedy and easy access.

This paper does not debate large hydropower's green credentials. Rather, **we accept that dams are being built and explore how to improve their sustainable development impacts.**

First, it is necessary to understand practices among Chinese hydropower actors and their financiers, particularly the incentives and modalities affecting their safeguarding practices. We draw on literature, policy narratives and interviews with researchers and civil society actors. We focus primarily on Chinese investments in the Least Developed Countries (LDC), a UN designation for low-income countries suffering from severe structural handicaps to sustainable development.

Assessing hydropower's scale

It is difficult to determine the scale of Chinese hydropower engagements as Chinese actors and recipient governments do not officially disclose figures. However, three broad trends are clear.

Chinese hydropower activity dwarfs any other country (estimates vary from 50% to 70% of the total). **Investment impacts vary greatly by region** (the greatest concentration is in Southeast Asia, followed by Africa, Latin America and Europe/Central Asia). **Chinese dam building is slowing down globally but growing more important in some locations.**

An Evolving Situation

Our research confirms that Chinese hydropower is starting to adopt social and environmental safeguarding norms, but also confirms many gaps and limitations. Current Chinese safeguarding norms reflect **complex governance interactions involving three principal domains: international norms (such as produced by the World Commission on Dams); Chinese Government policies and guidelines; and host country norms.** Within LDCs, these last tend to be weakly formulated and enforced. Since Chinese banks have not adopted the environmental, social and governance standards adhered to by other international development banks, weak local requirements can become an opportunity for Chinese contractors to undertake minimal safeguarding, while claiming they have met their responsibilities. This situation is reinforced by a general trend away from longer-term 'Build Own Operate Transfer' (BOOT) contracts and towards 'Engineering Procurement and Construction' (EPC) contracts. The shorter timeframe for EPC contracts leaves little incentive to address longer-term social and environmental problems.

Nonetheless, Chinese hydropower has responded to civil society, commercial pressures and government policies. Assumptions that Chinese companies work in isolation are sometimes incorrect. Some work with other international contractors or financiers, and may respond to safeguarding requirements thus acquired. Also, major losses incurred because of safeguarding failures

have been salutary. Interviewees emphasised that Environmental Impact Assessments are now standard practice among Chinese State Owned Enterprises (SOEs). Yet EIAs remain weak on governance, social impact and benefit sharing, including on participation, compensation and free prior informed consent, leaving a gap between rhetoric and practice.

Hydropower's application of social and environmental safeguards thus reflects a complex governance matrix influenced by Chinese policies and laws, national rules and guidelines, financier conditions, company procedures, informal norms and local stakeholder interests.

Understanding the actors

The dominant Chinese hydropower companies operating in LDCs are long-established SOEs with proven expertise. These powerful companies can have 'quasi-state' roles in host countries, negotiating directly with governments.

However, SOEs are also subject to Chinese geopolitical priorities, and lack autonomy under some conditions. Advocacy directed at **strengthening Chinese Government guidance on safeguarding** has had some recent success, leading to various formal guidelines. But focusing too closely on emerging official guidance can be misleading if it downplays SOEs' own lobbying power at home and abroad.

There are also many different bodies governing investments from within China. The Chinese Ministry of Commerce (MOFCOM) is the main gatekeeper for overseas investments. Many other agencies have significant regulatory, approval or influencing positions, including the National Development and Reform Commission, the Ministry of Finance, the Ministry of Foreign Affairs, and the Ministry of Ecology and the Environment.

Financing is similarly complex. Some dams have Chinese finance but non-Chinese constructors. Others are Chinese built with non-Chinese finance. The complexity makes it difficult to define the scope of Chinese hydropower activity. But within the new landscape of hydropower finance, large Chinese policy banks dominate, particularly the China Development Bank (CDB) and the Export-Import Bank of China (CHEXIM), which is the primary financier of large dams in LDCs. Policy banks exist to finance government priorities, so their lending decisions carry heavy political influence.

Indeed, Chinese policy banks probably have the greatest capacity to drive changes in norms and practice. Recently, some Chinese banks have begun to adopt international standards for social and environmental impact assessment and to trial green credit policies similar to the Equator Principles.

Changing risk profiles associated with climate impacts on hydropower facilities could strengthen more general risk assessment practices, potentially reinforcing awareness of social and environmental standards.

Moving forward

This paper discusses **five pathways to strengthening safeguarding norms in Chinese hydropower:** social mobilisation; stronger awareness and participation in host-country governments and communities; capacity building for hydropower companies; clear rules and unified policy; and finance reform.

Social mobilisation underpins the other four, but all are connected and mutually reinforcing. Improving Chinese hydropower safeguarding is an iterative 'dance' involving diverse actors, with civil society – Chinese, local and international – playing a key role.

Transparency is critically important for social mobilisation and advocacy. Recent studies have found Chinese overseas infrastructure activity discourages trade union involvement, and lacks transparency on debt, finance and management systems. However, poor transparency bedevils the whole sector, not just Chinese hydropower.

The following leverage points can improve **social and environmental safeguarding practice in China's overseas hydropower:**

- Civil society can tailor advocacy strategies to the actors involved and the contract arrangements.
- International development actors can push for more agreement for global safeguarding norms and engage Chinese actors in trilateral projects. They can also support host countries to manage contractors more effectively and ensure due diligence on environmental and social risk.
- National and local governments, civil society and researchers can work to strengthen rules and regulations, and monitor Chinese actors' performance, including on transparency.

In addition, we suggest three areas of further research:

- Develop much stronger evidence identifying which safeguarding areas particularly need attention. Gender dimensions and benefit sharing may be key areas.
- Boost transparency through research into scale, finance, management systems and operational practice.
- Investigate how enhanced attention to climate risk (a hugely important technical issue in most large hydropower projects) might encourage more thorough assessments across the full range of social and environmental risk.

1 Introduction

In a 1956 poem about swimming in the Yangtse river, Mao Zedong wrote of "turning a deep chasm into a thoroughfare" through a vision he had of a dam on the river. He writes, "Walls of Stone will stand upstream to the west/To hold back Wushan's clouds and rain/'Till a smooth lake rises in the narrow gorges./The mountain goddess if she is still there/Will marvel at a world so changed."

Hydropower has a special place in China's narratives of modernity, being viewed as a benevolent force for calming unruly nature and bringing progress, in line with the will of the gods. Inevitably, these perceptions influence China's engagement in foreign hydropower. Our research suggests that key actors have made much progress in understanding dams' social and environmental risks. However, recognising the origins and symbolism of China's hydropower industry remains important for advancing social and environmental safeguards.

1.1 Overview

Social and environmental safeguards in large infrastructure projects are policies that identify, avoid and minimise harm to people and the environment that might arise directly from the investment. For many decades, assessments of World Bank investments have dominated the debate on social and environmental safeguards in hydropower. But over the past two decades, China has emerged as a major funder of large dams worldwide, with an increasing focus in lower-

BOX 1. KEY TERM DEFINITIONS

The Belt and Road Initiative (BRI) is both China's vision for globalisation and global development, and its mechanism for other countries to join forces to implement this. It is presented along five pillars: infrastructure connectivity, unimpeded trade, financial integration, policy coordination, and people-to-people exchange. Announced by the Chinese leadership in 2013 as an ambitious global project for infrastructure, trade and investments, BRI is devised to reconfigure many aspects of China's business sector. As a vision of cooperation, BRI tries to be distinct from China's previous strategies (Reform, Opening Up and Going Out), which were not jointly implemented by other countries.

Five-Year Plans (FYP) are China's guiding socio-economic development plans issued every five years. There are also sub-themed FYPs developed for different sectors with the same timelines. For example, the 13th FYP for the hydropower sector was issued in 2016 after the general FYP, and provided a guiding policy framework for the sector. The 14th FYP was issued in March 2021.

Least Developed Countries (LDCs) are low-income countries confronting severe structural impediments to sustainable development. They are highly vulnerable to economic and environmental shocks and have low levels of human assets.

income Belt and Road Initiative (BRI) countries (see Box 1). This has implications for achieving the SDGs as well as global climate and biodiversity targets. On the one hand, hydropower offers stable, renewable, low-carbon energy that could support sustainable economic development. China has a long track record of hydropower development and the ability to export its experience and capacity overseas. On the other hand, large dams do well-documented damage to river ecosystems—both to the flora and fauna upstream and downstream – and to human communities whose lands and livelihoods are permanently altered. In addition, some studies show climate-damaging methane emissions from vegetation submerged in new reservoirs (Ocko and Hamburg, 2019).

This paper does not discuss *whether or not* large hydropower dams[4] can be considered a green energy source. Rather, we accept that large dams are being built, partly in the name of sustainable development, in the poorest parts of the world. Therefore, we concern ourselves with the question of how to engage constructively with improving their sustainable development impacts. To do this we need to understand the current practices of Chinese hydropower companies and their financiers, the drivers of these activities now and in the future, as well as the mechanisms underpinning the adoption of social and environmental safeguarding. This paper focuses primarily on Chinese investments in the Least Developed Countries (LDC) group (see Box 1) though we also draw on examples from outside of the LDC group for comparative purposes.

We draw from the rich literature on large dams and analyse Chinese policy materials and narratives. Additionally, we undertook interviews with researchers and civil society actors (see Research Methods) who provided insights into how Chinese hydropower companies are governed, and what drives trends.

This introduction provides a broad overview of the scope and scale of overseas Chinese hydropower. In Section 2, we examine the push and pull factors that have increased Chinese hydropower investments in certain LDCs in recent decades and the factors driving Chinese hydropower's increasingly global reach. Section 3 reviews the key Chinese actors involved in financing and constructing large hydropower projects in LDCs. Using this understanding of the complex governance context, Section 4 then examines the diverse ways that Chinese actors engage with hydropower overseas, reflecting that although practices are improving, there are still gaps and opportunities for improvement in all areas. In Section 5 we build on this discussion to explore key pathways and leverage points for improving the social and environmental outcomes of Chinese dams in LDCs.

1.2 Scope and scale of overseas Chinese hydropower

If the world is a stage for large hydropower dams, Chinese actors now play most of the lead roles. Before 2000, there were only six Chinese-built dams outside of China (Fam, 2017). Today there are a reported 320 Chinese hydropower dams in over 140 countries, totalling 81 GW of power capacity and with Chinese companies holding an estimated 70% of the global hydropower market (Zhi, 2021). Figure 1 shows the geographical trends of hydropower dams built or financed by Chinese companies in the past two decades. Recent research by Kong and Gallagher (2021) puts global Chinese investment in power projects over the past two decades by the two key Chinese policy banks at US$117bn, 44% of which went to hydropower.

Yet despite much recent effort to estimate the value of China's foreign energy investments, including in hydropower, exact figures remain elusive. For example, Kong and Gallagher (2021) exclude private investments, while capturing some reported projects that may not come to fruition. Reports can vary greatly depending on how researchers choose to count investments (excluding smaller actors, for example, certain types of investments, or focusing only on a certain size) and how they fact-check reported investments (i.e. through primary fieldwork versus relying on secondary reports). Shen (2020) compared a range of databases including CARI, AidData, China Global Energy Finance, International Rivers, China Global Investment Tracker, and the Power Futures Lab and found that the estimates of Chinese energy activities in Africa ranged from US$25bn to more than US$96bn over the past 15 years.

The challenge is rooted in the fact that Chinese governments and banks do not officially disclose foreign projects, nor do recipient governments. In addition, hydropower and other 'Chinese energy projects' tend to take multiple forms, including as Build Own Operate Transfer (BOOT) project developers (direct or equity investors), Engineering, Procurement and Construction (EPC) contractors, or technology suppliers. Furthermore, much of this activity is not financed according to traditional OECD-DAC definitions of development cooperation (Bräutigam, 2011). Finally, many estimates inaccurately include reported projects that were negotiated but ultimately abandoned or

4 A large dam, as defined by the International Commission on Large Dams is a dam with a height of 15 metres or greater from lowest foundation to crest or a dam between 5 metres and 15 metres impounding more than 3 million cubic metres (Braeckman et al., 2020).

not taken by a Chinese firm (Hwang et al., 2015). These factors make aggregate analysis of 'Chinese' hydropower engagements particularly messy. Bräutigam and Hwang (2017) applied stringent empirical evidence from Africa and found that Chinese engagement in overseas hydropower is often overestimated in both numbers and value. For example, of 51 hydropower projects listed in various databases, they found that only 17 involved committed funds from Chinese banks (Hwang et al., 2015).

