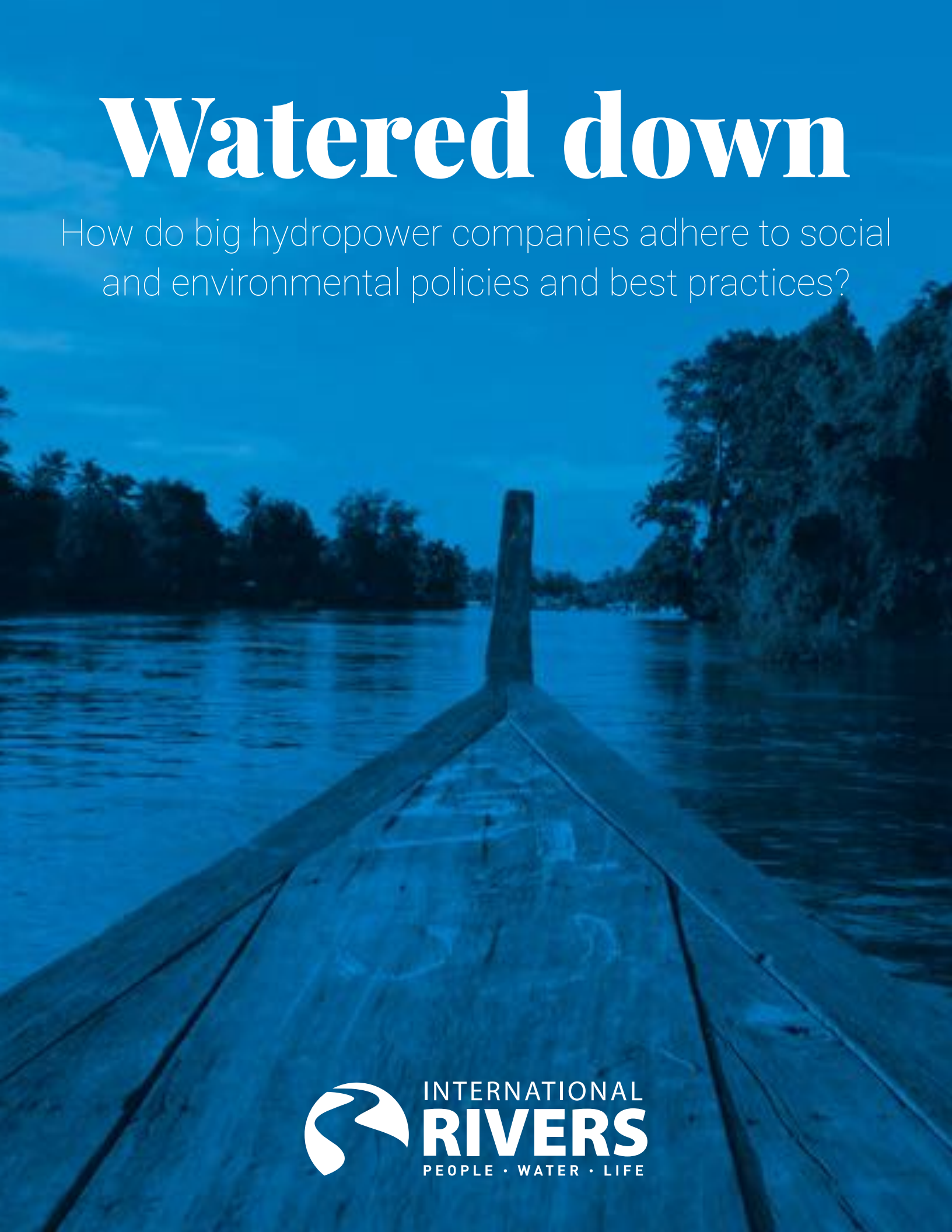
Watered down

How do big hydropower companies adhere to social and environmental policies and best practices?



INTERNATIONAL RIVERS

PEOPLE · WATER · LIFE

International Rivers protects rivers and defends the rights of communities that depend on them. Established in 1985 and with a small team working across four continents, we work to stop destructive dams and promote water and energy solutions for a just and sustainable world. We seek a world where healthy rivers and the rights of communities are valued and protected.

This report was published by International Rivers in November 2019.

1330 Broadway, 3rd Floor

Oakland CA 94612, USA

Tel: +1 510 848 1155

www.internationalrivers.org

Thank you to partner organizations and the companies who met with us and shared information so that this report and case studies could present a wide range of perspectives. We would like to express our gratitude to the MacArthur Foundation and blue moon fund for their support.

Please cite as:

Jensen-Cormier, S (2019). Watered down: How big hydropower companies adhere to social and environmental policies and best practices. Published by International Rivers. Retrieved from www.internationalrivers.org.

Text and development: Stephanie Jensen-Cormier

With input from: Josh Klemm, Michael Simon, Nick Guroff, Maureen Harris, Pai Deetes, Nareth Hem, Phairin Sohsai, Gary Lee, Kate Ross, Kirk Barlow, Margaret Zhou, Krystal Chen, Ange Asanzi, Narissa Allibhai, Monti Aguirre, Tomas Gonzales, Juan Pablo Orrego, Hongqiao Liu, Ejaz Ahmed Khan, Jeunes Volontaires Pour l'Environnement, Jessie Stone, countless anonymous interviewees. Apologies for any omissions.

Editor: Courtney Traub

Design and layout: Massimiliano Martino

Photographs are by International Rivers unless indicated

Front cover photo: Smooth waters on the Mekong, Thailand. 2016

Back cover photo: Sunset on the Teles Pires, Brazil. 2015


INTERNATIONAL
RIVERS
PEOPLE • WATER • LIFE

Free-flowing rivers are critical to sustaining life on earth

Despite the impacts of hydropower, it continues to feature heavily in some government agendas. These are the countries where International Rivers focuses its work.

They regulate the carbon cycle, protect against unpredictable and extreme climate events, replenish land with sediment and minerals, nurture critical ecosystems and biodiversity, their fisheries nourish 550 million people[1].

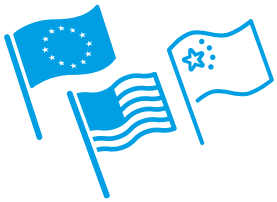
And yet, only 21 rivers longer than 1,000 kilometers retain an unobstructed connection to the sea.[2]

Global freshwater biodiversity has declined by 83 percent.[3]

Dams have fragmented two-thirds of the world's great rivers,[4] displaced over 80 million people[5] and negatively affected an estimated 472 million people.[6]

Dams generally have planned life spans of 50 years.[7] After that, they stop functioning optimally and lose viability.

Countries and regions which were the first to participate in a dam building boom have started to conduct widespread dam dismantling and partial decommissioning.



Europe has removed 3,500 dams.[8]
The USA has removed 1,605 dams.[9]
China is prioritizing re-connection of the country's rivers.[10]

Endnotes

1. The Nature Conservancy (2015). The Power of Rivers, page 12.
2. Nature International Journal of Science (2019). Mapping the world's free-flowing rivers.
3. WWF (2018). Living Planet Report 2018
4. Nature International Journal of Science (2019). Mapping the world's free-flowing rivers.
5. World Commission on Dams (2000). Dams and Development: A New Framework.
6. Water Alternatives (2010). Lost in Development's Shadow: The Downstream Human Consequences of Dams.
7. Massachusetts Institute of Technology (2012). Dams.
8. WWF (2019). Biggest Dam Removal in European History Begins.
9. American Rivers (2018). 99 Dams Removed to Restore Rivers in 2018.
10. Central Committee of the Communist Party of China (2016). The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China (2016–2020), see page 89.

Content

1. Executive Summary 4

2. Introduction 8

3. Methodology 18

4. International Standards 22

5. Key findings 26

6. Case Study: Soubré 32

7. Case Study: Isimba 42

8. Case Study: Alto Maipo 56

9. Case Study: Neelum-Jhelum 72

10. Case Study: Nam Ou 6 84

11. Case Study: Nam Ou 2 98

12. Case Study: Lower Sesan 2 114

13. Conclusion 128

1. Executive Summary

Healthy rivers are critical to sustain the communities and ecosystems that depend on them. Yet our rivers around the world are under threat. As many as 3,700 new dams have either been proposed or are already under construction.[1] Despite the enormous diversity in size, scale and geography of new dams being built, a relatively small number of corporations are responsible for their construction. Thus the policies and practices of these corporations have tremendous implications for rivers and human rights.

The intention of this report is to provide an incentive and justification for these corporations to compete on their environmental and social track records rather than simply on financial grounds.

From early on, International Rivers identified the emerging importance of Chinese companies, which have become the biggest actors in global dam building. Just one Chinese corporation, PowerChina Resources, is estimated to have as much as a 50 percent share of the international hydropower construction market.[2] Meanwhile, the China Energy Engineering Group recently boasted that Chinese enterprises represent 70 percent of the global hydropower market.[3] Looking forward, Chinese hydropower corporations are positioned to become even more influential, as China continues to roll out the "Belt and Road Initiative," a trans-continental connectivity scheme worth trillions of dollars in infrastructure projects that is slated for completion by 2049.

In 2015, International Rivers published a groundbreaking report that was the first to benchmark and rank the policies and practices in overseas projects of seven Chinese state-owned hydropower corporations. The present report builds on our 2015 work and aims to assess how corporate environmental and social policies compare to key internationally-accepted principles. It also examines how they are implemented through a series of seven in-depth case studies of dams constructed by six corporations(five Chinese and one American), with detailed information about the projects - some of the largest to have come online in between 2016 and 2019. These included site visits to projects being developed around the world and meetings with management, government agencies, workers, and local communities. It differs from the 2015 report in that it does not attempt to rank corporations against each other; rather it assesses performance against policies and standards and provides greater context of individual projects to highlight some of the complex situational factors that corporations should take into consideration in determining whether it is appropriate to become involved.

The research, interviews and site visits undertaken for this report were conducted with the intention of documenting and monitoring the performance of projects at final stages of completion. The report provides information that is evidence-based and descriptive of concrete, on-the-ground impacts. It offers recommendations on how companies can meaningfully improve the environmental and social outcomes for these specific cases, as well as better align their policies and practices to ensure positive outcomes in future projects.

Nu River, China. Photo by Li Xiaolong.

Summary of Key Findings

• Leading companies must embed proper due diligence into how they evaluate potential projects, even if it means passing on potentially profitable business opportunities. In one encouraging example, in 2013, Sinohydro International withdrew from the Agua Zarca Dam in Honduras on the grounds that their client was involved in controversial and inappropriate activities with local communities.[4] If companies aspire to be responsible actors in the sector, we need to see them adopt a higher risk threshold, whereby they set out key bottom lines for involvement. Certain projects simply should not be built because of their irreversible impacts, violations of agreements to maintain protected areas, or location in countries where affected communities lack meaningful avenues to raise concerns.

• By and large, companies lack adequate due diligence processes to guide whether it is appropriate to become involved in a new project. The case studies in this report show that China International Water and Electric (CWE), a subsidiary of China Three Gorges Corporation, accepted a contract to build the Isimba Dam on the White Nile in Uganda despite the fact that the reservoir would submerge important protected areas.[5] AES Corporation continued construction of the Alto Maipo project in Chile in the face of widespread public protest over the project's impacts on the primary drinking water supply to the capital, Santiago.[6] Huaneng pushed forward with the Lower Sesan 2 hydropower project in Cambodia despite widespread protests from communities and UN documentation of human rights abuses resulting from project implementation.[7]

• Most of the **companies are primarily concerned about staying on schedule during project building, to the detriment of social and environmental objectives**, which routinely lagged behind. PowerChina Resources, for example, did not respect Lao law to resettle and compensate before beginning construction of the Nam Ou Hydropower Cascade in Laos, which is expected to displace over 10,000 individuals.[8]

• Company policies fall well short of accepted international standards. Our assessment compared company policies against internationally accepted standards, using key requirements and principles of International Finance Corporation (IFC)'s Performance Standards as a reference because of their near-universal application. This includes objectives such as achieving improved living standards for resettled communities and requiring that companies assess the cumulative impacts of multiple projects on a river basin. We found that companies must significantly strengthen their environmental and social policies to reflect international norms if they are to be considered industry leaders.

• Similarly, **disclosure of key documents remains weak and below international standard**. All companies included in the study lacked policies requiring that environmental and social impact assessments be disclosed publicly or consulted upon with affected communities. Such requirements are embedded in all global standard regimes, including the IFC Performance Standards. Only one of the projects reviewed (Alto Maipo in Chile by AES) had made full environmental impact assessments publicly available prior to companies beginning construction.

• Since company regulations and hydropower industry guidelines are typically not considered to be binding, **companies perform to a higher level and implement stronger measures if they are obligated to do so by laws in the host country**.

• In cases when country laws are insufficient or not readily implemented, **we did not find instances where companies were successful in insisting that governments accept and apply the companies' own (higher) sustainability commitments**. China Gezhouba Group Company (CGGC), a company with one of the largest shares of the global hydropower market, has a sophisticated system for legal compliance and its company guidelines require environmental impact assessments to be conducted prior to project construction. Yet, the project proprietor (government of Pakistan) ordered construction of the Neelum Jhelum Dam to continue without ensuring proper conditions for project construction, including conducting an environmental impact assessment prior to construction.

The proprietor also used inadequate resettlement and compensation plans which excluded certain segments of the affected population. CGGC deflected responsibility for the environmental impact assessment and resettlement to the project proprietor.[9]

Even countries with strong laws on paper can be undermined by conflicting standards aimed at facilitating economic development and exploitation of natural resources. While Cambodia has laws recognizing the rights of indigenous peoples, the Lower Sesan 2 hydropower project resulted in the involuntary resettlement of over 5,000 people, many of whom are indigenous, in violation of national laws and human rights commitments.

• **Companies engaged through construction contracts (Engineering Procurement Construction) deflect responsibility for environmental and social impacts**. Hydropower corporations consistently relinquish environmental and social responsibilities and hide behind contract types. Responsible contractors should ensure that proper analysis and baseline studies are completed prior to starting project construction, regardless of their contract. This makes it easier to ensure robust implementation of policies to protect the environment and communities. The four companies reviewed in this report that were engaged through Engineering Procurement Construction contracts (CGGC, China Three Gorges, AES, Sinohydro International) did not accept responsibility for environmental and social outcomes. This would be an important step for companies to demonstrate leadership in aspiring toward becoming responsible actors in the sector.

Site visit of Nam Ou 7 Hydropower Project, Laos. 2017

Looking Forward

At the same time that the hydropower industry is intensifying efforts to position itself as contributing to achieving the Sustainable Development Goals and climate change mitigation, its true impacts are coming into sharp relief. The well-documented cases of dam-induced displacement of indigenous peoples from Brazil to Cambodia undermine these claims, while high-profile tragedies such as the collapse of the Xe Pian-Xe Namnoy Dam in Laos expose the severe safety risks that dams pose. The impact of dams on biodiversity, especially on endangered species, will come under closer scrutiny as the world prepares to make stronger commitments to protect biodiversity at the fifteenth Conference of Parties of the Convention on Biological Diversity in 2020.

Renewable energy options like wind and solar power are proven and competitive with dramatic increases in newly installed capacity worldwide. These energy solutions can be deployed to better meet persistent energy access needs, are quicker to build and in many places are less expensive than hydropower. In fact, some of the companies that we reviewed have energy portfolios that include these options. For instance, China Three Gorges Corporation aims to lead offshore wind power development in China and has commissioned the largest offshore wind farm in the country (Xiangshui Wind Farm) as well as large offshore wind projects in Europe.[10]

With hydropower representing such a great threat to free-flowing and healthy rivers,[11] companies must fundamentally transform the way that they operate by aligning their policies to and abiding by accepted international standards. And if they are to remain competitive globally, they would do well to align their business with recent trends that have seen a steady decline in hydropower in favor of renewable options.

Endnotes

1. Global Dam Watch (2015). "The Future Hydropower Reservoirs and Dams Database".
2. PowerChina Corporate Social Responsibility Report, 2016.
3. People's Daily (2019). Chinese enterprises represent 70 percent of global hydropower market.
4. Sinohydro Group (2013). Sinohydro Group response to Business and Human Rights regarding Agua Zarca Dam, Honduras.
5. Infrastructure Industry News for Uganda (2015). World Bank apprehensive of Isimba Power dam.
6. Salvemos el río Maipo (2015). 30,000+ People March in Chile to Save a River.
7. UN Human Rights Council (2018). Report of the Special Rapporteur on the situation of human rights in Cambodia.
8. Lao PDR (2005). Decree on Compensation and Resettlement of People Affected by Development Projects and the Decree on the Approval and Promulgation of the 'Policy on Sustainable Hydropower Development' in Lao P.D.R.
9. International Rivers (2017). Notes from company meetings in Beijing and interviews with CGGC, landlords and residents, local communities, labor union representatives during site visit 2015-2017.
10. China Three Gorges Corporation (2019). New Energy Projects.
11. Vörösmarty et al. (2010). Global threats to human water security and river biodiversity.

Local women heading to the fish market on the Sekong River, Cambodia. 2013

Case Studies

Chile

Alto Majpo

Alto Maipo Hydroelectric Project (531 MW) on the Maipo River in Chile.

By AES Corporation. EPC.

The Maipo River is the primary source of potable water for residents of Santiago and for Chilean farmers.

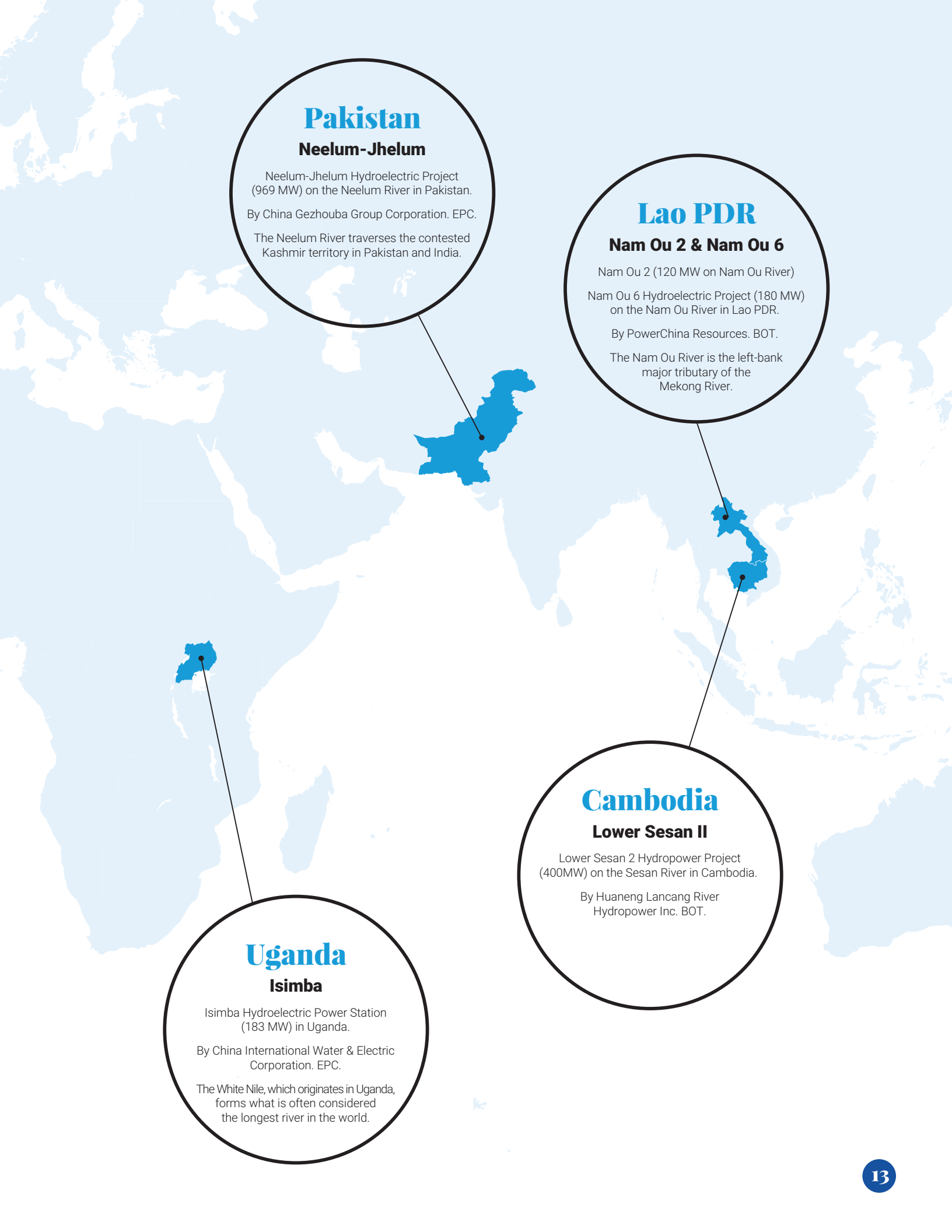
Côte d'Ivoire

Soubré

Soubré Hydroelectric Power Station (275 MW) on the Sassandra River in Côte d'Ivoire.

By Sinohydro International. EPC.

The Sassandra River flows through varied terrestrial ecoregions in Côte d'Ivoire.