Despite uncertain numbers, three broad trends emerge in overseas Chinese hydropower investments:

1. **Chinese hydropower activity dwarfs hydropower activity from elsewhere.** Whether research puts Chinese hydropower market share at 50% or 70% of the global market, it is still greater than any other. Between 2007 and 2016, Chinese banks and funds provided development finance for overseas energy-related projects equivalent to that of all major Western-backed Multilateral Development Banks, making China the largest public financier of global power development (Chen X et al., 2020). It is clear that Chinese policy banks are now a "major engine" behind Chinese overseas energy activities, providing more development finance than the World Bank and its counterparts (Gallagher, 2018). 50% of all large dams worldwide are located in China, but now most large dams built around the world are also built by Chinese companies. As of 2019, Chinese enterprises had invested in and helped construct about 320 overseas hydropower projects in over 140 countries with a total installed capacity of 81 GW—more than US$30bn of investment (Luo et al., 2020). The China Energy Engineering Group claims that Chinese enterprises together represent 70% of the international hydropower market, while a single company, PowerChina Resources (with Sinohydro as one of over 70 subsidiary companies), alone controls half of the market (Jensen-Cormier, 2019).
2. **The level and impact of investments vary greatly by region.** China's 13th Five Year Plan for the hydropower sector explicitly mentioned a strategic focus in specific low-income countries, mostly in Asia, including Bangladesh, Indonesia, Myanmar, Pakistan and Nepal (NDRC, 2016). In practice, the highest concentration of Chinese hydropower is in South East Asia, followed by Africa, Latin America and Europe/Central Asia. Jalles d'Orey and Prizzon (2017), for example, analysed how infrastructure finance from external sources has evolved over the past decade in Ethiopia and Kenya (with a trend towards increasing finance choices) and found that China is the largest financier in energy in both countries, with traditional bilateral donors almost entirely absent. In some cases, Chinese investment can even open up previously non-existent hydropower markets. Medinilla and

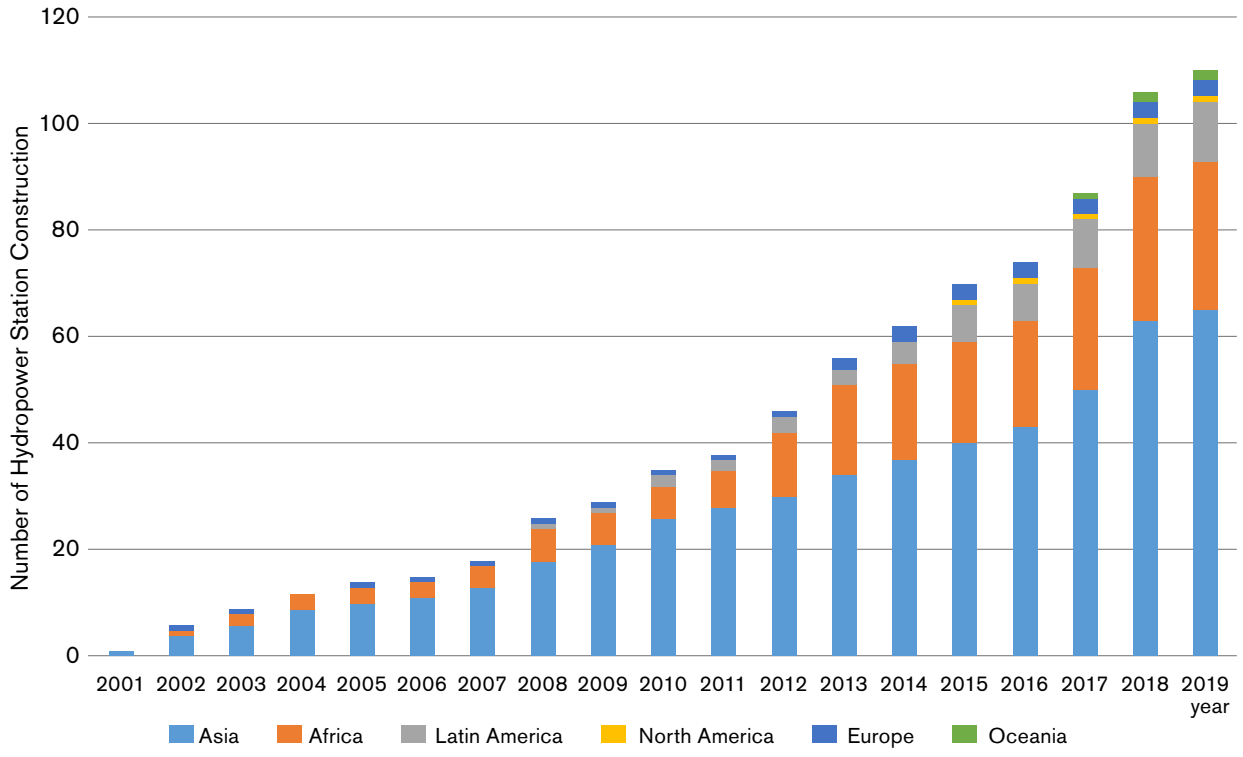

Figure 1. Geographic distribution of hydropower stations constructed or financed overseas by Chinese firms 2001 – 2019 (updated from Xue et al. (2018))

Ronceray (2019), for example, found that Chinese investment has introduced large dams to regions previously considered unfavourable. Urban et al. (2017) observed that perceptions of Chinese hydropower vary across regions. They reflected that "In Cambodia, the dams in the Greater Mekong Sub-Region are considered instruments of economic growth and development, whereas downstream in Vietnam the upstream dams are seen as potentially undermining national growth, development and security."

3. **Chinese dam building is slowing globally, but growing more important in some locations.** Chinese actors built only a handful of dams outside of China before 2000, but activity increased rapidly under China's 2001 'Going Out' policy, and was further boosted by the launch of the Belt and Road Initiative (BRI) in 2013. However, investment trends seem to have slowed since 2017 (Chen X et al., 2020; Ma and Gallagher, 2020). As interviewee RIC1 explained, "When China first launched the BRI and encouraged investments in hydropower, there was a boom in such investments. In this way the easy projects get snatched up. After this initial boom, it may now be harder to identify new projects, so there will be a natural decline." This natural decline parallels overall reductions in overseas investments, particularly following the outbreak of COVID-19. Yet hydropower fared better than coal—with investments in overseas hydropower and renewables overtaking fossil fuel investments for the first time in 2020. While total overseas investments decreased by 54% in BRI countries and 70% in non-BRI countries, investments in solar, wind and hydro increased their share of overseas energy investments: from 38% in 2019 to 57% in 2020 (Nedopil Wang, 2021). These data are still preliminary, and it is unclear whether this is a temporary shift or the beginnings of a new trend. This is an area to watch.

Thus, even with a global slowdown, Chinese hydropower will continue to increase and matter greatly in some regions, including LDCs. Interviewee RIU3 suggested that Chinese dam builders will probably focus on developing 'hydropower cascades' in multiple projects on large rivers in Asia and Africa, rather than scattered individual projects.

Luo et al. (2020) pointed to "huge hydropower resources along BRI", commenting, "The theoretical reserves and technologically developable amounts are respectively 12.57 trillion KWh per year and 4.94 trillion KWh per year, but the annual exploitation rate is only 15%." They forecast the total energy investment of the BRI economies will reach US$27 trillion by 2050.

1.3 Theoretical framing

Several studies have gone beyond case-study analysis of *what* Chinese actors are doing to mitigate dams' social and environmental impacts, and instead ask *why* Chinese actors adopt certain policies and practices. Scheumann and Hensengerth (2014) take a global, high-level approach, analysing hydropower actors from Brazil, China, India and Turkey to develop a framework explaining norm adoption. Hu et al. (2019), Kirchherr et al. (2017) and Yeophantong (2020) primarily focus on Chinese actors in Southeast Asia.

Our paper extends this '*why*?' approach, because doing so is crucial for identifying areas for further improvements. We broaden the geographic focus to glean insights from recent work on Chinese hydropower actors beyond Southeast Asia. We also argue that the debate about foreign hydropower's social and environmental impacts focuses too much on Chinese policies, guidelines and finance, assuming that governance of overseas Chinese companies should, or does, mirror the top-down structure within China. In reality, Chinese policies and guidelines are only one piece of a complex governance matrix guiding the social and environmental behaviour of dam developers (Weng and Buckley, 2016).

The way Chinese firms adopt safeguard norms can be seen as an improvised dance negotiated among many actors on a global stage, where the dancers' agency and their interactions shape how codified norms and standards are implemented. We categorise safeguarding norms following Kirchherr et al. (2017), including (from most-demanding to least-demanding, from a dam developer perspective):

- international norms (such as those outlined by the World Commission on Dams or the Hydropower Sustainability Assessment Protocol (HSAP),
- Chinese policies and guidelines (e.g. regarding resettlement, responsible investments, and business conduct overseas—the Chinese government and other bodies have issued more than 35 such norms since 2000),
- host country norms, which vary greatly and which tend to be weak or unenforced, or both in LDCs.

'Norms' are continually debated, and are not static, but we join researchers (Hu et al., 2019; Kirchherr et al., 2017; Scheumann and Hensengerth, 2014; Yeophantong, 2020 and many others), as well as NGOs both within and outside of China, in arguing that Chinese hydropower "would come closer to achieving procedural and/or distributive social justice if international safeguard norms… are mostly implemented" (Kirchherr et al., 2017). Though this is not an ethnographic account, we follow Mosse (2005) in his call "to reinstate the complex agency of

actors in development at every level". Exploring how theory and practice 'interlock' requires us to examine how the actors involved shape hydropower projects (Long and Long, 1992; Berkhout et al., 2003), working through processes of governance, legitimation and power negotiations. Rather than ask whether a project succeeds, we need to explore how success is produced (Mosse, 2004). This resonates with the broader literature on co-management and governance pathways.

1.4 Research methods

This paper is based largely on analysis of published literature and Chinese policy documents, triangulated with material from interviews. Fifteen interviews were conducted among scholars and NGO practitioners with previous field experience researching or advocating on overseas Chinese dam projects. These semi-structured interviews were carried out over Wechat and Zoom between October 2020 and February 2021. The COVID-19 pandemic restricted further planned in-person interviews with Chinese practitioners.

For these, face-to-face conversations, with all their opportunities for trust-building, would have been needed. Interviewees are summarised in Table 1 below and include international (7) and Chinese (1) researchers in universities as well as an international research consultancy (1), and staff of Chinese (1) and international (4) NGOs. Within this paper we reference the interviews using codes comprising letters indicating the role (R for Researcher, S for Staff, CN for Chinese NGO, IN for International NGO, IU and CU for international or Chinese university respectively, and IC for international consultancy) and numbers indicating the sequence of interviews within each type.

We acknowledge that the COVID-19 pandemic imposed some significant limitations on this work. We were not able, for example, to investigate subtler questions about the interpretation of social and environmental safeguards in Chinese overseas hydropower operations (such as specific areas of emphasis and weakness). Therefore, at the end of the paper we reflect on priority areas for future research.

Table 1

#	INTERVIEWEE	AFFILIATION	CODE
1	Staff	Chinese NGO	SCN1
2	Staff	International NGO	SIN1
3	Staff	International NGO	SIN2
5	Researcher	British University	RIU1
5	Researcher	International consultancy	RIC1
6	Researcher	German University	RIU2
7	Staff	International NGO	SIN3
8	Staff	International NGO	SIN4
9	Researcher	British University	RIU3
10	Researcher	Chinese University	RCU1
11	Researcher	Australian University	RIU4
12	Researcher	US University	RIU5
13	Researcher	US University	RIU6
14	Researcher	US University	RIU7
15	Researcher	US University	RIU8

2

What is driving Chinese investments in overseas hydropower?

This section examines the push and pull factors that have led to rising Chinese hydropower investments in certain LDCs in recent decades. It also looks ahead to the factors that position Chinese hydropower to continue increasing its global influence.

2.1 A shifting global hydropower sector

To understand what drives Chinese investments in overseas hydropower, it is necessary first to understand the significant change in the global hydropower market over the past 50 years. The past models of "exclusively public projects, typically financed by the host country government with support from multilateral development banks (MDBs), have become less common," wrote Braeckman et al. (2020), "while public-private-partnerships (PPPs) and new forms of bilateral finance arrangements have become more prevalent." Financing for hydropower has become more complex, with MDBs increasingly favouring complicated and time-consuming PPP arrangements to enhance credit and spread their resources more widely. Western Development Finance Institutions have also had to comply with the OECD's Common Approaches on Environmental and Social Due Diligence for the past two decades, leading them to shift away from coal and socially/ecologically controversial hydropower investments in favour of solar and wind (Kong and Gallagher, 2021).

This has left a space for new 'bilateral financing' structures (see Box 2 in Section 3) – offered primarily by the Chinese but also others such as Korean and Japanese financing – to fill the vacuum (Braeckman et al., 2020; Chen X et al., 2020). This new financing is attractive for its "many benefits" (Braeckman et al., 2020), including faster paced energy development than is possible with the PPP model, easier access to finance, simplified contracting and project documentation, the ability to sidestep public sector procurement, and the use of local authorities to manage Social and Environmental Impact Assessments (SEIAs). However, this trend also has drawbacks. Easier access to finance creates the potential for unsustainable debt burden, and because such projects are agreed bilaterally, and are not required to follow international guidelines for social and environmental safeguarding,

their undesirable impacts may not be well-mitigated. Chinese actors show significant concerns about debt burden in both the literature and our interviews (Alden and Jiang, 2019; RIU4; Shen, 2020). Questions of economic, environmental and social sustainability have indeed plagued Chinese dam-building throughout the past two decades. But while China plays an outsized role, similar concerns are also relevant for other newcomers. As we will see in Section 2.3, market and political shifts within China in recent decades have helped push Chinese hydropower actors out into this new landscape of overseas hydropower finance.

2.2 An increased environmental ambition

Large dams have been integral to China's domestic energy sector and development success for most of its modern history. Hydropower is a source of national pride. China boasts not only half of all large dams worldwide, but also the largest dam in the world (the Three Gorges Dam). China's hydropower infrastructure sector initially developed from the country's urgent need for electricity to fuel rapid growth (and its constraints in conventional energy sources) (Hwang et al., 2015), but domestic hydropower has been further boosted by China's increased environmental ambition to reduce pollution and carbon emissions from coal energy production (Wilmsen et al., 2011). Hydropower features prominently in China's current reform process, both domestically and in overseas engagements. In China's 13th Five Year Plan, leaders pledged to "build a modern energy system that is clean, low-carbon, safe, and efficient, and will safeguard the country's energy security". Hydropower was listed as a key priority in an energy strategy that included giving support to wind, solar and solar thermal, as well as "building a coastal nuclear power plant belt", along with biomass, geothermal and tidal.

The discourse is one of confidence and optimism, built on decades of growing Chinese expertise in hydropower, and underpinned by an urban/industrial-biased modernisation programme that emphasises controlling nature (Wilmsen et al., 2011). The 13th Five Year Plan (NDRC, 2016) said China would "coordinate the development of hydropower with ecological conservation while giving priority to the latter". The Plan set high expectations. It framed hydropower as green, saying China would "support the development of clean energy such as wind power and hydropower". Hydropower was seen as supporting ecological security, with the Heishanxia hydropower plant on the Yellow River specifically listed among "projects to manage rivers and lakes". It was also seen as pro-poor and pro-development. The Plan stated, "We will improve water conservancy facilities in poor areas, ensure that all people living in poverty have access to safe drinking water, and support hydropower development in poor rural areas". The Plan also identified new tools for compensating people affected by dams: "In poor areas where collective land is used for developing hydropower or extracting mineral resources, we will carry out trials to compensate local residents by offering collective equity stakes. We will improve the benefit-sharing mechanisms for resource development, so as to enable poor areas to acquire a greater share in the benefits therein."

Both Chinese leaders and hydropower State Owned Enterprises (SOEs) continue to hold up hydropower as a benevolent source of clean energy for China and the world. Concerns about dams' negative social and environmental impacts are largely brushed aside as technical issues easily solved by the state. Luo et al. (2020) explain hydropower as, "a clean and renewable energy with the properties of green, sustainability, high-efficiency and operation flexibility which can effectively reduce carbon dioxide emissions and optimise energy structure". Indeed, the Chinese government lists all installed hydropower capacity in both its national emissions reductions calculations and its Nationally Determined Contributions (NDCs) within the Paris Climate Agreement (Harlan, 2020). This history of strong capacity coupled with positive environmental narratives has produced a hydropower sector that enjoys considerable power and access to resources and is thus not risk averse or easily influenced by anyone other than the state.

2.3 Saturation of the domestic hydropower sector

With most of China's rivers now fully dammed, hydropower companies have found a natural outlet in overseas energy investments. Chinese and other researchers (Gu et al., 2020) characterise hydropower resources as underdeveloped outside of China, in direct contrast to the saturated domestic market. Luo et al. (2020) describe "huge hydropower resources along BRI. The theoretical reserves and technologically developable amounts are respectively 12.57 trillion KWh per year and 4.94 trillion KWh per year, but the annual exploitation rate is only 15%. Therefore, hydropower resources along BRI countries have great potential to be developed. According to the forecast, the total energy investment of the BRI economies will reach 27 trillion US dollars by 2050". Hydropower is seen as win-win for China and the recipient countries—providing much needed power through seemingly green investments. Luo et al. (2020) commented, "investing in hydropower along BRI is of great significance to the sustainable development of Chinese enterprises abroad and can help BRI countries to improve electrification and reduce pollutant emissions as well".

These economic push factors are strengthened by Chinese government strategies explicitly supporting overseas hydropower. The surge in overseas investments in the 2000s was in fact closely linked with reforms within China's own power sector. Large utility SOEs were established and moved quickly to secure new assets (Shen, 2020). China's leadership explicitly highlights energy cooperation as a crucial priority area for China's "contribution to global sustainable energy development" (Fernandes, 2020). In China's 13th FYP for hydropower, enhancing the sector's international competitiveness and influence was made an explicit policy goal (Gosens et al., 2017; NEA, 2016; Shen, 2020). First 'Going Out' and now the BRI have systematically provided preferential treatment and incentives for Chinese companies—particularly SOEs—to invest overseas (Fam, 2017). Furthermore, hydropower is favoured over other renewable energy investments as China's main policy banks see wind and solar sectors as less bankable (Kong and Gallagher, 2021). In Laos and Cambodia alone, China so far has developed more than 20 dams, and most of them have been considered as contributions to the BRI vision (SEI, 2019). Three of the top ten largest BRI energy investments are in hydropower: the Kohala Hydel Project, Pakistan – 1,100MW; Suki Kinari Hydropower Project, Pakistan – 870MW; and the Kayan River Cascade Hydropower Project, Indonesia – 9,000MW (Bhusan, 2019).

China's solid experience in hydropower through its own domestic experience gives Chinese companies advantages in technology, labour and financing costs over international competitors (Chen, X et al., 2020). Kirchherr et al. (2016a and 2016b) observed in their fieldwork on dams in Southeast Asia that Chinese dam-builders have far fewer cost and construction-time overruns. In recent years, improved engineering standards in China have also helped to meet global demand (Fam, 2017).

2.4 A strong demand for sustainable development

On the pull side, the narratives that enabled strong hydropower development within China also spur demand in other countries. Hydropower is touted as good for development and good for climate (Chen et al., 2019), and therefore an obvious "top priority choice for energy development in most countries along BRI" (Luo et al., 2020). Increasing global awareness of, and commitment to action on, climate change has provided a favourable environment for investments in low-carbon renewable hydropower to support low-carbon development. Indeed, Chinese leaders and researchers frame their hydropower investments as tools to achieve global sustainable development goals (Baxter, 2020) and a "green BRI [as a] platform for all countries to share in a resilient, inclusive, and sustainable development mechanism, and to implement the UN 2030 Agenda for Sustainable Development" (BRI IGDC, 2020).

In a recent study on Chinese official development finance for renewable energy, Kong and Gallagher (2021) found that when countries approach China for power finance, demand focuses on hydropower and coal over solar or wind. This parallels Harlan's (2020) finding that new Chinese-led hydropower capacity is concentrated in LDC countries. Furthermore, traditional actors have failed to address LDCs' energy needs, leading to a favourable environment for Chinese hydropower investments. The result of the push and pull factors combined is that hydropower has become an increasingly important element of China's global soft power diplomacy. This occurs through both BRI investments in large dams as well as South-South cooperation on environment and climate change in smaller hydropower projects[5].

2.5 Future trends

Looking ahead, Chinese hydropower investments will likely continue to slow down compared to 2017 figures due to cheaper costs of other alternate renewables, ongoing controversy over large dams, and the fact that many of the straightforward hydropower projects worldwide have already been developed. However, while the pace may slow, China will continue to dominate global hydropower investments, spurred by ongoing energy demand in LDCs, global carbon commitments, the BRI and other political commitments favouring hydropower investments, and continued recognition of Chinese hydropower capacity and competitive advantages.

With more large dams continuing to be built in LDCs, impacts on ecosystems and livelihoods of local communities will continue into the years ahead. How much these impacts are felt largely depends on the safeguarding practices of these projects. In the following sections, we will explore how far Chinese hydropower—vehemently criticised in the early 2000s for poor dam-building practices—is improving its social and environmental safeguarding and beginning to follow international best practice. First, we look at the key actors involved in hydropower in Section 3, and then in Section 4 we ask what mechanisms underpin safeguarding policy and practice among Chinese dam-builders overseas.

5 This paper does not focus on microhydro. However, this is an important area for understanding how Chinese overseas engagements contribute to the SDGs. See, for example, discussion of three cases of microhydro in Africa in FCSSC et al. (2019).

3

Key Chinese actors in hydropower overseas

This section focuses on the key Chinese actors involved in large hydropower dam projects in LDCs, exploring their governance, models for hydropower business and investment, and practices. Figures discussed in this section should be understood as broadly-indicative trends, not precisely accurate reflections of specific projects, since they could not be verified through fieldwork.

3.1 A complex governance mix

When we talk about 'Chinese' involvement in global hydropower, it is tempting to assume there is a definable group of actors working within a set 'Chinese' strategy. However, in reality diverse actors implement Chinese overseas engagements of all types. These actors include State Owned Enterprises (SOEs), private companies and joint ventures, contractors and investors with the support of both policy banks and commercial banks, and even non-Chinese financiers. Hydropower is no exception. The social and environmental performance of Chinese overseas engagements results not from a single strategy directed from Beijing, but rather from interacting factors within a complex governance matrix. This matrix includes Chinese policies and guidelines for overseas engagements, but also local laws, unwritten local institutional and social norms, contractual obligations and financier conditions, and internal company policies (Weng and Buckley, 2016). In hydropower, contract terms have a heavy influence on a company's sense of responsibility to ensure social and environmental safeguarding (see Section 4.2).

As discussed in Section 1.2, facts and figures on who is involved and at what scale can be elusive in Chinese overseas hydropower. Media reports are unreliable at best, and often misleading. For example, after fact checking more than 100 reported Chinese hydropower projects in Africa, Bräutigam and Hwang (2017) could only verify 23 projects with Chinese participation. They concluded that engagement is often overestimated in both numbers and value. They also found that Chinese practices in overseas hydropower are often misunderstood.

3.2 State-owned hydropower companies are the dominant dam builders

The dominant Chinese hydropower companies operating in LDCs are long-standing SOEs with proven expertise in large dams. There are some private Chinese companies involved in overseas power projects as well (interviewee SCN1), but they are not very active in hydropower. The leading SOEs engaged in hydropower in LDCs are:

1. China Three Gorges Corporation, with over 20 subsidiaries including China International Water and Electric Corporation (CWE);
2. Power China, with over 70 subsidiaries including Sinohydro;
3. China Gezhouba Group Corporation (CGGC), with over 30 subsidiaries including China Energy Engineering Corporation (CEEC) better known as Energy China. CGGC is now one of the world's largest construction companies, operating in more than 35 countries; and
4. Sinomach, with China Machinery Engineering Corporation (CMEC) and more than 50 subsidiaries.

In Africa, there are four major Chinese firms involved in hydropower. All of them are SOEs (Bräutigam and Hwang, 2017). Sinohydro is responsible for about 50% of all dams built in Africa since 2000. The three others are CGGC, CMEC and CWE.

These SOEs are giants within China and many also have a long-standing presence on the ground in host countries. As such, they are able to operate as "quasi-state actors" with political clout, "able to negotiate deals directly with leaders, sometimes behind closed doors" (Shen, 2020). Indeed, Shen (2020) argued that "Chinese SOEs' preferences have a strong influence over project selection and development", citing the comparatively few investments in wind and solar, which tend to go through open auctions not favoured by SOEs.

However, our interviewees also stressed how the political nature of SOEs makes them less autonomous in some ways, particularly as overseas hydropower projects are often part of a high-level political agreement between Chinese and other leaders. "For many hydropower projects, there are top level leaders involved in an agreement, pushing for the project to proceed for political reasons. This means that the economic considerations of the investment itself will only be a second-level factor for the company. The first consideration is to meet the top leaders' expectations. This means that the considerations are often not based on the project attributes themselves. Once a particular project is understood as a political task everything else must take a backseat to make sure it happens. They do things not for the merit in themselves, but because the top leaders say they must" (interviewee RIC1). Weng and Buckley (2016) surveyed representatives of Chinese companies in Africa, including hydropower companies, and found that SOEs are generally "much more sensitive" to Chinese state influence than privately-owned enterprises (POEs).

While SOEs are both powerful and closely aligned with Chinese government policy priorities, their dam-building practices are based on many factors.

In a recent overview of the investment practices for hydropower along the BRI, with a lead author from the China Three Gorges Corporation, researchers evaluated Chinese hydropower investments in 65 BRI countries and concluded "that politics and hydropower industry factors are the key determinants of choosing the countries for conducting investment while legal, economic, social and environmental factors should also be covered" (Luo et al., 2020). The "hydropower industry factors" listed include resource and market potential as well as demand and intensity of hydropower exploitation. Political factors include government effectiveness, corruption, stability and relationship with China—reflecting "important bilateral investment policies and investment attitudes and friendship by the host government" (Luo et al., 2020).

3.3 There are many governing bodies involved

The Chinese Ministry of Commerce (MOFCOM) is the main gatekeeper for Chinese activities overseas. However, Chinese overseas hydropower projects are governed across multiple regulatory subsystems handling overseas construction contracts, investments and aid (Bräutigam and Hwang, 2017; Shen, 2020). Other key ministries and agencies influencing the nature and practices of Chinese hydropower include:

- the National Development and Reform Commission (NDRC), which reviews and approves overseas projects valued at $300 million and up, including reviewing the terms of the investment;
- the Supervision and Administration Commission of the State Council (SASAC), which approves projects of all sizes listed in 'sensitive industries', including any hydropower or cross-border water development projects;
- the Ministry of Finance (MOF), which manages the state budget that funds many overseas hydropower activities;
- the Ministry of Foreign Affairs (MOFA) and the China International Development Cooperation Agency (CIDCA), which oversee foreign aid strategy and activities, including hydropower projects that fall within this category; and
- the State Administration of Foreign Exchange (SAFE), which purchases foreign exchange with certificates received by the authorising ministries
- and, to a limited extent (see section 5.1.4), the Ministry of Ecology and the Environment, which focuses on environmental safeguarding, promoting Green BRI (see Box 5) and other policies for mitigating overseas impacts.

Many interviewees said that this complicated Chinese governance model makes it hard for Chinese companies to adopt social and environmental safeguarding norms. Interviewee RCU1 commented: "There are too many units doing different things, this creates overlapping and confusion of the management of overseas companies. There is not one entity overseeing overseas investments. This means that some do not find the need to be controlled, especially private entities".

3.4 Financiers are diverse and hold significant influence

'Chinese' dams are rarely built or financed by China alone. More often, Chinese firms collaborate in a range of ways. Some dams have Chinese finance but are built by others (China Eximbank allows countries to hold competitive tenders for projects that it finances), while others have only a fraction of Chinese finance. The Upper Atbara dam in Sudan is only 7% Chinese-financed (Bräutigam and Hwang, 2017). Others are built by Chinese contractors but fully financed by others. In Africa, for example, Bräutigam and Hwang (2017) found that by 2013 there were 17 projects "with at least some Chinese finance commitment," and an additional six large hydropower projects being built by the Chinese but with finance from other funders including governments (such as the Tekeze dam in Ethiopia), and other regional banks and funds (as in Sudan and Niger). Many Chinese-built dams engage consultant engineers and firms from Europe and elsewhere for specific tasks and generally also hire local workers (Bräutigam and Hwang, 2017). This diversity of financial and contractual arrangements makes aggregated analyses challenging. It also complicates understanding of how to effectively engage with any given 'Chinese' dam project.