Pakistan
Neelum-Jhelum
Neelum-Jhelum Hydroelectric Project (969 MW) on the Neelum River in Pakistan.
By China Gezhouba Group Corporation. EPC.
The Neelum River traverses the contested Kashmir territory in Pakistan and India.
Lao PDR
Nam Ou 2 & Nam Ou 6
Nam Ou 2 (120 MW on Nam Ou River)
Nam Ou 6 Hydroelectric Project (180 MW) on the Nam Ou River in Lao PDR.
By PowerChina Resources. BOT.
The Nam Ou River is the left-bank major tributary of the Mekong River.
Cambodia
Lower Sesan II
Lower Sesan 2 Hydropower Project (400MW) on the Sesan River in Cambodia.
By Huaneng Lancang River Hydropower Inc. BOT.
Uganda
Isimba
Isimba Hydroelectric Power Station (183 MW) in Uganda.
By China International Water & Electric Corporation. EPC.
The White Nile, which originates in Uganda, forms what is often considered the longest river in the world.

2. Introduction

Why Healthy Rivers Matter

Healthy rivers host some of the greatest biological diversity on earth and are instrumental in sustaining other critical ecosystems. Scientists continue to discover species of flora and fauna in river basins; these include the white-cheeked macaque, which was found along the Nu River in China in 2015[1] and the Tapanuli orangutan, which inhabits the Batang Toru river basin in Sumatra, Indonesia and was announced as a distinctive species in 2017[2].

Not only are rivers important for resilient biodiversity and ecosystems: they also protect from floods, droughts and other climate events. Rivers bring nutrient-rich sediments and other dissolved minerals to replenish the land and regulate the carbon cycle by transporting organic matter into the oceans[3].

From the Nile River across North Africa, to the Yangtze in China and the Mississippi in the US, rivers have been instrumental to the development and economic growth of nations. They have been important sources for the production of food, energy, and goods. Their degradation becomes evident when rivers are exploited at rates and in numbers superior to their threshold. In January 2019, one million fish[4] in the Barwon-Darling River in Australia were asphyxiated because of severe extractions from the river, mostly for agriculture[5]. In mid-2018, the Rhine River hit record-low levels which caused the death of hundreds of tons of fish, environmental damage, and significant economic losses to major industries that rely on the river for transporting their goods[6].

Infant white-cheeked macaque. Image credit: Cheng Li et al

Tapanuli Orangutan. Image credit: Tim Laman, Nat Geo Image Collection

Fish in the Darling Barwon River in 2019. Image credit: Rod Mackenzie

Record low level of the Rhine in 2018. Image credit: Gordon Welters for The New York Times

The expansion of hydro & its impact on rivers: Latest facts and figures

One of the biggest threats to healthy rivers is the development of hydropower, which could impact more than 300,000 kilometers of rivers by 2050[7]. Hydropower wipes out valuable aquatic and terrestrial ecosystems. Freshwater species have already lost 83 percent of their populations since the 1970s--twice the loss suffered by marine and terrestrial ecosystems[8].

While the world is seeing increasing growth in solar, wind and tidal power, hydropower supplies 71 percent of all renewable electricity and 16 percent of the world's electricity from all sources[9]. Though global net additions of installed capacity in large hydropower have remained steady since 2008[10], funding consecrated to hydropower projects doubled from 2017 to 2018[11]. This suggests a continued appetite for hydropower, and that hydropower companies are looking to build in increasingly challenging areas where costs are greater. It also underlines the continuing need to draw attention to the social, environmental and cumulative consequences of hydropower projects.

The justification for such projects is usually that they alleviate poverty and increase access to electricity. These claims must be carefully assessed. Collectively, dams have displaced over 80 million people[12] and have negatively affected an estimated 472 million people living downstream[13]. Dams can exacerbate poverty and worsen conditions for people who earn their livelihoods from land and river ecosystems. Individuals who are displaced by dams find their cultural, ecological and community capital destroyed while they live beneath transmission lines that either fail to bring power to their homes or generate energy sold at unaffordable prices. One of the only long-term studies of large dams worldwide found that living standards worsened in 82 percent of reviewed cases[14].

Why this project?

International Rivers has long been a leading advocate for dam builders to adopt and implement strong environmental and social standards.

From early on, we identified the emerging importance of Chinese companies, which have become the biggest actors in global dam building. In the early 2000s, the Chinese government prioritized development of the sector, including through the "Going Out" strategy. Just one Chinese company, PowerChina Resources, is estimated to have as much as a 50 percent share of the international hydropower construction market[15]. Meanwhile, the China Energy Engineering Group recently boasted that Chinese enterprises represent 70 percent of the global hydropower market[16]. Looking forward, Chinese hydropower companies are positioned to become even more influential, as China continues to roll out the "Belt and Road Initiative" a trans-continental connectivity scheme worth trillions of dollars in infrastructure projects that is slated for completion by 2049.

This report aims to assess how corporate environmental and social policies compare to key internationally-accepted principles, and examines how they are implemented through a series of seven in-depth case studies. These included site visits to projects being developed around the world and meetings with management, workers, and local communities.

Building upon our 2015 benchmarking report

In 2015, International Rivers released the first-ever report to benchmark and rank the policies and practices in overseas projects of seven Chinese state-owned hydropower companies. The report used 23 Key Performance Indicators based on existing international and Chinese standards to assess performance on environmental, social and risk management. The level of company engagement was encouraging, and six of the seven companies agreed to provide information about their policies and projects, as well as arranging site visits to meet with managers and workers at project sites. In some cases, companies made adjustments to their policies or practices on the ground after meeting with us at their headquarters or on project sites.

However, there were some challenges with how our 2015 study was designed. Scoring and ranking the projects was contentious. When the company with the highest-ranked project learned about the result, it asked International Rivers for the equivalent of a letter of endorsement. This particular project, the 1,500 MW Coca-Codo Sinclair Hydroelectric Project by Sinohydro International, is located on what used to be one of the largest waterfalls in Ecuador. Following the publication of our report, the Coca-Codo Sinclair Hydroelectric Project has become operational. Since then, the foundations have been documented to be inappropriate, as they were not built into the bedrock despite the region being seismically active. Sediment and silt has caused tremendous blockages to turbines[17]. The Ecuadorian government has reported that there are 7,648 cracks in the dam's machinery, but has also deemed the required repairs unaffordable. Furthermore, the project is part of a national scandal exposing corruption by politicians who have now been imprisoned[18].

Project design

The research, interviews and site visits that were undertaken for this report were conducted with the intention of documenting and monitoring the performance of some of the largest hydropower players, carrying out specific projects at final stages of completion. It also offers recommendations on how companies can meaningfully improve the environmental and social outcomes for these specific cases. While International Rivers is an important voice against destructive dams, this report reflects a need to better inform companies in order to minimize harmful impacts of projects near completion on people, animals, ecosystems and biodiversity. Companies that engage with NGOs more frequently understand the local situations more clearly and avoid involvement in 'unstable' projects. As with the 2015 report, this document aims to provide information that is evidence-based and descriptive of concrete, on-the-ground impacts. However, this report is more contextual concerning the seven case studies reviewed. The information for each case study is not scored and the projects are not ranked. Instead, we share recommendations that we have made to the companies under review. Ultimately, this report intends to provide an incentive for companies to compete on their environmental and social track records rather than simply on financial grounds.

General outline of report

This report details the methodology used, provides an overview on best practices and standards for the hydropower industry, and offers general recommendations geared towards the participating companies and other corporations in the hydropower sector. The report then provides seven detailed case studies, including recommendations that were made to each of the companies.

Nu River, China. Photo by Li Xiaolong.

Endnotes

1. Sci News(2015). Macaca Leucogenys: New Species of Macaque Discovered in Tibet.
2. National Geographic (2017). New Species of Orangutan Is Rarest Great Ape on Earth. The orangutan was immediately listed as critically endangered by the International Union for the Conservation of Nature.
3. Woods Hole Oceanographic Institution (2015). Study Reveals How Rivers Regulate Global Carbon Cycle.
4. Including the iconic Murray Cod, a critically endangered species and the largest freshwater fish in Australia. This phenomenon is also impacting other riverine species.
5. The Conversation (2019). The Darling River Is Simply Not Supposed to Dry Out, Even in Drought.
6. Handelsblatt (2018). Germany's Quarterly Downturn Due in Part to Drought, Says Study.

This has been cited as one of the major causes for Germany's economic slowdown in Q3 & Q4 of 2018. The German Kiel Institute for the World Economy reported that the Rhine's low water levels slowed growth in GDP by 0.2 percent in the second quarter, and by 0.1 percent in the fourth quarter.

7. The Nature Conservancy (2015). The Power of Rivers. A Business Case.
8. WWF (2018). Living Planet Report 2018.
9. World Energy Council (2019). Energy Resources, Hydropower.
10. IRENA (International Renewable Energy Agency) (2018). Renewable Power Generation Costs in 2017. Figures fluctuate slightly from year to year. Hydropower was one-third lower in 2017 than in 2016, according to reports by UN Environment, Bloomberg New Energy Finance and the IHA.
11. International Hydropower Association (2018). 2018 Hydropower Status Report.
12. World Commission on Dams (2000). Dams and Development: A New Framework.
13. Water Alternatives (2010). Lost in Development's Shadow: The Downstream Human Consequences of Dams.
14. Scudder, Thayer (2019). Large Dams: Long Term Impacts on Riverine Communities and Free Flowing Rivers, Springer.
15. PowerChina Corporate Social Responsibility Report, 2016.
16. People's Daily (2019). Chinese enterprises represent 70 percent of global hydropower market.
17. The New York Times (2018). It Doesn't Matter If Ecuador Can Afford This Dam. China Still Gets Paid.
18. Ibid.

3. Methodology

Description of methods for field visits and desk research

The seven case studies discussed here cover a wide geography, and are considered to be flagship projects of some of the most influential companies in the hydropower sector. The seven chosen studies were all considered to be large hydropower projects and were in the final stages of construction. Two of these are updates from International Rivers' 2015 benchmarking report. They are included here as we have continued monitoring the projects since the publication of the 2015 report and would like to share these findings as well as our ongoing interactions with the companies in question. For purposes of comparison, we included one project from a non-Chinese company, based in Alto Maipo, Chile and developed by the American company AES Corporation.

All companies assessed for this report were notified about our intention to conduct this review and were given opportunities to respond to our findings and observations. China Water Electric, PowerChina Resources, Gezhouba and Sinohydro International invited us for interviews at their headquarters in China site visits to their projects, as well as responding to questions and feedback and providing access to documentation which is not publicly accessible. Although AES Corporation and Hydrolancang International responded to some of our questions, they refused access to their project sites and declined to meet with us. Nonetheless, we conducted visits to areas surrounding the Alto Maipo Hydroelectric Project and Lower Sesan 2 Hydropower Project. For each of the seven case studies, we also consulted with impacted community members and workers.

Six out of seven of the hydropower projects discussed here were reviewed during their latter stages of construction and have now begun to generate electricity.

The projects reviewed include:

1. Nam Ou 6 Hydroelectric Project (180 MW) on the Nam Ou River in Lao PDR. By PowerChina Resources. BOT.
The Nam Ou River is the left-bank major tributary of the Mekong River.

2. Neelum-Jhelum Hydroelectric Project (969 MW) on the Neelum River in Pakistan. By China Gezhouba Group Corporation. EPC.
The Neelum River traverses the contested Kashmir territory in Pakistan and India.