Whatever the scale of their involvement, the financiers of overseas hydropower play a key role in driving project activities and developer behaviours and "can be pivotal in enabling the plant's commissioning" (Chen X et al., 2020). Multilateral agencies are increasingly being replaced by new bilateral financiers (Box 2). These actors play a range of roles, from providing export credit and supporting trade to financing hydropower projects.

Chinese hydropower also receives financing through Official Development Assistance (ODA) and some commercial banks, for example the Industrial and Commercial Bank of China (ICBC) and Bank of China (BOC), as well as from international funds, host governments and some commercial loans. However, the policy banks (CDB and CHEXIM) don't just dwarf financing by other actors. Their role goes far beyond pure finance, providing make-or-break services and funding for most overseas hydropower projects today. They can be considered active members of project teams: as Shen (2020) put it, they are "project-level decision makers". This role has increased significantly since 2017 as Chinese ministries have reduced their involvement in project approvals and sectoral planning of overseas engagements. However, as with all generalisations about trends, it is important to note that these actors' patterns of involvement vary across region and from project to project. In Africa for example, the majority of hydropower projects are financed by CHEXIM, with no financing from CBD, and only one project financed by a commercial bank (Bräutigam and Hwang, 2017).

In LDCs, the Chinese policy banks have a strong influence on the patterns of new hydropower. Indeed,

BOX 2. A 'WHO'S WHO' OF THE NEW BILATERAL HYDROPOWER FINANCIERS

Although there are bilateral financiers from South Korea (KDB and KEXIM) and Japan (JBIC and JICA), two Chinese policy banks dominate. These are China's official export credit agency, Export–Import Bank of China (CHEXIM), and the China Development Bank (CDB), which became active globally in the 2000s, focusing on coal and hydropower. Today, CDB and CHEXIM are among the largest bilateral financiers in the world—with total assets of US$2.4 trillion and US$0.6 trillion in 2018, respectively (Chen X et al., 2020). In hydropower, CHEXIM is now the primary financier of large dams in LDCs—financing, for example, most of the Chinese-involved hydropower in Africa (Bräutigam and Hwang, 2017). Looking at these two banks combined, Chen X et al. (2020) found that existing and planned generation capacity additions in hydropower between 2000 and 2018 totalled 23 GW worldwide[4]. Of this, Africa saw the most investments in hydropower, at 10,214 MW for this time period, followed by Latin America (4,808 MW), Southeast Asia (4,140 MW), South Asia (3,809 MW), and Europe (375 MW), with no projects in the Middle East. According to these same estimates, as of 2019, 88% of the two banks' hydropower capacity was in BRI countries (Chen X et al., 2020).

3 Such calculations likely have errors. Projects may be inaccurately reported, or planned and then not actualised. The figures are indicative as further verification was beyond the scope of this research.

NGO interviewee SIN1, who has a long history of finance policy advocacy in China, explained, "Banks now play a role as financiers and post regulators". Because policy banks exist to finance government policy, their lending decisions follow government priorities. This means that the financial viability of a given hydropower project is often not the primary consideration when approving funding. Many researchers have observed that, in practice, the Chinese policy banks' evaluation criteria differ from those of Western financial institutions, and often place less emphasis on a specific project's financial return than on long-term development contributions (Bräutigam, 2011; Tang, 2014; Shen, 2020). The result is that Chinese policy banks tend to be much less risk averse than other lenders. This high-risk appetite has been further strengthened by export credit insurance services provided by Sinosure for a large portion of CHEXIM and CDB's loan portfolios (Shen, 2020).

Though the key actors involved in governing overseas hydropower are known, as are their high-level responsibilities and roles, more research is needed. Specifically, the political economy of investment decisions—how actors interact and coordinate with each other to conduct sectoral planning, make decisions, and facilitate specific transactions—is still unclear, and still less is understood about how Chinese actors interact with counterparts in recipient countries. Chen X et al. (2020) found that the Chinese policy banks' overseas financing portfolios typically align with the energy resources and domestic capacity of the recipient countries, but how that result is negotiated was unclear. Shen (2020) observed that, "The black box of governance [of SEOs in Africa] is only half open to outsiders." For example, there are significant knowledge gaps in the specific mechanisms for risk management decisions, both within the insurance providers and policy banks. "In general, most of these organisations pursue rather aggressive strategies to expand their portfolios, but how such expansionary strategies are compatible with internal risk management policies is the crucial missing link for current analysis of Chinese development finance institutions" (Shen, 2020).

3.5 A complex sector: more improvised than choreographed

The notion of 'Chinese' hydropower is too simple. In reality, hydropower activities result from an improvised 'dance' of negotiations involving Chinese contractors, investors, banks and government agencies. This complex group of actors engage in diverse ways, having a range of involvement and contribution. For example, SOEs are involved in services ranging from financing, project consultancy, engineering and design, to construction of projects, power operation and maintenance (Bräutigam and Hwang, 2017). Policy banks also play a range of roles that go beyond pure finance.

In addition, this 'dance' has important roles for recipient country leaders, other financiers and contractors, as well as local communities and civil society. In bilateral negotiations, for example, the recipient government generally plays a key role as the concession awarder, "identifying the projects for development; assigning hydropower concession agreements; defining the key characteristics of the project and the principal terms of the concession (such as term, start date, transfer arrangements, royalty payments, and compliance requirements); monitoring the project implementation; and defining the risk sharing between the government and the owner" (Markannen and Braeckman, 2019).

Government agencies, development finance institutions and large SOEs tend to share a high-level goal of expanding hydropower, but this is often implemented through a negotiated process of "conflicts and power struggles over specific issues or projects" (Shen, 2020). And while high-level strategy and planning are guided by MOFCOM, MOFA and MOF, none of these ministries are charged with setting clear targets or developing a specific strategy. Decisions about specific hydropower activities are largely ad hoc and made by development banks and export credit insurance companies, without the guidance of coordinated short-term or long-term planning (Ma, 2020; Shen and Power, 2016).

Thus research on overseas Chinese hydropower must grapple not with an orchestrated single policy led by China's central government, but rather with "highly diversified institutional interests" (Shen, 2020).

4

Actors, interests and change in safeguarding practice

This section focuses on the ways that actors, including China's State Owned Enterprises and policy banks, engage with hydropower, and their different approaches to social and environmental safeguarding. First, we examine evidence that safeguarding is improving, and increasingly following international best practice (although this is not always the case). We then explore the main kinds of contracts employed (Build-Operate-Transfer, Build-Own-Operate-Transfer and Engineering, Procurement, and Construction) and their different considerations for social and environmental safeguarding. Understanding this context is crucial for exploring key pathways and leverage points that might be used to improve the social and environmental outcomes of Chinese dams in LDCs (discussed in Section 5).

4.1 Two steps forward, one step back

The literature generally agrees that Chinese dam-building has come under particular scrutiny. It has increased in scope and scale around the world over the past two decades and has been slow to conform to existing international norms (Nordensvard et al., 2015). For example, Chinese banks have adopted various internal policies, but have yet to sign on to the environmental, social, and governance (ESG) standards that have been 'hard won' with other international development banks (Gu and Carey, 2019).

However, criticism of hydropower's safeguarding is not exclusively aimed at Chinese actors. In a comparative global study that included case studies of seven Chinese and non-Chinese hydropower projects in Asia, Latin America and Africa, Jensen-Cormier (2019) finds that "hydropower corporations consistently relinquish environmental and social responsibilities".

And while some criticisms of Chinese hydropower (see Box 3) come from valid concerns that apply to the global sector, others come from misconceptions. For example, Bräutigam and Hwang (2017) found that, contrary to popular perception, resource-backed financing was not prevalent; that Chinese firms are not largely working in isolation (many engage European or other consultant engineers and firms and hire local workers); and that

China Eximbank allows countries to hold competitive tenders for projects that it finances. Brautigam and Hwang also found that Social and Environmental Impact Assessments (SEIAs) are "often required" for hydropower projects they examined in Africa.

Meanwhile, growing evidence suggests that Chinese hydropower is now improving its social and environmental safeguarding and increasingly following international best practice (Fam, 2017; Kirchherr et al., 2017; Tang and Shen, 2019; Urban et al., 2015). When Chinese SOEs first expanded overseas operations in the early 2000s, they did so largely without strong safeguarding measures. Although the Chinese government required SOEs to follow local laws in the countries where they operated, many countries had no social or environmental safeguarding requirements. Myanmar, for example, only began requiring SEIAs in 2016, and still lacks the ability to enforce them (Kirchherr et al., 2017).

Companies, banks and the Chinese Government learned the hard way (Kirchherr et al., 2017) that following local laws was not enough to keep them from reputational and financial trouble. Most interviewees in our study reflected this. RIC1 commented, "The problems with Chinese hydropower came from lack of awareness. Much of it was unintentional. Over time, project by project they are improving. They have increasing awareness of differences between the situation in China and other countries. They now are improving: they are paying attention to local issues such as local community and sustainability". Likewise, RIU1 explained, "Chinese hydropower companies were surprised to encounter conflicts with communities in host countries and to see publications criticising their practices. They were not used to this kind of flow of information. They started to be confronted with something that was completely different from what they knew from China. I find that they are quite interested in change to a certain point. They want to have a good reputation. They believe they are and want to be seen as good people doing something good for the local population, and they don't like to be criticised. It was these challenges that helped them to realise that they have to apply international standards. The fact that they weren't doing that before was more of an awareness issue".

Some suggest that this shift is a natural maturation that is to be expected as Chinese SOEs gain experience of operating overseas. Tang and Shen (2019), for example, commented that "Many Chinese companies are still new players in the international market and are learning and adapting their practices to more closely follow those of other foreign actors". They cite the fact that many SOEs have adopted their own corporate social responsibility policies "because they have learned the lesson that improved practices could eventually lead them to a more competitive position in the international market". Indeed, the Myitsone Dam in Myanmar is seen as particularly influential in improving Chinese SOEs' safeguarding standards. Safeguarding failures resulted in the company being forced to abandon the project despite investment reported in the press at over US$300m (Kirchherr, 2017). Interviewee SCN1 commented, "SOEs have tended to pay most attention to the host government because they think this is the most

BOX 3. SOME NEGATIVE IMPACTS OF CHINESE HYDROPOWER PROJECTS

Chinese energy projects have been criticised for not giving local residents fair access to energy (interviewee RIU1), for damaging livelihoods in resettled communities, and for lack of community engagement (Bosshard, 2009; Cooke et al., 2019; Gleick et al., 2012; International Rivers, 2012; Hensengerth, 2013; Hwang et al., 2015; Kleinitz and Näser, 2013; Tang and Shen, 2019; Yankson et al., 2017) as well as limited technology transfer (Chen and Landry, 2018). Interviewee RIU1 described fieldwork observations of a Chinese dam in Cambodia: "The energy produced by the dam is not available to those impacted by dam. If the locals wanted to connect, they had to invest in their own transmission lines. Those who went that route may have access then, but then still the electricity is not affordable. Also, relocation compensation was per hectare, and per tree, but did not incorporate other aspects such as the impact on wildlife and fisheries and tourism. And customary rights were not considered in the environmental impact assessments—this hit Indigenous communities especially hard".

Comparing Chinese and Australian management of the same (Bakun) dam in Malaysia, Fam (2017) found that the Chinese company "clearly failed" to fulfil socio-economic safeguarding obligations. The paper finds that Chinese and Australian enterprises involved in constructing the dam and resettling indigenous communities displayed different attitudes to social and environmental safeguards. Chinese management "resulted in adverse impacts on biodiversity, natural fisheries, and freshwater supplies," with indigenous communities "dispossessed from their land, affecting their ability to successfully reconstruct their livelihoods, with their attempts to do so causing further damage to the environment around the reservoir of the dam."

important, and they tended to ignore the communities. But this is changing because they have learned from experiences in Africa that have created problems with the local communities". In a study of the investment practices for hydropower along the BRI, led by an author from the China Three Gorges Corporation, researchers evaluated hydropower investments in 65 countries and concluded that hydropower investment outside of China is "quite different from China's domestic hydropower investment" because it is "affected by politics, laws, economy, hydropower industry as well as other aspects and involves various stakeholders" (Luo et al., 2020). As interviewee RIU1 summarised, "They were not aware of what other companies were doing and were not used to doing the western way of doing investments. They had to learn how to improve their practices from a social environmental point of view. They slowly changed because they recognised that there was a better way".

This learning led Chinese enterprises to adopt better policies, regulations and guidelines. More foreign institutions were recruited to conduct SEIA processes (Hwang et al., 2015) and SOE contractors were gradually adopting stringent guidelines and Corporate Social Responsibility policies (Power et al., 2012). As a result of these changes, Chinese SOEs' safeguarding norms have changed "significantly" in the past 15 years, with Chinese dam developers increasingly taking international norms into account, sometimes even investing in safeguards not required of them, such as in the case of resettlement compensation paid for the Myitsone Dam in Myanmar (Kirchherr et al., 2017; Fam, 2017).

In 2018 China issued a set of Regulations on Outbound Investment and Business Activities, requiring businesses to "respect local laws, cultures, and standards and to work actively to improve their performance on five specific fronts, including corporate social responsibility and resources, and environmental protection, as well as to refrain from illegal activities and financial transfers" (Gu and Carey, 2019). Tang and Shen (2019) found that the Bui Dam in Ghana "significantly improved local urban households' access to electricity and increased their ownership of some electrical appliances". This led the authors to suggest that China-financed dams have the potential to improve social welfare in sub-Saharan Africa. Looking at resettlement in particular, they found that Sinohydro used World Bank standards, resulting in a "promising" resettlement experience. Other research highlights how Chinese SOEs have sometimes transferred skills in hydropower projects (Chen and Landry, 2018). Interviewee SCN1 told us, "Most SOEs now pay more attention to their overseas investments than in their domestic, because they have understood from experience that a local community's relationship is very important and a crucial factor for their successful business activities. They usually have specific managers to deal with this issue specifically". Interviewees emphasised that in contrast to the early 2000s, Environmental Impact Assessments are standard practice among Chinese SOEs now. "In all the cases we have looked at there was an EIA prior to the dam construction", said RIU1.

However, awareness still lags on relevant Chinese guidelines and the relevance of international standards to companies' bottom lines (Weng and Buckley, 2016). Though companies may be conducting SEIAs, for example, the way these are implemented could be improved. As interviewee RIU3 explained, Chinese hydropower companies will invite professional impact companies to conduct SEIAs and manage the impact process, "but civil society is still less-involved in this process. SOEs are not used to communicating with civil society, they don't know how. And they don't see the point. They think this is the host government's problem. I think it is a communication barrier". Likewise, RIU4 asserted, "How do they handle participation, compensation, free prior informed consent, mitigation of the environmental impacts? In general, the answer is not at all". Interviewee RIU1 said, "The notion of inclusivity and multistakeholder dialogue is not something they abide by in practice yet. Most companies still follow a top-down decision-making process. This reflects the modus operandi of Chinese companies internally".

These views are also reflected in the literature. Jensen-Cormier (2019) for example, undertook case studies of both Chinese and non-Chinese dams and found that Chinese companies "lack understanding of what constitutes 'benefit sharing'" and they "have a very narrow definition for [ ] 'affected people'". International best practice includes people who have been displaced but also others who are impacted because they live upstream, downstream or in the reservoir's surroundings. The companies reviewed only included displaced people as being eligible to receive 'benefits'. For example, the compensation plan for the Lower Sesan 2 dam, northeastern Cambodia, lists only six villages as being affected, but there are widely publicised studies showing it affects more than 250 villages.

The norm in international hydropower guidance documents is that affected people must be consulted and involved in choosing how benefits are distributed and delivered. Affected people are no longer expected to endure hardships for the so-called 'greater good'. However, it is not only Chinese dam developers who fail to apply this norm. Jensen-Cormier's research (2019) found none of the plans for benefit-sharing were sustainable over the long term, and concluded that, even though plans included compensation for displaced communities, infrastructural development such as levelling land, building or improving roads and bridges,

building schools or local community centres, adding fish to reservoirs or gifting company vehicles after the construction team leaves, "If there is no buy-in from the communities to maintain schools or other community infrastructures, these are not of long-term benefit".

Chen and Landry (2018) compare two hydropower projects in Cameroon financed by China Eximbank and the World Bank, and assess decisions on project contracting, financing and implementation. They found that both projects showed similarities in their adherence to domestic laws and organisational regulations, but the degree and rigour of implementation, and the financiers' involvement in the processes, differed considerably. They comment that China Eximbank appeared silent in the overall project implementation of Memve'ele dam. Environmental impact mitigation and assessments were a condition of the loan disbursement, but the Cameroon Government was largely responsible for enforcement and monitoring. The two different financiers also put differing pressure on the construction companies to engage with labour. Overall, while financing from China was faster and less onerous than from the World Bank, Chen and Landry (2018) found that more issues arose at later stages. Another difference tends to be the level of experience. Our interviewee RIU3 said, "When you interview staff in the field, you find that most local managers are fairly young, compared to project managers I interview in Western companies who tend to be much older and more experienced. The on-site managers of Chinese companies need some proper training". Interviewee SIN4 summarised, "Norms have generally improved, but it is generally a dance of two steps forward, one step back".

4.2 How contract types affect social and environmental safeguarding

The responsibilities for social and environmental safeguarding are set out differently in different types of contracts for hydropower projects. In recent decades, there has been a general decrease in dams built through public-private partnerships and contracted through build-operate-transfer (BOT) or build-own-operate-transfer (BOOT) models. In these long-term contracts, a company is awarded a concession to build and operate the dam for a set period before it is transferred to the government. However, dams are now largely built through Engineering, Procurement, and Construction (EPC) contracts, also called turnkey contracts. Under EPC contracts, a single contractor takes responsibility for designing and constructing the dam, supplying and installing equipment, and commissioning the scheme to meet the owner's requirements (Markannen and Braeckman, 2019).

While Chinese SOEs do engage in BOT contracts, Chinese overseas dams are largely built through the EPC model, with SOEs tending to avoid open auctions and tenders, instead preferring bilateral negotiations (Shen, 2020). Bräutigam and Hwang (2017), for example, found no Chinese BOT contracts for hydropower in Africa.

This shift is important, because under BOT contracts, contractors are motivated to recuperate the costs, rather than simply deliver a dam. This usually means that the construction company takes on more responsibility for environmental and social aspects (Jensen-Cormier, 2019). However, this is not always the case. Bräutigam and Hwang (2017) note that although Sinohydro operates and manages the Kamchay hydropower plant in Cambodia, under a long-term BOT contract, it "leaves dealing with the social and environmental impacts of the dam largely to the local authorities." Some of our interviewees suggested that the contract type used reflects the available expertise. RIU1 said, "Chinese companies prefer to use EPC contracts. In countries where there isn't that expertise, this is not possible".

The companies hired through EPC contracts are not usually responsible for a dam's environmental and social impacts, for relocation planning and implementation, or for distributing or ensuring access to power produced (Hensengerth, 2013; Jensen-Cormier, 2019; Shen, 2020). In a review of hydropower company actions in four EPC and three BOT projects across Asia, Latin America and Africa, Jensen-Cormier (2019) found that none of the EPC contracted companies (CGGC, China Three Gorges, AES, Sinohydro International) accepted responsibility for social or environmental impacts of the dams, commenting that "hydropower corporations consistently relinquish environmental and social responsibilities and hide behind contract types". She gives the example of CGGC's involvement with the Neelum-Jhelum Hydroelectric Project as an EPC contractor: "CGGC used contract type to deflect responsibility [for safeguarding studies] to the proprietor and project developer, Pakistan's Water And Power Development Authority (WAPDA). CGGC explained that during meetings with WAPDA, they iterated their expectation that WAPDA properly handle issues like the EIA. CGGC did not ensure that these baseline documents were satisfactorily completed prior to site preparation and construction. Without a proper baseline study of the environmental impacts of the project, CGGC was not able to effectively implement its environmental plans and measures from the Health Safety and Environment Department."

Our interviewees similarly emphasised contract type as a key issue for the social and environmental safeguarding. RIU4 said Chinese companies prefer EPC contracts as a "more straightforward and less risky model". RCU1 and others echoed this view. SIN4

reflected that "it will take years" for Chinese contractors like Power China and Energy China[4] to shift their business model, since "As contractors, they are hired to do this work, but the actual designing and constructing the project lies with the project sponsor. If contractors do anything, they will mostly focus on CSR-style work." RIU3 explained, "One key challenge is the very stringent budgeting structure. The Chinese contractor mainly wins the contract because they are much cheaper than other companies. This means they don't have much flexibility to do anything extra." Nor do they have the incentives. For example, RIU3 pointed out, "The EPCs are not affected by the long-term climate risks, because they are just the builders".

However, although the contract type matters, our interviewees also argued that companies can no longer completely relinquish responsibilities for harm done. RIU4 commented, "Regardless of the role that the company plays, if it contributes to harm, then it contributes to harm. Can't get away with saying 'I wasn't part of that, so you can't blame me'. Even in procurement, you have to exercise due diligence. It's much harder now for companies, including Chinese companies, to say that this doesn't apply to us". RIU1 gave the example of the Kamchay dam in Cambodia, saying "the Chinese company was operating the dam and encountered many cases of flooding, [and] conflicts with people losing land due to heavy rain where the managers had to open the gate of the dam suddenly – the responsibilities are messy. There was a lot of push and pull of people putting the responsibly on each other".

Furthermore, there is some suggestion that Chinese banks may be shifting to emphasise more BOT contracts, or as an alternative, so-called "EPC+Investments+Corporation" models (Wang and Li, 2019) of financing overseas power projects. Leutert (2016) observed that Chinese infrastructure companies, including dam-builders, are shifting from contractors to stakeholders through public-private partnerships. SIN4 explained that Power China has created a subsidiary to look for greenfield projects and work with local developers to develop PPP projects: "This subsidiary is called Power China Resources and it actually puts in the equity on these projects. This shows a desire to diversify—to be both a developer and an investor for a variety of project types". It is still early days for this experimental approach, however, and SIN4 pointed out that "an internal conflict arises with such approaches because as an investor they want to keep the cost down, but as an EPC contractor they want the profit to be maximised. It is difficult to do both at once."

Similarly, although interviewee SCN1 thought that the Chinese hydropower business model is "unlikely" to shift to BOT, since EPC is generally seen as a more secure business model in the high-risk hydropower sector, they suggested that the EPC+ finance model may provide "room for improving ESG standards" as it makes the contract holder responsible for coordinating both the construction of a dam and its finance from Chinese banks. However, researcher RIU3 thought the EPC+ approach may not solve the problems of responsibility, explaining "The EPC+ project model is very rigid. There is very little room to negotiate. MOFCOM can't even influence them. The companies know they are actually the gatekeepers. We call it EPC+financing, but without the +, there would be no EPC. We need to push away from the traditional EPC+finance model, to do more project financing, so that the nature of the projects themselves will encourage changes in practices." RIU1 also observed that when Chinese banks finance projects with Chinese contractors, they don't have to respond to international standards, only the host government.

So EPC will likely continue to dominate. Interviewee RIU4 explained, "Especially with COVID-19 and the large amount invested in BRI, China won't have the capacity to invest as much as they have in the past. Contrary to what is being said. They still need to build their manufacturing base back up, so many factors domestically. Constraints to longer term higher risk investments. Cleaner: they go in, they build, and its done. Likely to be more of the model favoured going forward."

4 Energy China is a Sinohydro parent company following the 2012 consolidation of the EPC Gezhouba. Power China is important because about 50% of all hydro is owned by Power China

5

Moving forward

Our review shows that there are five possible pathways to better social and environmental safeguarding norms for Chinese overseas hydropower projects. These pathways emerged from our analysis of Chinese experiences but may be more widely applicable. They work synergistically, but with different emphasis in different situations. There is no one-size-fits-all solution.

5.1 Five pathways to better safeguarding

Our research review and interviews confirm that Chinese hydropower is starting to adopt social and environmental safeguarding norms, but also confirms the gaps and limitations. Five pathways to better safeguarding emerge and are discussed below:

1. Social mobilisation to incentivise safeguarding
2. Stronger awareness and participation within host-country governments and communities;
3. Capacity building within hydropower companies;
4. Creating clear rules and unified policy; and
5. Finance reform.

These pathways work synergistically, but variously. As interviewee RIU4 explained, "Understanding the actors matters. You need different strategies for different projects depending on the actors involved and the contract arrangements." Different pathways will apply in different projects, and though there are leverage points with all actors, some matter more than others. "You have to identify the weakest link," commented RIU4.

"If the financier is a Western bank, for example, you go after them, because they are likely to be susceptible to pressure. On the other hand, if the financier is an SOE, it is easier to get the Chinese government attention if you target the SOE. It is a case-by-case basis".

The first pathway, social mobilisation, underpins all of the others. Improving Chinese hydropower safeguarding is an iterative process of negotiations. Civil society—Chinese, local and international—all play a key role.

5.1.1 Using social mobilisation to incentivise safeguarding

Many researchers have found effective social mobilisation to be a root cause and direct pathway for international norm adoption (Chan and Pun, 2020, Fam, 2017; Kirchherr et al., 2017; Tang and Shen, 2019; Urban et al., 2015). In addition to civil society's direct engagement at the country and project level, three other areas are also supported and spurred on by social mobilisation. Civil society can work directly with Chinese hydropower SOEs to increase safeguarding awareness and capabilities. Civil society can also collaborate with government agencies in China and in host countries to produce research and improve policy. Thirdly, social mobilisation campaigning can spur development of Chinese bank capacity for socially and environmentally responsible finance. Kirchherr et al. (2017) found that "social mobilization likely has led to stricter host country and Chinese legislation, stricter rules of Chinese funders (partly as a consequence of Chinese governmental legislation) as well as cooperation with international players".

Social mobilisation is first and foremost focused within countries where the dam projects operate—both on specific projects, as well as more widely with the recipient countries to improve local governance of hydropower developments.

For example, Kirchherr et al. (2017) argued that Chinese dam developers are largely guided by rational cost-benefit calculations. They say social mobilisation can mean that the costs of not adopting safeguard norms are higher than the costs of implementing them, and that this is the main driver for recent adoption of international norms. They also pointed to three other factors—legislation, responsible finance and cooperation with international actors—as contributing to this change. These findings build on Scheumann and Hensengerth's (2014) earlier work identifying three pathways to norm adoption in evolving dam policies: social mobilisation; reputational; and foreign services (and their conditionalities).

Likewise, Yeophantong (2020) explored how civil society advocacy has compelled Chinese dam developers in the Mekong into policies that resonate more with responsible investment norms. She argued that mobilising transnational advocacy networks has been key, and finds that directing efforts at Chinese actors is as important as focusing on host country actors, saying, "Civil society actors and their partners have been at the forefront of challenging the traditional development paradigm adhered to by governments in the Mekong region, effectively casting a critical light on the adverse impacts of Chinese-backed infrastructure schemes." These have proven crucial "to sensitizing the Chinese government and its state-owned enterprises to their environmental and social responsibilities within a contested political space" (Yeophantong, 2020).

Interviewee SIN4 commented, "When Chinese companies get a message from civil society that this is not something the people want, China won't force it." RIU3 said, "Hydropower is the comparative advantage of Chinese overseas energy strategy, so it will be impossible to have them give it up. So we can only encourage them to improve. But if the risks are perceived as low, they won't change. If enough African countries / 'demand-side' stand up and demand better, then they will listen".