3. Soubré Hydroelectric Power Station (275 MW) on the Sassandra River in Côte d'Ivoire. By Sinohydro International. EPC.
The Sassandra River flows through varied terrestrial ecoregions in Côte d'Ivoire.

4. Isimba Hydroelectric Power Station (183 MW) in Uganda. By China International Water & Electric Corporation. EPC.
The White Nile, which originates in Uganda, forms what is often considered the longest river in the world.

5, Alto Maipo Hydroelectric Project (531 MW) on the Maipo River in Chile. By AES Corporation. EPC.
The Maipo River is the primary source of potable water for residents of Santiago and for Chilean farmers.

The projects which were updated from the 2015 report include:

6. Lower Sesan 2 Hydropower Project (400MW) on the Sesan River in Cambodia.
By Huaneng Lancang River Hydropower Inc. BOT

7. Nam Ou 2 Hydropower Project (120MW) on the Nam Ou River in Lao PDR.
By PowerChina Resources. BOT

Differentiation between EPC and BOT contracts

Prior to visiting the project sites, International Rivers conducted desk research, interviews at corporate headquarters with five of the companies (all excepting Huaneng Lancang River Hydropower Inc. and AES Corporation), researched the most up-to-date company policies, contacted groups active in the regions concerned and knowledgeable about the impacts of dams used in the case studies, and developed a survey to ensure consistency of information gathered across site visits. Visits were conducted between 2016 to 2018. Five of our site visits to dams were arranged by companies. For these case studies, interviews with community members and workers were conducted with company staff present. When possible, our teams conducted additional fieldwork to meet with community members, in an effort to encourage more frank conversations. In some cases, we asked local counterparts to verify information that had been provided to us by companies.

The case studies include both of the two main contracting types for hydropower projects: EPC and BOT models.

In the Engineering Procurement Construction (EPC) model, the contractor designs, builds and delivers the asset in an operational state[1] to the client. The client, usually a government body or a utility manager, provides the financing to carry out preliminary studies and publish pre-qualification documents; it is also responsible for the technical, legal and other guarantees, investment and plant operation. The contractor is the single point of responsibility for design and construction only.

The client is also responsible for managing all social and environmental impacts resulting from the project. The contracted company's main responsibility is to ensure that the project is completed within the timeframe and budget agreed upon in consultation with the client. An EPC contractor should ensure that the client has undertaken due diligence in studying legal, environmental and social obligations and in making provisions to mitigate against adverse impacts from the project. Likewise, the client should aim to implement international best practices by drawing up a Contractor Management Plan, explicitly detailing environmental and social requirements in order to proactively identify, mitigate, manage and report potential risks and impacts.[2]

In a Build-Operate-Transfer (BOT) arrangement, the company assumes greater responsibility for ensuring that environmental and social aspects of the project are considered and respected. The contracted company finances, designs, builds and provides human resources for construction and operation, in exchange for holding the operating rights over a period of time, typically 20-30 years. After this concession period, the asset returns to the public entity. The BOT arrangement is thought to allow risks to be distributed more evenly between private companies and public entities, thereby optimizing project conditions. BOT contracts are sometimes preferred if the client (host government or utility manager) does not have sufficient financial capital to invest. Due to the operational nature of BOT models, and depending on the size and location, hydropower companies can face significant challenges managing the environmental and social impacts associated with these initiatives.

This report includes four projects that were contracted as EPC and three BOT projects. We applied the same environmental and social considerations for all seven projects. This contrasts to the method used for International Rivers' 2015 benchmarking report on Chinese overseas hydropower companies. While the 2015 report applied 23 Key Performance Indicators to the BOT projects, we used only 17 of them on EPC projects. In the 2015 report, this adjustment was determined to reflect the differentiated responsibilities of EPC and BOT projects, as EPC companies objected to being rated on environmental, social and other issues they deemed to be beyond the scope of their contract. However for the purposes of this report, International Rivers reiterates that regardless of the nature of a given contract, companies that claim to be leaders in the hydropower industry must be selective about their investments and uphold rigorous environmental and social standards. It is now widely accepted that global companies and investors must meet global investing rules and standards.

As part of this project, we reviewed international best practices and standards which are a reference for hydropower companies. While each case study will reference standards relevant to the project, the next section provides an overview of some of the key international norms that should be followed as a matter of due diligence by leading global hydropower brands.

Endnotes

1. MinterEllsion. Construction Law Made Easy, Chapter 2, Project Delivery Methods.
2. International Finance Corporation (2017). Good Practice Note. Managing Contractors' Environmental and Social Performance.

Glacial lakes in Bhutan, 2014. Photo credit: NASA

4. International Standards and Due Diligence

This assessment reviews and references the stated commitments of companies on environmental, social, and labor issues, with the aim of determining whether projects met those objectives. These commitments are uneven, vary by company, and in many cases do not align with accepted international standards. Therefore, we selected the Performance Standards of the International Finance Corporation,[1] the private-sector lending arm of the World Bank Group, as a common baseline by which to assess compliance to common international standards. While by no means perfect, the IFC's Performance Standards have become the de facto international standard for companies and financiers around the globe. The Performance Standards form the basis for the Equator Principles, a set of criteria adopted by 96 private banks and representing three-quarters of project finance invested annually in emerging markets.[2] The IFC's Performance Standards are designed specifically for companies, unlike the safeguard policy regimes adopted by other development institutions and applied largely to government borrowers.

The Performance Standards consist of eight discrete standards covering environmental and social risk assessment, labor, involuntary resettlement, biodiversity, and indigenous peoples. The Performance Standards are focused primarily on meeting key objectives and outcomes, rather than on prescribing specific procedures to be followed. Most of the procedural steps are outlined in the accompanying set of Guidance Notes for each standard. In our project assessments, we make reference to both.

Given the complexity of the projects we assessed and the standards themselves, we did not attempt to conduct a comprehensive assessment of whether projects complied with the full range of IFC Performance Standards.

Rather, we focused on thematic areas that we reviewed during our site visits and interviews, matching these with the subset of relevant objectives in the Performance Standards to determine whether companies are complying with international standards. The key principles and objectives we reviewed are as follows:

Disclosure

A common element across nearly all safeguard policy regimes is that the public and affected communities should have timely access to environmental and social impact assessments (ESIA). IFC Performance Standard 1 requires that ESIAs be disclosed to "[help] Affected Communities and other stakeholders understand the risks, impacts and opportunities of the project".

Environment

Another key principle is that project developers assess possible adverse environmental risks, and take steps to minimize those impacts. IFC Performance Standard 1 requires that clients document "the measures taken to avoid or minimize risks to and adverse impacts on the Affected Communities, and will inform those affected about how their concerns have been considered". IFC policy also requires that companies report periodically on progress in implementing action plans to mitigate adverse impacts.

Cumulative Impacts

A key consideration in hydropower projects is the need to assess a project's impacts beyond the construction site. For example, hydropower dams often incur additional impacts through associated transmission lines. Multiple dams on a river basin can also cause significant cumulative impacts beyond the direct ones incurred by individual dams, as river flows are altered from their natural flow regimes. In such cases, IFC Performance Standard 1 requires its clients to prepare a cumulative impact assessment to account for and mitigate these potential problems.

Biodiversity and Protected Areas

IFC Performance Standard 6 requires that mitigation measures "achieve no net [biodiversity] loss" and in critical natural habitats that they "achieve net [biodiversity] gains". For projects impacting protected areas, companies must implement programs to "enhance the conservation aims" of the area.

Consultation

Informed and prior consultation with affected communities is a key principle enshrined in all international safeguard regimes. To be effective, communities must be adequately informed about the environmental and social risks that a project may entail, and must have a means through which they can influence how a project is designed. Key principles enshrined in IFC Performance Standard 1 require that consultation "(i) begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise; (ii) be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format [that] is understandable to Affected Communities...(vi) be documented".

Indigenous Peoples

Indigenous peoples have historically and currently been disproportionately impacted by hydropower projects, which have resulted in their forced relocation away from the rivers and lands that are often central to their culture and sense of self-identity. Global momentum over the past several years has seen a growing recognition of the intrinsic collective rights that indigenous peoples have over their territories, cultural practices, and collective intellectual property rights. This manifested most clearly through the adoption in 2007 by the United Nations of the Universal Declaration of the Rights of Indigenous Peoples, which enshrined their right to grant or withhold their Free, Prior and Informed Consent (FPIC) on projects that will impact them. This right is central to IFC Performance Standard 7 on Indigenous Peoples, which requires that clients secure Free, Prior and Informed Consent in cases where indigenous lands and natural resources would be impacted, indigenous peoples would be required to relocate, or where projects would cause significant impacts on critical cultural heritage or indigenous practices. Performance Standard 7 further requires that any adverse impacts on indigenous peoples would trigger the development and use of an Indigenous Peoples Plan that would describe agreements made with affected indigenous communities.

Resettlement and Compensation

One of the most common and well-known impacts of dams is that they often displace people living near the construction site or in the location around the reservoir. Conservative studies estimate that 80 million people have been forced to relocate because of dams.[3] This has led to widespread impoverishment, and international standards on resettlement now routinely require that project developers improve the standard of living of displaced people compared to their previous standard. This fundamental principle is reflected in IFC Performance Standard 5, which requires companies "to improve, or restore, the livelihoods and standards of living of displaced persons…through the provision of adequate housing with security of tenure at resettlement sites". Performance Standard 5 also makes provision for people who are economically impacted, but not forced to relocate, and requires that "economically displaced persons who face loss of assets or access to assets will be compensated for such loss at full replacement cost."

Grievance Mechanisms

A common feature of most safeguard regimes is the requirement to create an official grievance mechanism through which communities can register their complaints and concerns about the adverse impacts of projects. IFC Performance Standard 1, for example, requires that the "client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance". The corresponding Guidance Note further stipulates that "Communications and grievances received and responses provided should be documented...and reported back to the Affected Communities periodically."

Benefit Sharing

The IFC and World Bank define benefit sharing as "the systematic efforts made by project proponents to sustainably benefit local communities". The IFC Performance Standards explain that developers must engage in effective engagement with stakeholders to create benefit-sharing programs "that will help mitigate the risks and maximize the benefits of their projects". Performance Standards 1 (Risk Management), 5 (Land Resettlement), 7 (Indigenous People) and 8 (Cultural Heritage) make specific references to benefit sharing. Industry best practice suggests longer-term monetary and non-monetary benefits such as providing free access or preferential electricity rates, payments for environmental or ecosystem services, establishing long-term community development funds, creation of long-term employment, and ensuring custodianship over wildlife and other natural resources.[4]"

Labor

IFC Performance Standard 2 is among the first safeguard instruments that provides specific obligations for companies to respect the rights of its workforce. It covers a number of labor issues, including the right for workers to organize. For the purposes of this report, we focus on non-discrimination in hiring, wages, and working conditions. IFC Performance Standard 2 stipulates that the client "will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. The client will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women."