5.1.2 Stronger awareness and participation within host country governments and local communities

Other research has emphasised the importance of local laws and host country regulations, suggesting that Chinese leaders in Beijing have very little influence over Chinese companies abroad (Weng and Buckley, 2016). For example, Lamb and Nga Dao (2017) suggested that the important factor is domestic governance. Their case studies of Chinese dams in Myanmar, Thailand and Vietnam found that host country laws and regulations in Southeast Asian states are the key determinants of what happens on the ground, and need to be stronger and better enforced. They cautioned that "exceptionalising the role of Chinese investors overlooks foundational issues regarding local participation and environmental governance." (Fam, 2017) similarly contended that: "Instead of pushing all the responsibility onto Chinese enterprises, host governments also need ensure Chinese enterprises stick to their commitments".

The governance matrix within countries where dams operate also deserves scrutiny. Cooke et al. (2019) examined resettlement and compensation schemes for the Bakun dam in Borneo, East Malaysia. They found that the Indigenous people and land were not protected sufficiently and a "commodification process of both land and people" harmed them. Cooke et al. argued that this should "be understood as a colonisation of their land and their cultures". They were concerned less about the role of Chinese actors, and more about the power balance between the Malaysian state and its own people. They also fault the global community's legitimisation of the nation-state at the expense of Indigenous people, cautioning that "the role of Indigenous people in relation to their ancestral land on one side, and the local, national and international elites on [the] global scale, collides in the case of hydropower dams."

So, who has power over the decisions and practices at play in a given dam project? It is a two-way interaction. Civil society mobilisation underpins and highlights the importance of strong host-country governance. Chinese dam developers are pushed to adopt safeguard norms when negotiating with robust governments with strong rule of law and clear country-level energy development strategies. NGO staff in interviews described work with governments on a country-by-country basis to develop such strategies (SIN4, SCN1, SIN3). Jensen-Cormier (2019) argued that in EPC contracts, host countries especially need development assistance to better manage the contractor and to carry out "due diligence in studying legal, environmental and social obligations and in making provisions to mitigate against adverse impacts".

Host country planning departments need to advocate for climate-safe river basin development approaches from the outset. Strategic planning and capacity building support is crucial. National planning departments need to take a holistic approach to dam investment decisions, especially as freshwater resources come under increasing pressures from severe floods and droughts. Interviewee SIN1 said, "China built its dams at a time when climate risks weren't as much of a concern, and also the alternatives of wind and solar weren't as cheap. If I were a financier of a large dam today, I would want to be aware of the massive droughts and floods risks."

Better local governance could also come through greater cooperation and supportive engagements with other international actors in countries hosting Chinese hydropower. Gu and Carey (2019) cite the G7-founded

Infrastructure Consortium for Africa's call for a holistic reassessment of the continent's infrastructure needs (ICA, 2017) as an "opportunity to bring a shared trilateral platform into being … to help underpin Africa's public management capacities for the critical transformation process and the one billion more Africans to be alive in the three decades ahead".

5.1.3 Capacity building within hydropower companies

The third pathway is capacity building to increase safeguarding awareness and capabilities of Chinese hydropower companies. Earlier discussion emphasised that Chinese firms have gradually started adopting international norms. As interviewee SCN1 commented, "One of the most important ways to encourage companies to realise that environmental risks matter is to help them see that not following environmental good practice creates economic problems. Some Chinese projects have been stopped by the local communities, and this has helped them learn that environmental practices are very important". Interviewee SIN4 said, "We have to ask, how do we maximise the risks to the companies? The answer is in challenging their social license to operate".

Chinese hydropower company safeguarding policies and mechanisms are not yet strong enough to ensure accountability to their own frameworks and to international guidelines they agree to follow, and measures risk becoming weaker and more vague over time (Jensen-Cormier, 2019; Nordensvard et al., 2015). Jensen-Cormier's 2019 case study comparison for International Rivers noted that when Sinohydro Resources drafted its Policy Framework for Sustainable Development along with an Environmental Policy Statement in 2012, the measures were "quite ambitious", adopting all of the World Bank's safeguard policies, committing to open dialogues with civil society, respecting "no-go" zones, and creating complaint mechanisms. However, only two years later these commitments were revoked, "stating that such objectives were aspirational, and that local laws and regulations form the company's basic safeguard".

Company policy, then, is not enough. Indeed, interviewees were generally sceptical that policies result in real behavioural change. "Policy matters, but it depends on the scale, and also the nature of the policy," explained RIU4. Explaining their work on gender and inclusivity policies, RIU4 said, "Almost no Chinese SOEs make mention of gender. Rather,

BOX 4. CHINESE HYDROPOWER SOEs LACK TRANSPARENCY—BUT THE PROBLEM IS NOT UNIQUELY CHINESE

All our interviewees raised transparency as a key issue. China's hydropower sector is dominated by SOEs, and these particularly lack transparency. Interviewee RIU4 said, "Within the companies themselves people don't have a good idea of what is going on. [It] can be a very top-down decision-making process".

And while Jensen-Cormier (2019) recognised PowerChina Resources, China Three Gorges and Sinohydro International for sharing documents and providing "constructive and informative" support for her case study comparison of Chinese and non-Chinese dams, she noted "limitations remain". She points to the role of contract type (discussed in Section 4.2), saying "Depending on the nature of the contract, companies share information more or less transparently. For instance, PowerChina Resources has been more transparent in sharing information about the Nam Ou Cascade for which it has a Build-Operate-Transfer (BOT) contract than it has been for the Don Sahong Dam, which is also in Laos, and for which it is the main builder under an EPC contract".

Of course, transparency issues go beyond sharing information with researchers. A study by Shen (2020) found Chinese overseas activities "discourage trade union involvement", lead to a "higher perception of corruption among local residents near the project sites", and are plagued by "lack of transparent rules and institutions on debt evaluation, relief, and management systems".

However, poor transparency is not unique to Chinese hydropower companies. Interviewee RIU1 said, "If you look at other countries investing, they also follow the same practices. They are not transparent. They skirt responsibility. One Italian hydro company I tried to contact for my research was impossible. It was actually easier to get in touch with the Chinese". Interviewee RIU4 commented, "Chinese companies might be a little bit worse, but they aren't that different. If you look at what the Australian companies are doing in Cambodia or elsewhere, there isn't that much transparency. Companies are willing to share data in so far as it doesn't harm their competitive advantage. The host country is responsible there to enter into more transparent contracts. But the government [is] trying to get a back door deal in Cambodia, so there is a lot of guesswork involved. Many NGOs only hear about a project after it has already been approved. This may be more indicative of the sector than anything specific to Chinese company behaviour."

there is mention of 'women's day' so they can tick the boxes. But when it comes to the actual constructing or financing of projects, gender and inclusivity are missing". In this sense, interviewees suggested that it can be difficult to determine whether environmental and social policies are being meaningfully implemented "or if it is just cosmetic" (RIU4). For example, Sinohydro issued a public statement on safeguarding, but, explained RIU4, "After the guidelines were produced, it didn't really result in changes. They do set a precedent, but they still exist more at the rhetorical level than the policy implementation level." Policy signals intentions and opportunities—and this matters in so far as it signals those leverage points—but adoption of policies is sometimes performative, rather than indicating meaningful change in practice.

In this space then, there is room for direct improvement through hydropower SOEs gaining capacity to understand and apply principles of Free Prior Informed Consent and benefit sharing, and to meaningfully mitigate ecological impacts. One route to this would be greater transparency (see Box 4). But improved safeguarding requires more than just NGO advocacy pressure—companies need 'demand' from host countries, from Chinese government and from financiers. This will come partly through policy changes by these actors, and partly through shifts in contracts. As discussed earlier (Section 4.2), the type of contract has a large impact on a dam developer's responsibility for social and environmental safeguarding, and long-term BOT and BOOT contracts offer more opportunities to shift business practices (SIN4). Over time, if responsible Chinese hydropower companies develop enforceable standards of their own, that will be a more durable solution than relying on country standards, which are often weak in terms of both content and enforcement.

5.1.4 Creating clear rules and unified policy

The fourth pathway is creating clear rules to guide coherent Chinese governance and policy for overseas hydropower. Because the key actors are SOEs and policy banks closely linked with government, Chinese overseas hydropower is more closely tied with government than its counterparts in many other countries. As interviewee SIN1 summarised, "Compared with other countries, government policy still dominates the direction of travel for big hydro in China. Many dam projects are linked with BRI or an aid package". In general, the sector enjoys strong support from the government.

These close ties mean that advocacy directed at Chinese leaders can be one effective pathway to better adoption of safeguarding norms in the sector. Indeed, this has been a central focus of much research, critique and advocacy on Chinese overseas hydropower over the past two decades. The prevailing assumption has been that if Chinese leaders tell dam developers to implement safeguards, they will. Policy advocacy has therefore focused on improving and strengthening the messaging from Chinese government, and Chinese leaders have often pointed defensively to the more than 35 guidelines and policy documents on overseas engagements issued since 2000.

BOX 5. A GREEN BRI AND A CLASSIFICATION SYSTEM FOR ENVIRONMENTAL RISK

Recent Chinese policy has been to promote a Green BRI. In a project led jointly by the WRI and MEE, the BRI International Green Development Coalition (BRI IGDC) has begun formulating guidelines on assessing and classifying BRI projects according to 'green' criteria. The intention is to prevent ecological and environmental risks, establish risk prevention and management systems, provide green solutions for BRI projects, and support decision-making for stakeholders. A recent report (BRI IGDC, 2020) provides: "in-depth analysis of environmental policies, safeguard measures and practices of governments, financial institutions and NGOs around the world". Based on best practices, the report recommends a classification system for BRI projects, much like that required by the Equator Principles. Projects are to be divided into three categories based on positive and negative impacts:

- Red projects—projects at risk of causing 'significant and irreversible' environmental damage or major negative environmental impacts in one or more aspect of climate change mitigation, pollution prevention, and biodiversity protection, and thus requiring stricter supervision and regulation;
- Yellow projects—environmentally neutral projects with moderate impacts;
- Green projects—encouraged projects.

Hydropower projects are automatically placed in the red category, alongside coal-fired power, petrochemical, and mining and metal smelting projects (BRI IGDC, 2020). Project classification can, however, be adjusted (upgraded or downgraded), so long as "the project adopts sufficient environmental management measures to mitigate negative environmental impact and promote the realization of environmental objectives".

While the various guidelines, including on a Green BRI (see Box 5), have provided a platform for meaningful dialogue, and an important context for continued adoption of safeguard norms, they are not an end in and of themselves. A narrow focus on Chinese guidelines and policy documents misses the fact that Chinese government influence over SOEs is a negotiated process. The majority of dam projects are done by SOEs who have strong lobbying power to influence both the local governments hosting the projects and the Chinese government. Xu (2014, quoted in Shen, 2020) questioned the autonomy of Chinese ministries and development finance institutions in making policy or loan decisions, noting "the strength of state control over the policy agenda is dubious, as SOEs' behaviour often contradicts the Chinese Government's promises and articulated strategy".

Furthermore, government agencies are jostling for influence over the direction of Chinese hydropower development. For example, MOFCOM focuses on promoting investments while Ministry of Ecology and the Environment focuses on environmental safeguarding, promoting Green BRI and other policies for mitigating overseas impacts. Interviewee RIU3 says, "MEE can potentially be the game changer, with their promotion of green BRI, but they don't actually have any approval rights for Chinese overseas activities, nor do they have any experience with actual projects—domestic or overseas. MEE wants to play a role, but the vested interests are very strong. MEE is a ministry existing on fines rather than approvals. MOFCOM gives the incentives to the companies. There are no leverage points for MEE". Likewise, the National Development and Reform Commission tends to align with the high-level narratives promoted by Xi Jinping, but its role is in flux. And the Ministry of Finance also has its own set of priorities and influences. In practice, the governance of Chinese overseas hydropower is quite a fragmented system (see, for example, Jones and Zeng 2019 on BRI, Zhang 2019 with case studies from Europe, and Shen and Power 2016 with case studies from Africa). Interviewee RIU3 reflected on Chinese policy advocacy: "Sometimes you see a vacuum, an opening for change, but it can be hard to know whether this is a rent seeking opportunity or a danger zone that no one will touch".

The result is that Chinese hydropower and other overseas actors often do not align with policy signals from the Central Government. The Green BRI is a case in point. "At the moment," commented interviewee RIU3, "I don't see major impacts from Green BRI within the existing Chinese companies and financiers. Ideologically they are picking up the language, but there are no strict rules that projects can't be financed, so the problems continue. There may be some changes from the top down in the next five-year plan".

Within this negotiated Chinese governance context, it would clearly improve safeguarding practice if dam developers and financiers got clearer, more coordinated signals from the government. "The World Bank has very strict rules. But in China there is no such rulebook, or where there is a rulebook, it is too abstract. There are no general or uniform rules, so it is left up to the implementor to interpret appropriate action. This means that the outcomes are not stable or uniform", commented interviewee RIC1. "If the government doesn't know how to set a target for hydro," suggested interviewee RIU3, "they should at least set a target for all financial institutions, such as doing portfolios for non-hydro renewables, and differentiations for interest rates and insurance premiums, to change their incentive structures. For example, for Power China they could say, you can only fund x% hydro, etc. This could be done under the banner of green BRI." Weng and Buckley (2016) similarly observed that Chinese company representatives operating in Africa don't feel they have clear, targeted and applicable rules regarding environmental and social safeguards.