Beyond abiding by internationally accepted standards, the companies evaluated in this report must apply rigorous due diligence in assessing whether and under what conditions they agree to participate in a given project.

Over the years, the companies assessed in the study have complained that some issues we highlight fall beyond their scope of responsibility. We uphold that certain projects simply should not be built owing to their irreversible impacts, violation of agreements to maintain protected areas, or because they would be located in countries where affected communities lack any meaningful avenue to raise concerns. Leading companies must embed proper due diligence in how they evaluate potential projects, even if it means passing on potentially profitable business opportunities.

In one such encouraging example, Sinohydro International withdrew from the Agua Zarca Dam in Honduras in 2013 on the grounds that their client was involved in controversial and inappropriate activities with local communities.[5] If companies aspire to be responsible actors in the sector, we need to see them adopt a higher risk threshold, whereby they set out key bottom lines for involvement. Some of these are covered in the section above, such as adopting a company-wide policy that robust EIAs be carried out, subject to consultation, and publicly disclosed as a condition for involvement.

Globally, the Dutch Sustainability Unit of the Netherlands Commission for Environment Assessment sets out the best articulation of proper due diligence that decision makers should undertake prior to constructing any large dam. Among the recommended measures, the paper argues for a fulsome consideration of whether adequate governance conditions exist, including a positive track record on human rights, and full consideration of energy options at the strategic level, before any decision is made to pursue a specific dam project.[6]

Not every project can be justified once adverse impacts are accounted for, and in some cases companies do not show willingness and capacity to invest in order to properly mitigate such impacts. Simply committing to abide by national and local laws is insufficient, and companies need to reflect on their bottom line.

Endnotes

1. IFC Performance Standards (2012).
2. Equator Principles Financial Institution (2019).
3. World Commission on Dams (2000). Dams and Development: A New Framework.
4. World Bank (2012). A Guide for Local Benefit Sharing in Hydropower Projects. Social Development Working Paper No. 128.
5. Sinohydro Group (2013). Sinohydro Group response to Business and Human Rights regarding Agua Zarca Dam, Honduras.
6. Dutch Sustainability Unit (2017). Advice on better decision-making about large dams.

Soubre Hydroelectric Power Station construction site, Ivory Coast. 2016

5. Key Findings

Our effort to augment and strengthen discussions with six of the world's largest hydropower companies provide new insights into how they operate. The conclusions are consistent with observations from International Rivers' discussions with companies over the past ten years, including the 2015 report that benchmarked and ranked policies and overseas projects for seven Chinese state-owned hydropower companies.

International Rivers holds hydropower corporations, especially those with a large market share of the industry, to a high standard. Beyond individual company commitments or host country laws, the hydropower sector is expected to adhere to guidance documents and processes for assessing risk and developing projects. These documents all assert that good practice seeks to first avoid, then minimize, mitigate and compensate for, negative impacts. The main industry guidance documents that guide our assessment include Dams and Development: A Framework for Decision Making, by the World Commission on Dams; safeguard policies by multilateral development banks (including the International Finance Corporation's Performance Standards and World Bank safeguard policies); the Hydropower Sustainability Assessment Protocol by the International Hydropower Association; the UN Global Compact, OECD's Guidelines for Multinational Enterprises; the Global Reporting Initiative, and the United Nations' Guiding Principles on Business and Human Rights. These documents all require that proper due diligence, including robust EIAs with demonstrated consultation and buy-in from communities, are conducted and then disclosed publicly. International standards require that resettlement guarantees an improvement in living standards, and a demonstrated track record of doing so. These documents require that cumulative impacts of proposed dams on a river basin be conducted and disclosed.

Companies make broad commitments to reflect these international standards for numerous reasons including responding to local or domestic pressures, or to keep up with competitors, but often do not implement or prioritize them in their projects.

During our desktop research and case studies, we have made the following observations:

1. Company policies can become weaker and more vague over time

The environmental and social policies of companies change over time. Environmental frameworks can improve, but they can also become weaker and more vague. As an example, in 2012, Sinohydro Resources drafted a Policy Framework for Sustainable Development and an Environmental Policy Statement which was quite ambitious and adopted all of the World Bank's safeguard policies, respected "no-go" zones including national parks and UNESCO World Heritage sites, committed to conducting open dialogues with local communities and NGOs, and created complaint mechanisms for all of its projects. By 2014, the company had backtracked on these commitments, stating that such objectives were aspirational and that local laws and regulations form the company's basic safeguard.[1] These weaker policies have persisted until now.

2. There are gaps between policy and implementation

For the companies we reviewed, local laws and standards in the host country are the most important factors in assessing legal compliance with environmental and social objectives. Since company regulations and hydropower industry guidelines are not binding or enforced, companies perform to a higher extent if they are forced to do so by laws in the host country. Yet, even countries with strong laws can be undermined by conflicting standards aimed at facilitating economic development and exploitation of natural resources. While Cambodia has strong laws recognizing indigenous peoples' identities and rights, the Lower Sesan 2 hydropower project resulted in the involuntary resettlement (and often forced removal) of over 5,000 people, predominantly from indigenous and ethnic minority groups.

In terms of compliance with company policies and industry guidelines, there are gaps regarding consultations, as well as conducting thorough and verifiable, publicly available environmental assessments and mitigation plans prior to beginning construction. Another fundamental gap has to do with completing resettlement prior to project construction. These are fundamental principles within accepted international standards and are legal requirements for large hydropower projects in Chinese and American law. All five of the Chinese companies under review said that they are committed to Chinese laws and standards when these are more rigorous than the host country's laws. Likewise, the American company iterated its commitment to abiding by American laws and standards as a minimum.

One of the projects reviewed (Neelum Jhelum) carried out its EIA during the construction process and released it three years after construction had begun. Four of the seven projects reviewed did not publicly disclose their EIAs. Many projects did not consider or include concerns from local stakeholders.

The information concerning social impacts provided for all projects was quite general, addressing exclusively positive health impacts, economic development and gender impacts with broad generalizations that were not place-specific.

Five of seven projects reviewed did not conduct cumulative impact assessments. Of the two Cumulative Impact Assessments that were conducted, one was not publicly released and the other failed to evaluate impacts on the entire river basin.

Most of the companies we reviewed were primarily concerned about staying on schedule during project building to the detriment of social and environmental objectives, which routinely lagged behind. PowerChina Resources did not respect the principle to resettle and compensate before beginning construction during the implementation of seven dams forming the Nam Ou Hydropower Cascade. These projects are expected to displace 10,700 individuals. The building and operation for the seven dam 1,156 MW cascade is on schedule.

3. There is often a lack of accountability to international mechanisms and reporting bodies

There must be mechanisms to ensure that corporations remain accountable to their own frameworks, to the international guidelines to which they voluntarily commit, and for the long-term impacts of their projects.

One of the companies reviewed in this report, China Huaneng Group, was expelled from the UN Global Compact in September 2018 "due to failure to communicate progress".[2] This coincided with extensive documentation that Huaneng's Lower Sesan 2 Hydropower Project violated community rights. The reports included a 2018 briefing by the UN Special Rapporteur on Human Rights which stated that indigenous communities, especially the Bunong, "were losing their homes and much of their spiritual forest and burial grounds to the reservoir's water, leaving them at risk of losing their livelihoods".[3]

4. Transparency and disclosure remain weak

Companies must be more transparent and proactively share documents, especially if they are listed in the contract agreement as having to be available publicly. In addition to disclosing information, there is a need to communicate early on and more frequently directly with affected communities. Such practices bridge the gaps between what communities want and other project outcomes.

When companies meet and exchange with NGOs and local communities, they make steps towards greater transparency. During the research for this report, PowerChina Resources, China Three Gorges, Sinohydro International and AES Corporation provided access to documents related to their projects and in some cases, prepared presentations with updates on project status. Company representatives were welcoming, constructive and informative. While these efforts are to be commended, limitations remain in the information shared, including non-disclosure of key project documents and impact assessments. This constrained the substantive dialogue that is possible in important areas relating to the social and environmental performance of companies' projects.

5. Contract types can be used as a means to deflect responsibility

Hydropower corporations consistently relinquish environmental and social responsibilities and hide behind certain contract types. Responsible contractors should ensure that proper analysis and baseline studies are completed prior to starting project construction, regardless of contract type. This makes it easier to ensure robust implementation of policies to protect the environment and societies. The cost of not respecting industry guidelines is borne by rural communities and fragile ecosystems.

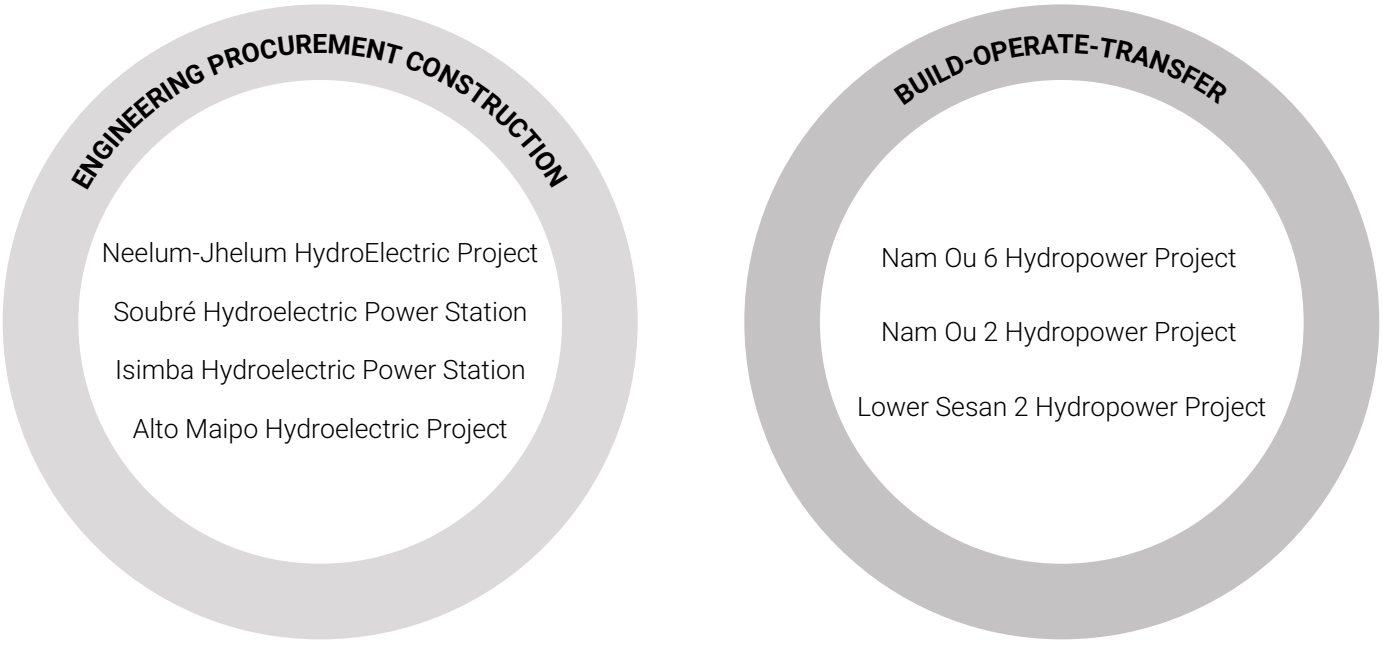
Engineering Procurement Construction (EPC) contracts generally carry less responsibility. Companies with EPC contracts therefore tend to deflect responsibilities for environmental and social impact assessments and compliance with local and international laws to the clients, usually the host country government. Companies with EPC contracts point to compliance with international norms when it is convenient. They often explain that by doing so they are going beyond their obligations.