5.1.5 Finance reform

The fifth pathway for improving social and environmental safeguarding is finance reform. As with SOEs (Box 4), poor transparency remains a key stumbling block. Since investment figures are not consistently disclosed, it is difficult to have a clear understanding of bank behaviour. And without that clear understanding, it is difficult to know the pathway to improving social and environmental safeguarding norms for finance institutions. BRI projects often suffer from a lack of transparency and public participation, which may damage public acceptance and oversight (Aung et al., 2019 and interviewee RIU2). Neuweg (2018) commented, "If China were to increase transparency and disclosure of their investments, the opportunities to learn from them could help improve international understanding of the impact infrastructure investments have in developing countries. With a more open sharing of data there could also be opportunities and willingness to explore collaboration between the West and China". Achieving global sustainable development goals will require a "major structural transformation" observe Chen et al. (2020), and the emerging bilateral funders "have pivotal roles to play in catalyzing such a transition, given their policy-oriented missions".

Braeckman et al. (2020), for example, say project finance must not exploit host countries' lack of capacity, if LDCs are to gain economic and developmental benefits from hydropower. Lower Income Countries (LICs) and Lower- Middle Income Countries (L-MICs), they say, need adequate support to access project finance that can address their needs without compromising progress towards a zero carbon future.

Interviewee SCN1 (a staff member of a Chinese NGO) asserted, "The financial sector is the most important sector to influence". This includes the need to influence disclosure and transparency on finance patterns, improvements to bank policy, and innovative finance mechanisms—including green credit and trilateral finance—to support safeguarding and improve risk assessment and management. Financial institutions have a key role to play in pushing Chinese hydropower companies to adopt norms. Jiang (2019) notes that while it is hard for investors to understand the abstract concepts, it is easy to follow practices that could bring benefits: "They need confidence in business cases that could satisfy high standards, business sustainability, and public interests".

A Gap Between Paper And Practice

In response to the trend towards EPC contracts, which have little to no contractual safeguarding requirements (see Section 4.2), Chinese policy banks have begun to adopt international standards for environmental and social impact assessment (Bräutigam and Hwang, 2017; Bosshard, 2010; Fam, 2017; Tang and Shen, 2019), but "it is still unclear what rules or standards should be deployed to achieve these goals, and who should be responsible for implementing them, and held accountable if they are not met" (Shen, 2020). Interviewees agreed with scepticism in the literature. Interviewee RCU1 noted that "there is always a gap between principles and enforcement". RIU1 said, "I can see that it would be easy for Chinese banks to put in place rules for funding [but] there is a gap between the standards on paper and implementation in practice. Green finance could play a role in closing that gap. Finance institutions do tend to have regulations. But in practice these rules are quite flexible and up for interpretation. Strict standards should be adopted over time".

Chinese banks have begun trialling green credit policies similar to the Equator Principles, following publication of the Green Credit Guidelines in 2012 by China's Banking Regulatory Commission (Tang and Shen, 2019). For example, ICBC (the Industrial and Commercial Bank of China) have developed an environmental index to assess against environmental, social and governance standards. However, interviewee SCN1 said, "Most banks in China don't have a professional environment department, so we still have a long way to go. Capacity building and policy engagement is very important". In practice, green credit policies have "produced mixed results" (International Rivers, 2012) as they lack enforcement mechanisms and there are no grievance processes in place (IDI, 2019). For example, both CHEXIM and SINOSURE have rules declaring that they should discontinue their loans or reject insurance claims if Chinese contractors have violated local environmental laws. However, the close relations between these organisations as a policy community means that in reality triggering such clauses can be highly challenging (Shen, 2020).

Poor Policies: A Potential Problem

This issue can go beyond a simple gap between policies and practice, with one interviewee suggesting that the policies themselves can actually hinder real progress. RIU4 said, "People pin their hopes on the financial instruments, because it seems like a concrete mechanism and because money talks. People think, 'If we can get a financial instrument to control impacts, that would speak volumes compared to just the guidelines.' But there was a lot of hopefulness on this even ten years ago. The state of play does not seem to have changed much. If you look at the Asian Development Bank and World Bank projects, the social and environmental problems that have resulted, the danger is that if you push for something formalised, but if it is inherently flawed, that closes opportunities to even challenge this. Building that façade of compliance is a more dangerous and worrying prospect. [I'm] not sure whether financial regulations will make [the] Chinese more self-righteous or more responsible. Looking at the track record of the World Bank, it doesn't give too much confidence".

Two potential ways around this challenge emerge from this research: 1) better risk assessment, which would create the potential for insurance companies to act in an additional gatekeeping role; and 2) collaboration with other financiers through trilateral finance mechanisms.

The Role For Risk Assessments

In their report on greening BRI projects, for example, IGDC authors observe that despite great potential to develop energy resources, "the environmental and climatic conditions of BRI participating countries are varied and are often of a high level of environmental and climatic sensitivity" (BRI IGDC, 2020). They conclude that "risk identification and prevention mechanisms of overseas investment must be improved; the application and promotion of green investment and financing tools are insufficient; and eco-environmental risk management of many overseas investment projects needs enhancement". As interviewee RIU3 explained, "The climate change implications are being taken up gradually by scientists in China, but the financial institutions are still not convinced. We need to try to communicate in a risk management perspective, to help them fully understand the short-term risks". Chinese and other insurance companies could play a role in this push for norm adoption by finance institutions.

Better risk assessments that include longer term climate risk could spur design changes, as well as informing finance and insurance decisions, and hence lead to better safeguarding. Indeed, interviewee SIN1 suggested that Sinosure is playing a "more important role" because the risks of hydropower are increasing with climate change. "Financiers are nervously looking

to them: if they don't underwrite the risks, then the projects won't go forward." RIU3 commented that insurance companies could differentiate interest rates and insurance premiums, to change their incentive structures, but added, "If they want to do that, they need to be pushed by someone. The question is who? Who should be doing this?". Interviewee SIN4 pointed out that COVID-19 "has helped to accelerate the vulnerabilities of the financial modelling. The uncertainty of the long-time lines and the heavy subsidies required for hydropower in particular have caused pause. If finance is moving away from these projects, local investors are also less willing to collaborate".

Trilateral Cooperation

Trilateral cooperation between Chinese and international financiers is another avenue for influence. Interviewee SCN1 relayed discussions with Chinese hydropower companies, highlighting examples of projects funded by the International Finance Corporation (IFC) and the World Bank: "In these circumstances, the Chinese are usually the EPC, not the investors, so they do whatever the funders ask them to do. Their work is closely aligned with the policies of these funders, adopting very high standards of environmental regulations." There seems to be particular hope in emerging examples of trilateral cooperation financing for BRI and other Chinese investments overseas, including in hydropower. In such cases, SOEs invest together with IFC and the World Bank. Here too they align with international norms. SCN1 said, "For these kinds of projects, they follow environmentally friendly practices, and usually do very thorough environmental impact assessments".

Commercial Banks As A Leverage Point

In terms of strategy, there may be more room for influencing commercial banks than policy banks initially – with this picked up in time by the policy banks. Interviewee SIN4 advised, "Go for the commercial banks because the policy banks will not come out to take a stand independently. That will only happen when the government signals. Commercial banks will be more responsive to financial pressures and other risk factors, and they have more reputational gains at stake if they are being shamed for investing in a given project by civil society".

Braeckman et al. (2020) also see commercial banks as an opportunity to drive change and tackle the challenge of getting power to local people near hydropower schemes "without crippling the host country government's finances". They call for research into attitudes to risk within the private finance sector, with the aim of making it faster and simpler for LIC and L-MIC hydropower projects to put Public Private Partnership financing in place. They also urge better understanding of how hydropower might fit with intermittent renewables, and research into green bonds and finance initiatives that might extend financing opportunities.

5.2 Actor-specific Leverage Points and Further Research

Influencing practice in China's overseas hydropower safeguarding is challenging. The political economy of change is much more complex than was the case when multilateral development banks were the dominant actors. But despite the complexity of governance arrangements, various actors can target their efforts to make the best use of leverage points:

- Armed with a better understanding of what drives individual hydropower projects, civil society actors can tailor advocacy strategies depending on the actors involved and the contract arrangements.
- International development actors can push for more agreement in the hydropower sector for global safeguarding norms. They can engage Chinese actors in trilateral projects where stronger safeguarding is the norm. They can also support host countries to build their capacity to manage contractors more effectively and ensure due diligence on environmental and social risks.
- On the global level, national and local governments, civil society and researchers can continue to engage in strengthening rules and regulations and monitor the performance of Chinese actors, including in the key area of transparency.

In addition to applying these leverage points for continuing progress, further research would help to deepen understanding of the pathways to change. We suggest three areas of focus.

First, it would be helpful to develop a much stronger evidence base on which areas of social and environmental safeguarding practice in Chinese overseas hydropower engagement need particular attention. Our review of evidence suggests that understanding and practice may be particularly weak in relation to the gender dimensions of social impact analysis and safeguarding, for example. Also, approaches at the more innovative end of practice (such as the 'benefit sharing' model) are weakly developed.

Second, since transparency is often a weak spot in Chinese overseas hydropower operations, research that throws more light on scale, finance, management systems and operational practice in general is still extremely important.

Third, it would be valuable to research how enhanced attention to climate risk (a hugely important technical issue in most large hydropower projects) may be encouraging more thorough risk assessment practices across the full range of social and environmental risk.

References

Alden, C and Jiang, L (2019) Brave new world: Debt, industrialization and security in China–Africa relations. *International Affairs* 95(3) 641-657.

Aung, TS, Shengji, L and Condon, S (2019) Evaluation of the environmental impact assessment (EIA) of Chinese EIA in Myanmar: Myitsone Dam, the Lappadaung Copper Mine and the Sino-Myanmar oil and gas pipelines. *Impact Assessment and Project Appraisal* 37(1) 71-85. https://www.themimu.info/sites/themimu.info/files/documents/Report_Evaluation_of_the_environmental_impact_assessment_EIA_of_Chinese_EIA_in_Myanmar.pdf

Baxter, T, Who gets to be green on the BRI and on whose terms? https://pandapawdragonclaw.blog/2020/11/23/who-gets-to-be-green-on-the-bri-and-on-whose-terms/

Berkhout, F, Leach, M and Scoones, I (2003) Negotiating environmental change: New perspectives from social science. Edward Elgar, Cheltenham, UK and Northampton, MA.

Bhusan, D, Biggest power plants under China's Belt and Road Initiative (BRI). https://www.power-technology.com/features/biggest-power-plants-chinas-belt-road-initiative/

Bosshard, P (2009) China dams the world. *World Policy Journal* 26(4) 43–51. DOI: 10.1162/ wopj.2010.26.4.43

Bosshard, P (2010) China's overseas dam builders: from rogue players to responsible actors? *The Asia Pacific Journal* 8(17) 2.

Braeckman, P, Markannen, S and Souvannaseng, P, Mapping the evolving complexity of large hydropower project finance in low and lower-middle income countries. http://www.aimspress.com/fileOther/PDF/GF/GF-02-02-009.pdf sanna.markkanen@cisl.cam.ac.uk

Bräutigam, D (2011) Aid "with Chinese characteristics": Chinese foreign aid and development finance meet the OECD–DAC aid regime. *Journal of International Development* 23(5) 752–764.

Bräutigam, D and Hwang, J (2017) Great walls over African rivers: Chinese engagement in African hydropower projects. *Development Policy Review* 37(3) 313-330. https://onlinelibrary.wiley.com/doi/abs/10.1111/dpr.12350

BRI IGDC, Green Development Guidance for BRI Projects Baseline Study Report. BRI International Green Development Coalition 2020 Policy Study Series. http://en.brigc.net/Reports/Report_Download/202012/P020201201717466274510.pdf

Chan, D and Pun, N (2020) Renegotiating belt and road cooperation: Social resistance in a Sino–Myanmar copper mine. *Third World Quarterly* 41. DOI: 10.1080/01436597.2020.1807928.

Chen, H et al., Greener power projects for the Belt & Road Initiative (BRI). https://www.nrdc.org/experts/han-chen/greener-power-projects-belt-road-initiative-bri

Chen, X, Gallagher, KP and Mauzerall, DL (2020) Chinese overseas development financing of electric power generation: A comparative analysis. *One Earth* 3(4) 491-503. DOI: 10.1016/j.oneear.2020.09.015

Chen, Y and Landry, D (2018) Capturing the rains: Comparing Chinese and World Bank hydropower projects in Cameroon and pathways for South-South and North South technology transfer. *Energy Policy* 115 561-571.

Chen, Y and Landry, D (2016) Capturing the rains: A study of Chinese and World Bank-financed hydropower projects in Cameroon. SAIS CARI Working Paper. http://observatoire-europe-afrique-2020.org/wp-content/uploads/2016/11/Minutes-3rd-CARI-Conference-John-Hopkins-13th-October-2016.pdf

Cooke, FM, Nordensvard, J, bin Saat, G, Siciliano, G and Urban, F (2019) The limits of social protection: The case of hydropower dams and Indigenous Peoples' Land. *Asia & the Pacific Policy Studies* 4 437-450. www.researchgate.net/publication/331149575_The_Limits_of_Social_Protection_The_Case_of_Hydropower_Dams_and_Indigenous_Peoples%27_Land

Fam, SD (2017) China came, China built, China left?: The Sarawakian experience with Chinese dam building. *Journal of Current Chinese Affairs* 46(3) 119–158. https://journals.sagepub.com/doi/abs/10.1177/186810261704600305

FCSSC, CISSCA and PST, China's Contribution to South-South Cooperation: Cases and implications. Report by the Finance Center for South-South Cooperation (FCSSC), China Institute for South-South Cooperation in Agriculture (CISSCA) and Phoenix Satellite Television (PST), with support from the South-South Education Foundation and the United Nations

Office for South-South Cooperation. https://drive.google.com/file/d/1nPV2pLqFHP36SxlZhKmUnC-PhQlQCQJA/view

Fernandes, C (2020) A cooperação energética China-África: Das energias fósseis às energias «limpas». *Relações Internacionais* (R: I) (65) 27-41. http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S1645-91992020000100003

Gallagher, KP (2018) China's global energy finance: Poised to lead. *Energy Research & Social Science* 35 15-16. DOI: 10.1016/j.erss.2018.01.001

Gerlak, AK, Saguier, M, Mills-Novoa, M, Fearnside, PM and Albrecht, TR (2020) Dams, Chinese investments, and EIAs: A race to the bottom in South America? *Ambio* 49(1) 156-164.