Investors and builders acquire environmental and social risks and responsibilities when they become involved in a project that is under development.

For instance, when China Gezhouba Group Corporation (CGGC) was brought on to the Neelum-Jhelum Hydroelectric Project as an EPC contractor, the EIA, EMP, SIA and geological studies had not been conducted. CGGC used contract type to deflect responsibility for these 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.

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.

Contract types for the case studies



6. Project offices in the host country are not enabled and responsible for responding to requests from NGOs and communities

For all seven of the case studies reviewed, we reached out to the corporate headquarters. The headquarters for six of the seven projects (excluding Huaneng Group) subsequently directed us to project personnel in the field office.

A number of community members and civil society organizations expressed disappointment that they received no or little information from project offices and embassies in the host country. When they reached out with written communications and requests for meetings, these generally went unanswered.

Companies can uphold the principle of engagement to build relationships and enable a process of consultation with local communities and NGOs by engaging with them on the ground, rather than merely responding to requests that go through the company's main headquarters in a foreign country.

In order to build the capacity for project offices to respond, companies can allocate budgets for particular concerns and appoint responsible personnel on the ground. Companies must also establish clear redress and complaints mechanisms at local project sites. It is critical that this be done in ways that do not make local people feel threatened by the local government or company in question.

7. Cumulative and long-term impacts are not sufficiently considered

The world's foremost experts on the social impacts of dams note that the hydropower sector lacks consideration or monitoring for the long-term social impacts of dams.[4] Our case studies revealed some inadequate EIAs. Experts state that even good EIA studies do not accurately predict 30 to 50 percent of negative and positive impacts, completely missing some of them.[5] One of the only studies on the long-term impacts of large dams throughout the world found that living standards worsened in 85 percent of cases.[6]

The footprint of a dam is never limited to its immediate project location. All seven of the projects reviewed lacked appropriate tracking and monitoring systems to evaluate and mitigate the cumulative impacts of multiple projects in their areas of activity. The companies described how they tracked and mitigated against the impacts at the project site, thus deliberately ignoring the broader repercussions on the environment and local people. The companies described their environmental measures to treat the waste and wastewater produced on the site and plant trees to compensate for loss of biomass in the flooded reservoir. Dams not only flood previously dry areas; they also alter the flow and sedimentation of the river, resulting in dramatically and unpredictably altered environments for riverine inhabitants, fauna, and flora.

There was no cumulative impact assessment for the many dams in the Nam Ou hydropower cascade, which spans seven dams over 350 kilometers out of the 450-kilometer long Nam Ou River.

Huaneng also took a relatively narrow view of environmental responsibility for the Lower Sesan 2 project, largely limited to the project site and surrounding areas rather than the wider impacts of the project on the ecosystems of the 3S and Mekong river basins.

Sinohydro International, which built the Soubré Hydropower project in Ivory Coast, did not conduct cumulative impact studies. It is currently building the 112 MW Gribo-Popoli Dam just 15 kilometers downstream on the Sassandra River.

8. Companies lack understanding of what constitutes 'benefit sharing'

The World Bank defines benefit sharing as "the systematic efforts made by project proponents to sustainably benefit local communities affected by hydropower investments". Nowadays there is recognition among all international hydropower guidance documents that affected people must be consulted and involved in choosing the distribution and delivery of benefits. There is no longer an expectation that affected people are to endure hardships for the so-called "greater good".

Benefit-sharing is a fundamental consideration for any infrastructure project. All companies shared some information regarding benefit sharing. Companies with EPC contracts-- China Gezhouba Group Corporation (Neelum Jhelum) PowerChina International (Soubré), China International Water & Electric Corporation (Isimba) and AES Corporation (Alto Maipo)-- absolved themselves from the responsibility to determine and implement benefit-sharing schemes, as these were not included in their contracts. However, by showing that they had some local development schemes, the EPC companies believed that they were going above and beyond their requirements.

The plans for benefit-sharing for all seven companies were not sustainable over the long term and included providing compensation for displaced communities, infrastructural development such as leveling land, building or improving roads and bridges, building schools or local community centers, adding fish to reservoirs or gifting company vehicles after the construction team leaves.

Initiatives like building or improving roads improves access to the work site and are designed to benefit the construction process more than local communities. Development of roads and bridges could be argued to be of greater benefit to local communities if the communities were consulted during the design process. If there is no buy-in from the communities to maintain schools or other community infrastructures, these are not of long-term benefit. Adding non-native fish to reservoirs in order to ensure that riverine people can continue to fish is likely to diminish the balance of the ecosystems and could wreak havoc on native aquatic species.

Industry best practice suggests longer-term monetary and non-monetary benefits like providing free access or preferential electricity rates, payments for environmental or ecosystem services, establishing long-term community development funds, creation of long-term employment, and ensuring custodianship over wildlife and other natural resources.[7]

Companies also have a very narrow definition for individuals who are considered to be 'affected people'. International practice includes people who have been displaced and others who are impacted because they are located upstream, downstream or in the surroundings of the reservoir. The companies reviewed only include displaced people as being eligible to receive 'benefits' as established by the company. For example, while the Lower Sesan 2 compensation plan lists only six villages as being affected, there are widely publicized studies evidencing that the dam impacted more than 250 villages.[8] There are significant discrepancies between numbers, while more than 80 million people have been directly displaced by dams,[9] more than half a billion people have been impacted.[10]

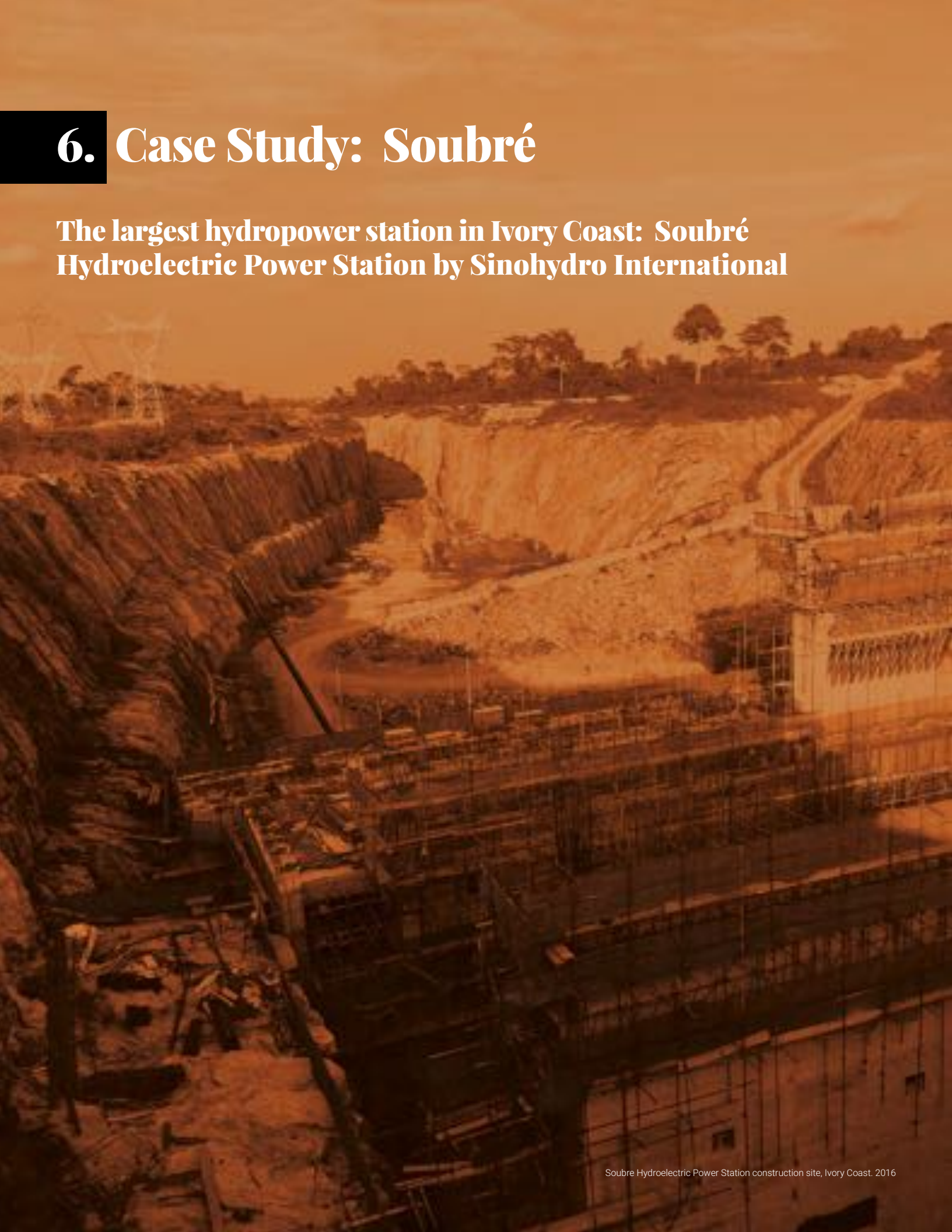
Endnotes

1. International Rivers (2014). Recommendations to Sinohydro on Its Environment and Social Policies.
2. UN Global Compact (2019). China Huaneng Group.
3. UN Human Rights Council (2018). Report of the Special Rapporteur on the Situation of Human Rights in Cambodia.
4. Scudder, Thayer (2019). Large Dams: Long Term Impacts on Riverine Communities and Free Flowing Rivers, Springer. World Commission on Dams (2000). Dams and Development: A New Framework.
5. Scudder, Thayer (2019). Large Dams: Long Term Impacts on Riverine Communities and Free Flowing Rivers, Springer.
6. Ibid., 250.
7. World Bank (2012). A Guide for Local Benefit Sharing in Hydropower Projects. Social Development Working Paper No. 128.
8. Ley, Kem (2015). The Compensation Policies and Market Property Price LS2 Dam Development Project,. Rivers Coalition in Cambodia, Phnom Penh. Baird, Ian (2009). Best Practices in Compensation and Resettlement for Large Dams: The Case of the Planned Lower Sesan 2 Hydropower Project in Northeastern Cambodia. Rivers Coalition in Cambodia.
9. World Commission on Dams (2000). Dams and Development: A New Framework.
10. Scudder, Thayer (2019). Large Dams: Long Term Impacts on Riverine Communities and Free Flowing Rivers, Springer.

Soubre Hydroelectric Power Station construction site, Ivory Coast. 2016

6. Case Study: Soubré

The largest hydropower station in Ivory Coast: Soubré Hydroelectric Power Station by Sinohydro International



Soubre Hydroelectric Power Station construction site, Ivory Coast. 2016

Summary and background on the Soubré Hydroelectric Power Station

The national overall electricity access rate in Ivory Coast is one of the highest in the sub-Saharan region at 64 percent. The Government aims to electrify all localities in the country by 2020.

Located upstream of the Nawa Falls on the Sassandra River in the southwestern part of the country, the Soubré Dam provides power from the project site to Abidjan and to the national grid via a 338-kilometer transmission line. The project consists of a hydroelectric dam with a capacity of 275 MW and is the largest hydropower station by installed capacity in the country.

The project had a planned execution time of 56 months and was completed ahead of schedule, in May 2017. Sinohydro is now building the 112 MW Gribo-Popoli project, a dam 15 kilometres downstream of Soubré, which is scheduled to be completed in 2021.

While Sinohydro International managed to deliver the project ahead of schedule, it could have secured a stronger social license to operate, especially considering that the company is in discussions with the government of Ivory Coast concerning three other dams, as part of the national effort to double energy production by 2020.

The EMP and EIA for Soubré Hydroelectric Power Station absolves Sinohydro International from researching alternatives, surveying or addressing cumulative impacts of the dam, including impacts on biodiversity. It is irresponsible and contrary to international best practices in the hydropower sector to disregard cumulative biological impacts, especially when constructing multiple projects on the same river basin.

Despite being allegedly conducted according to Chinese and international standards, the EMP and EIA are not publically available. The EMP lacks monitoring and evaluation, as well as a mechanism to report measures designed to reduce environmental impacts.

Project managers at Soubré explained that they conducted public consultations when they felt that there was a need.[1] This however does not fulfill Sinohydro International's policies, nor the project EMP which states that consultations should regular, and documented to summarize the topics discussed and adopted resolutions.

The company also failed to establish a complaints mechanism for affected communities. There was a complaints mechanism for workers in place, but many claimed that they received threats from the government and had no alternative but to abandon their grievances.[2] Workers also reported instances of discrimination and physical abuse. Workers often felt that these reports had not been resolved or taken seriously by Sinohydro International.[3] In 2016, a Chinese manager at the project site reported that in order to improve relations with local workers, the company holds French language courses for Chinese staff.[4] Since then, relations between Chinese managers and workers are reported to have improved.

Soubre Hydroelectric Power Station construction site, Ivory Coast. 2016

Background information

Status of the project: Completed in May 2017

EPC Contractor:

Sinohydro International/ Power China

Sinohydro International merged with PowerChina Resources in 2012 and is now wholly owned by Power Construction Corporation of China. Sinohydro International has a wide portfolio of international projects (524 projects in 74 countries, $US 42.5 billion) that goes beyond hydropower and includes the energy, transport infrastructure, building and water works sectors. This company has the largest (50 percent) market share for international hydropower projects.

Sinohydro International is mainly a project contractor, undertaking EPC and other construction contracts, while PowerChina Resources mainly undertakes BOT projects.

In 2009, Sinohydro International and International Rivers first held a policy dialogue to discuss the impacts of the company's overseas hydropower projects.[5] At the time, the company's attitude was to "over-deliver and under-promise"; consequently, policy documents and commitments were vague and dialogue channels with NGOs were less than robust.

Resettlement impact: Approximately 3,000 people

Installed capacity: 275 MW

Total height of dam: 19m

Total Length: 4.5 km

Reservoir: 17.3 km2

Financiers: Export-Import Bank of China (85%), Government of Ivory Coast (15%)

Total cost: US $572 million

Timing of our assessment:
International Rivers conducted meetings with the company in 2016 and 2017 and one site visit with a local partner, Jeunes Volontaires pour l'Environnement-Côte d'Ivoire, in June 2016.

Limitation statement to our assessment:
This visit was hosted by Sinohydro International. All interviews were conducted with company staff present; there was no unscripted meeting held with community members. Our team did not have the space nor the ability to meet with communities that were forced to relocate because of the reservoir.

Soubre Hydroelectric Power Station construction site, Ivory Coast. 2016

Sinohydro International's environmental policies and their application in the Soubré project

Disclosure

International standard: Environmental and Social Impact Assessments (ESIAs) are conducted and disclosed to "[help] Affected Communities and other stakeholders understand the risks, impacts and opportunities of the project."[6]

Company commitment: None.

Project performance: Project performance: The EIA and EMP are not publically available. Upon request, Sinohydro International shared the EMP and the 2015 Annual Report with International Rivers.

Environmental impacts and reporting

International standard: "The client will document... the measures taken to avoid or minimize risks to and adverse impacts on the Affected Communities, and will inform those affected about how their concerns have been considered".[7] "The client will provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues that involve ongoing risk to or impacts on Affected Communities".[8]

Company commitment: Sinohydro International has committed to limiting the impact of business activities on the environment.[9] The company's environmental management policies require the implementation in accordance with international standards such as ISO 14001 (improve resource efficiency), OHSAS 18001 (protect the natural environment).[10] The company commits to abide by Chinese and local laws and standards, depending on which are more stringent.[11]
Sinohydro corporate policy does not require regular public reporting on implementation of its environmental management plans.

Project performance: The Environmental Management Plan (EMP) states that an Environmental Impact Assessment (EIA) for Soubré was conducted according to Chinese and international standards (project EMP).

Sinohydro International launched a QHSE Management System in 2010, and an HSE Management Guidance in late 2014. These include procedures for noise management, waste management, dust control, air emissions control, hazardous waste management, water quality control, and contaminated land, erosion and sedimentation control procedures.[12] A qualified third party performs an annual audit on compliance.[13]

The Deputy Director ensures safety and environmental protection as well as the implementation of HSE measures.[14] The EMP for Soubré Hydroelectric Power Station neither addresses sedimentation nor contains management or monitoring plans for erosion or sedimentation during construction and operation. There was no evidence of a monitoring system for water quality or control over discharged water.[15]

Project managers of Soubré Hydroelectric Power Station reported that the company took actions in order to reduce environmental impacts. This included reducing the reservoir area, building a spillway channel on the left bank (originally planned on the right bank) to protect aquatic animals, reducing disruption to the lives of local people in an effort to save funds, building a wastewater filtering processing system, using a sprinkler system to improve air quality, and recycling waste, oil and managing hazardous elements. However, measures in the EMP to address environmental impacts (noise[16], air[17] and water quality, waste[18], sedimentation, and vegetation[19], erosion[20]) were all temporary and there were no details on quantitative measurement of environmental impacts, effectiveness of the measures or plans for long-term management, monitoring or reporting.

The project impacts the Nawa Falls, an area on the Sassandra River high in biodiversity and featuring strong rapids. The Nawa Falls are used by locals for recreation and are also a known tourist site. Sinohydro International was aware that the Nawa Falls were located in the project area and claimed that the chutes would be maintained through a water management scheme.[21]

Cumulative impacts

International standard: The scope of ESIAs should cover all impacts within a project's entire area of influence, including "cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted".[22]

Company commitment: None.

Project performance: The EMP and EIA for Soubré Hydroelectric Power Station covered the land area within the project site during construction, but did not address cumulative biological impacts in surrounding areas. The EMP stated that Sinohydro International is not responsible for addressing impacts on biodiversity or researching alternatives. Sinohydro International is now building the 112-MW Gribo-Popoli hydroelectric project, 15 km downstream of Soubré, which is scheduled to be completed in 2021. It is ill-advised not to assess cumulative biological impacts of projects on the Sassandra River.

Soubre Hydroelectric Power Station construction site, Ivory Coast. 2016

Selected comments on social commitments and performance

Consultation

IInternational standard: "Effective consultation is a two-way process that should: (i) begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise; (ii) be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format and is understandable to Affected Communities...(vi) be documented".[23]

Company commitment: Sinohydro International commits to fostering an open and effective dialogue mechanism to facilitate information exchange.[24] This includes communication with owners, local partners, public and governmental institutions, NGOs, local associations, local authorities, and affected communities.

Project performance: The Environmental Management-Public Relations Procedure and HSE Policy require a functional mechanism through the Environmental Management and Monitoring Unit to collect complaints and allow for consultations with affected populations that allow for participation in planning, implementation and monitoring by all affected groups. Conflicts must be tracked and signed off by relevant project managers. The company commits to working in compliance with local cultural and community practices. The company's Environmental Management-Public Relations Procedure requires the implementation of an action plan to avoid or mitigate adverse impacts on indigenous people.

Project managers at Soubré explained that they conducted public consultations when they felt that there was a need.[25] This does not fulfill company policies nor the project EMP which states that "consultation sessions with the administrative political authorities, representatives of local affected people, health workers and concerned NGOs are to be held regularly" and that minutes are to be taken at each meeting to "summarize the topics discussed and adopted resolutions". The company did not share meeting minutes or other documentation from the consultation sessions. The number, frequency, and method for choosing local representatives for consultation sessions concerning Soubré are not described in the project EMP or in the 2015 Annual Report. While the government of Uganda has fallen short of meeting its own responsibilities in ensuring positive outcomes for displaced communities, these issues are systemic within Uganda, and the company should have conducted appropriate due diligence to determine the capacity of government to enforce compliance with international good practice standards in resettlement.

Complaints mechanism

International Standard: "The client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance".[26] "Communications and grievances received and responses provided should be documented...and reported back to the Affected Communities periodically".[27]

Company commitment: There is no provision for a community complaint or dispute mechanism in the EMP or in the 2015 Annual Report.