Gleick, PH, Allen, L, Christian-Smith, J, Cohen, MJ, Cooley, H, Heberger, M and Schulte, P (2012) The World's Water Volume 7: The Biennial Report on Freshwater Resources. Island Press.

Gosens, J, Kåberger, T and Wang, Y (2017) China's next renewable energy revolution: Goals and mechanisms in the 13th Five Year Plan for energy. *Energy Science & Engineering* 5(3) 141–155. DOI: 10.1002/ese3.161

Gu, J and Carey, R (2019) China's development finance and African infrastructure development, in Oqubay, A and Lin, JY (eds). *China–Africa and an Economic Transformation*. Oxford University Press, Oxford. DOI: 10.1093/oso/9780198830504.003.0008.

Gu, Y, Peng, D, Zhao, K and Fan, C (2020) Study on exploitation status and potential of hydropower in countries along the Belt and Road. *Journal of Hydroelectric Engineering* 39 11–21.

Harlan, T (2020) Green development or greenwashing? A political ecology perspective on China's green Belt and Road. *Eurasian Geography and Economics* 62. DOI: 10.1080/15387216.2020.1795700.

Hensengerth, O (2013) Chinese hydropower companies and environmental norms in countries of the global South: The involvement of Sinohydro in Ghana's Bui Dam. *Environment, Development and Sustainability* 15(2) 285-300. https://link.springer.com/article/10.1007/s10668-012-9410-4#auth-1

Hu, F, Zhang, X, Hu, M and Cook, DL (2019) Chinese enterprises' investment in infrastructure construction in Cambodia. *Asian Perspective* 43 177-207. DOI: 10.1353/apr.2019.0006. http://210.101.116.28/W_files/ksi2/02107721_pv.pdf

Hwang, J, Brautigam, D and Wang, N (2015) Chinese engagement in hydropower infrastructure in Sub-Saharan Africa. Working Paper No. 2015/1. China Africa Research Initiative, School of Advanced International Studies, Johns Hopkins University, Washington, DC. www.sais-cari.org/s/CARI-WP-01_Hydropower.pdf

ICA (2017) Toward Smart and Integrated Infrastructure for Africa: An Agenda for Digitilisation, Decarbonisation and Mobility. www.icafrica.org/fileadmin/documents/Annual_Meeting/2017/2017_Annual_Meeting_-_background_paper_FULL.pdf

IDI (2019) Safeguarding People and the Environment in Chinese Investments. A Reference Guide for Advocates, Second Edition. Inclusive Development International. www.inclusivedevelopment.net/wp-content/uploads/2020/01/2019_idi_china-safeguards-guide-final.pdf

International Rivers (2012) The New Great Walls: A guide to China's Overseas Dam Industry (2nd Edition). https://archive.internationalrivers.org/resources/the-new-great-walls-a-guide-to-china%E2%80%99s-overseas-dam-industry-3962

Jalles d'Orey, MA and Prizzon, A (2017) An 'age of choice' for infrastructure financing in sub-Saharan Africa? Evidence from Ethiopia and Kenya. ODI Report. https://cdn.odi.org/media/documents/11456.pdf

Jensen-Cormier, S, Watered down: How do big hydropower companies adhere to social and environmental policies and best practices. https://3waryu2g9363hdvii1ci666p-wpengine.netdna-ssl.com/wp-content/uploads/sites/86/2020/10/watered-down-full-report-english-compressed.pdf

Jiang, X (2019) Green Belt and Road Initiative environmental and social standards: Will Chinese companies conform? *IDS Bulletin* 50(4). https://bulletin.ids.ac.uk/index.php/idsbo/article/view/3062

Kirchherr, J, Matthews, N, Charles, KJ and Walton, MJ (2017) "Learning it the Hard Way": Social safeguard norms in Chinese-led dam projects in Myanmar, Laos and Cambodia. *Energy Policy* 102 529-539. DOI: 10.1016/j.enpol.2016.12.058

Kirchherr, J, Charles, KJ and Walton, MJ (2016a) The interplay of activists and dam developers: The case of Myanmar's mega-dams. *International Journal of Water Resources Development* 33. DOI: 10.1080/07900627.2016.1179176.

Kirchherr, J, Disselhoff, T and Charles, K (2016b) Safeguards, financing, and employment in Chinese infrastructure projects in Africa: The case of Ghana's Bui Dam. *Waterlines* 35(1) 37–58. https://www.jstor.org/stable/26600752?seq=1

Kleinitz, C and Näser, C (2013) Archaeology, development and conflict: A case study from the African continent. *Archaeologies* 9 162–191. DOI: 10.1007/s11759-013-9227-2

Kong, B and Gallagher, KP (2021) Inadequate demand

and reluctant supply: The limits of Chinese official development finance for foreign renewable power. *Energy Research & Social Science* 71 101838.

Lamb, V and Dao, N (2017) Perceptions and practices of investment: China's hydropower investments in Vietnam and Myanmar. *Canadian Journal of Development Studies / Revue canadienne d'études du développement* 38. DOI: 10.1080/02255189.2017.1298519.

Leutert, W (2016) From Contractors to Stakeholders? Chinese Companies and Public-Private Partnerships in Overseas Infrastructure Development. Working Paper. Unpublished. Presentation video www.sais-cari.org/event-details/2016/8/26/2016-conference-chinese-infrastructure-in-africa; and conference minutes Minutes-3rd-CARI-Conference-John-Hopkins-13th-October-2016.pdf (observatoire-europe-afrique-2030.org)

Long, N and Long, A (1992) Battlefields of knowledge: The interlocking of theory and practice in social research and development. Routledge, London and New York.

Luo, Q, Fang, G, Ye, J, Yan, M and Lu, C (2020) Country evaluation for China's hydropower investment in the Belt and Road Initiative Nations. *Sustainability* 12(19) 8281. https://www.mdpi.com/2071-1050/12/19/8281/pdf

Ma, TJ, How one think tank represents evolving thinking on BRI infrastructure investments. https://pandapawdragonclaw.blog/2020/10/19/how-one-think-tank-represents-evolving-thinking-on-bri-infrastructure-investments/

Ma, X and Gallagher, KP, Losing steam: China's overseas development finance in global energy. https://pandapawdragonclaw.blog/2020/05/24/losing-steam-chinas-overseas-development-finance-in-global-energy/

Markannen, S and Braeckman, P (2019) Financing sustainable hydropower projects in emerging markets: An introduction to concepts and terminology. Cambridge Institute for Sustainability Leadership working paper, SSRN 3538207. https://www.cisl.cam.ac.uk/resources/publication-pdfs/Financing-sustainable-hydropower-projects-concepts-terminology

Medinilla, PA and Ronceray, M (2019) Entre coopération et contestation: Les intérêts maliens dans la gestion des fleuves transfrontaliers du Sahel, Document De Réflexion no 247. www.ecdpm.org/dp247

Mosse, D (2004) Is good policy unimplementable? Reflections on the ethnography of aid policy and practice. *Development and Change* 35(4) 639-671.

Mosse, D (2005) Cultivating development: An ethnography of aid policy and practice. Pluto Press, London and Ann Arbor, MI.

NDRC (2016) The 13th Five-Year Plan For Economic And Social Development Of The People's Republic Of China (2016-2020). National Development and Reform Commission.

Nedopil, C (2021) China's Investments in the Belt and Road Initiative (BRI) in 2020, Green BRI Center, International Institute of Green Finance (IIGF), Beijing. https://green-bri.org/china-belt-and-road-initiative-bri-investment-report-2020/

Neuweg, I, What types of energy does China finance with its development aid? https://www.lse.ac.uk/GranthamInstitute/news/china-energy-development-aid/

Nordensvard, J, Urban, F and Mang, G (2015) Social innovation and Chinese overseas hydropower dams: The nexus of national social policy and corporate social responsibility. *Sustainable Development* 23(4) 245-256. https://eprints.soas.ac.uk/20620/1/Social%20innovation%20CSR%20Chinese%20hydropower.pdf

Ocko, IB and Hamburg, SP (2019) Climate impacts of hydropower: Enormous differences among facilities and over time. *Environmental Science & Technology* 53(23) 14070-14082. https://pubs.acs.org/doi/abs/10.1021/acs.est.9b05083

Power, M, Mohan, G and Tan-Mullins, M (2012) The environmental implications of China's rise in Africa. In: *China's Resource Diplomacy in Africa* (pp. 191–220). Palgrave Macmillan, London.

Scheumann, W and Hensengerth, O (2014) Dams and norms: Current practices and the state of the debate. In *Evolution of Dam Policies: Evidence from the big hydropower states*. Springer, Berlin Heidelberg, 1–12.

Hong, CS and Johnson, O (2018) Mapping potential climate and development impacts of China's Belt and Road Initiative: A participatory approach. SEI. www.sei.org/wp-content/uploads/2018/10/china-belt-and-road-initiative-hong-johnson.pdf

Shen, W and Power, M (2016) Africa and the export of China's clean energy revolution, *Third World Quarterly* 38(3) 678-697. DOI: 10.1080/01436597.2016.1199262.

Shen, W (2020) China's role in Africa's energy transition: A critical review of its intensity, institutions, and impacts. *Energy Research & Social Science* 68 101578. https://www.sciencedirect.com/science/article/pii/S2214629620301547 PDF in folder https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/15138/SoK%20-%20China%20role%20for%20Africa%20energy%20transition_Jan%2020.pdf?sequence=1&isAllowed=y

Tang, K and Shen, Y (2019) Do China-financed dams in Sub-Saharan Africa improve the region's social welfare? A case study of the impacts of Ghana's Bui Dam. SAIS CARI Working Paper 25/2019.

Tan-Mullins, M, Urban, F and Mang, G (2017) Evaluating the behaviour of Chinese stakeholders engaged in large hydropower projects in Asia and Africa. *The China Quarterly* 230 464-488. https://www.cambridge.org/core/services/aop-cambridge-core/content/view/975F4CBDBCC0F4A6A04660C03F777353/S0305741016001041a.pdf/div-class-title-evaluating-the-behaviour-of-chinese-stakeholders-engaged-in-large-hydropower-projects-in-asia-and-africa-div.pdf

Urban, F, Nordensvard, J, Siciliano, G and Li, B (2015) Chinese overseas hydropower dams and social sustainability: The Bui Dam in Ghana and the Kamchay Dam in Cambodia. *Asia & the Pacific Policy Studies*, 2(3) 573–589.

Urban, F, Siciliano, G and Nordensvard, J (2017) China's dam-builders: Their role in transboundary river management in southeast Asia. *International Journal of Water Resources Development* 34(5) 747–770. DOI: 10.1080/07900627.2017.1329138

Wang, Y and Li, D (2019) How China's power companies invest overseas. https://pandapawdragonclaw.blog/2019/09/24/how-chinas-power-companies-invest-overseas/

Weng, X and Buckley, L (2016) Chinese businesses in Africa: Perspectives on corporate social responsibility and the role of Chinese government policies. International Institute for Environment and Development, London. https://pubs.iied.org/17581IIED/

Wilmsen, B, Webber, M and Duan, Y (2011) Involuntary rural resettlement: Resources, strategies, and outcomes at the Three Gorges Dam, China. *The Journal of Environment and Development* 20(4) 355–80. http://www.jstor.org/stable/26199391

Xu, Y (2014) Chinese state-owned enterprises in Africa: Ambassadors or freebooters? *Journal of Contemporary China* 23(89) 822–840.

Xu, Z, Niu, Y, Liang, Y, Li, Z and Iftikhor, A (2020) The integrated hydropower sustainability assessment in Tajikistan: A case study of Rogun hydropower plant. *Advances in Civil Engineering*, 2020.

Xue, D, Wan, Y and Yang, R (2018) Spatial-temporal evolution pattern and mechanism of China's construction of overseas hydropower stations. *Acta Geographica Sinica* 2018 73(10) (in Chinese).

Yankson, PWK, Asiedu, AB, Owusu, K, Urban, F and Siciliano, G (2017) The livelihood challenges of resettled communities of the Bui dam project in Ghana and the role of Chinese dam-builders. *Development Policy Review* 36 DOI: 10.1111/dpr.12259.

Yeophantong, P (2020) China and the accountability politics of hydropower development: How effective are transnational advocacy networks in the Mekong region? *Contemporary Southeast Asia: A Journal of International and Strategic Affairs* 42(1) 85-117. https://www.muse.jhu.edu/article/754324

Zhang, B (2019) State transformation goes nuclear: Chinese National Nuclear Companies' expansion into Europe. *Third World Quarterly* 40(8) 1459-1478. DOI: 10.1080/01436597.2019.1627189

Zhi, T (2021) "13th Five-Year Plan" Energy Transcript: Hydropower Chapter. Hydropower Structure Speeds Up Optimization, Transformation and Adjustment, Steady Progress. https://news.bjx.com.cn/html/20210108/1128103.shtml

China has a leading role in building large hydropower dams in developing nations, partly in the name of sustainable development. Rather than debating whether or not large hydropower truly offers clean green energy, this paper explores how to engage constructively with improving dam projects' sustainable development impacts via social and environmental safeguarding practices. Focusing primarily on Chinese investments in the Least Developed Countries, we examine the practices of hydropower companies and their financiers, and what drives these activities. We discuss the mechanisms underpinning companies' adoption of social and environmental safeguarding, and how these might be influenced so that safeguarding is strengthened.

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