Project performance: Information obtained by International Rivers suggests that very few complaints were filed.[28] To respond to complaints, Sinohydro International organized meetings with affected parties and claims to have resolved the issues. Workers claim that they received threats from the government and had no alternative but to concede.[29]

Labor

International Standard: The client "will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. The client will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women". "The client will provide a safe and healthy work environment".[30]

Company commitment: Sinohydro commits "to treat all employees equally...and forbids discrimination".[31] As per the labor code of the Ivory Coast, the company established a complaints system to respect the rights of workers. Sinohydro International "seeks to make a lasting positive impact in host countries, including by recruiting and training local workers and by promoting their professional development".[32] Sinohydro International "is committed to the health and safety of any persons who may be affected by their operations and have a responsibility to prevent injury, ill health, damage and loss arising from their operations. Sinohydro commits to comply with all regulatory and legal requirements pertaining to safety, health, and the environment".[33]

Project performance: Workers complained about work conditions, including insufficient numbers of protective welding outfits, helmets and shoes for all workers; lack of security for drivers of motorized equipment; the lack of a camp or canteen for local workers; the use of ambulances, first aid and granting of time off for recovery only in cases of major injury; inequality of health care and working conditions between local and Chinese workers; unsatisfactory salaries and working conditions for construction workers[34](local workers in managerial positions reported satisfactory compensation). Workers claimed that the company did not address these complaints.[35]

Workers told International Rivers that there were many instances of discrimination and violence, but none had been resolved or taken seriously by Sinohydro International.[36] They cited a complaint that they filed concerning discrimination and violence initiated by Chinese managers (physical striking) and reports of several other cases of race-based violence.[37] They reported that the local Labor Inspector did not review their complaint.[38] Some local workers described an improvement in relations between local and Chinese workers in 2016. A Chinese manager reported that the company holds French language courses for Chinese staff in order to improve relations with local workers.[39]

The ratio of local to Chinese workers improved from 3:1 in 2015[40] to 4:1 (2,000 local and 500 Chinese nationals) in 2016.[41] The majority of laborers and manual workers come from villages in the vicinity of the project and from the town of Soubré. Few locals occupy executive positions; these are mostly awarded to Chinese employees.[42] Workers reported that most of them received training on the job, though some reportedly had the necessary skills when hired.[43] All employees who joined in 2015 received training related to their jobs.[44]

The EMP includes safety regulations and measures on construction site and equipment safety, emergency measures in case of accidents and disasters, fire prevention.[45] The Department of Safety, Environment and Health is responsible for the deployment of organization-wide systems to ensure work safety, inspections, education for all staff, and reporting and investigating accidents. The department holds a meeting every quarter.[46] The 2015 Annual Report lists targets of 0 on-site accidents and 100% achievement in safety targets.[47] The company reported that it met its target of 100% employee participation in the safety education and training program[48] which included a "safety values are in my heart" speech contest to deepen staff's understanding of safety practices. The company reported that there were no major accidents and 52 minor accidents in 2015 and that these were due to a lack of proper oversight and training.[49] The company reported employees operating equipment while they were sleepy or sick; poor quality construction materials, and lack of protective equipment as security risks. Workers do not receive paid leave when ill. The company's target to achieve zero accidents/incidents and 100 percent compliance in safety and environmental protection is unrealistic: these figures are not based on the number of incidents that have already happened, nor on concrete measures to reduce the number of incidents by a certain percentage and according to a specific timeframe.

Recommendations to Sinohydro International on Soubré Hydroelectric Power Station

Soubre Hydroelectric Power Station construction site, Ivory Coast. 2016

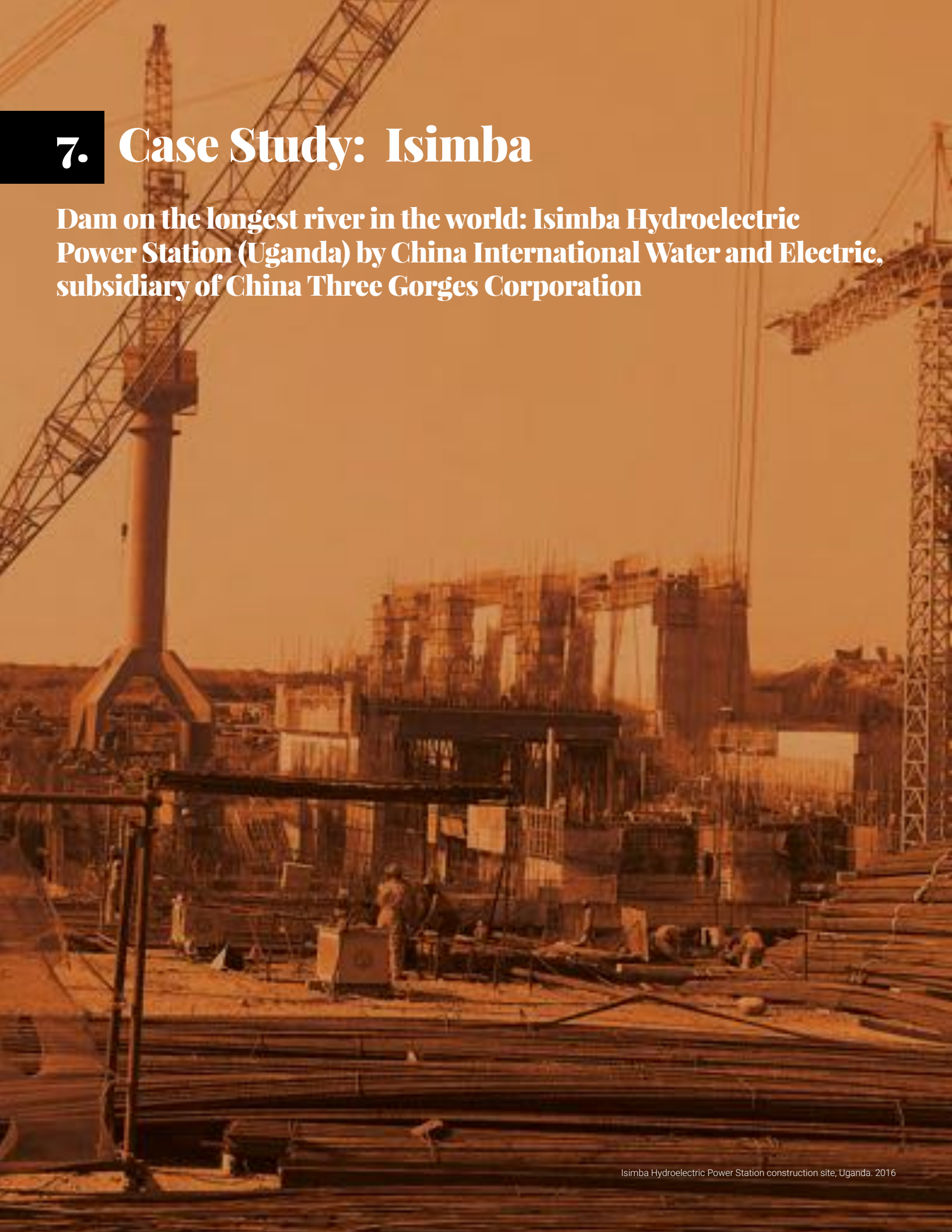
1. Projects should require Cumulative Impact Assessments if there are multiple existing or planned infrastructure projects on the same river.
2. Prior to construction, Sinohydro International should have clearly designed plans to mitigate impacts on cultural resources, and shared these in a format and language that can be understood and easily accessed by key stakeholders.
3. The company should introduce reporting measurements for all of the measures introduced in the EMP.
4. Sinohydro International should make documents including the EIA, EMP, Environmental and Social Impact Assessment (ESIA) and annual reports widely accessible to the public.
5. The company should improve monitoring and evaluation by soliciting feedback from local communities and making the results publicly available.
6. Sinohydro International should continue to encourage qualified local workers to obtain managerial positions.
7. Sinohydro International should introduce compensated sick days in an effort to minimize accidents due to excessive fatigue or working while sick. The company should also ensure that all local and Chinese staff have functioning and effective Personal Protective Equipment.
8. Sinohydro International should make efforts to strengthen the grievance mechanism at Soubré. The consultations should include a wide range of representatives to assess and address impacts on vulnerable populations.

Endnotes

1. International Rivers (2016). Observations From Interviews and Site Visit to Soubré Hydroelectric Power Station, Ivory Coast, June.
2. Ibid.
3. Ibid.
4. Ibid.
5. International Rivers (2009). Civil Society Letter to Sinohydro to Adopt Environmental Standards.
6. International Finance Corporation. Performance Standard 1.
7. Ibid.
8. Ibid.
9. Sinohydro Corporation Limited (2014). Sustainable Development Policy.
10. Ibid.
11. International Rivers (2014-2017). Notes from Company Interviews With Sinohydro International headquarters, Beijing, China.
12. Ibid.
13. Ibid.
14. Sinohydro Corporation Limited (2014). Environmental Management Project Plan.
15. International Rivers (2016). Observations From Interviews and Site Visit to Soubré Hydroelectric Power Station, Ivory Coast, June.
16. Measures to mitigate the impact of construction noise include aggregating processing plants in one place and building roads far from the villages.
17. The company used a sprinkler system on the roads to reduce dust.
18. Measures taken to improve waste management include upgrading the site's oil collection tanks, septic and sedimentation tanks, garbage dump, landfill construction, and mobile toilets.
19. Limit number of borrow sites, keep topsoil and natural vegetation to restore sites after construction.
20. The installation of a drainage network and the establishment of peak trenches on the upper slopes.
21. Ibid.
22. International Finance Corporation. Performance Standard 1.
23. Ibid.
24. Sinohydro Corporation Limited (2014). Sustainable Development Policy. Sinohydro Corporation Limited (2013). Occupational Health, Safety and Environmental Policy.
25. International Rivers (2016). Observations From Interviews and Site Visit to Soubré Hydroelectric Power Station, Ivory Coast, June.
26. International Finance Corporation. Performance Standard 1.
27. Ibid.
28. The Annual Report does not mention any complaints or disputes occurring in 2015. A project manager from Sinohydro International informed that as of June 2016, three complaints had been received from the labor union.
29. International Rivers (2016). Observations From Interviews and Site Visit to Soubré Hydroelectric Power Station, Ivory Coast, June.
30. International Finance Corporation. Performance Standard 2.
31. Sinohydro Corporation Limited (2014). Statement of Ethical Principles.
32. Ibid.
33. Ibid.
34. Workers reported that they are underpaid and often have to work during weekends in order to earn a living.
35. International Rivers (2016). Observations From Interviews and Site Visit to Soubré Hydroelectric Power Station, Ivory Coast, June.
36. Ibid.
37. Ibid.
38. Ibid.
39. Ibid.
40. Sinohydro Corporation Limited (2015). Annual Report.
41. International Rivers (2016). Observations From Interviews and Site Visit to Soubré Hydroelectric Power Station, Ivory Coast, June.
42. Ibid.
43. Ibid.
44. Sinohydro Corporation Limited (2015). Annual Report.
45. Sinohydro Corporation Limited (2015). Environmental Management Project Plan.
46. (Project EMP)
47. Sinohydro Corporation Limited (2015). Annual Report.
48. Ibid.
49. Ibid.

7. Case Study: Isimba

Dam on the longest river in the world: Isimba Hydroelectric Power Station (Uganda) by China International Water and Electric, subsidiary of China Three Gorges Corporation



Isimba Hydroelectric Power Station construction site, Uganda. 2016

Summary and background on Isimba Hydroelectric Power Station

According to World Bank data, only 26 percent of Uganda's population of 45 million has access to electricity. The government is striving to increase this and is building the transmission lines required. Though Uganda is a landlocked country, 18 percent of its land surface is covered by water. There is high hydroelectricity potential; it currently represents more than two-thirds of the power generated in the country. The Isimba Hydroelectric Power Station was designed to have an installed capacity of 183 MW and to be the fourth-largest hydropower project in the country in terms of generation capacity.

The dam is located on the White Nile, which is 3,700 kilometers long and is one of the two main tributaries of the Nile, the world's longest river.

The Isimba Hydropower Project is located 40 kilometers downstream of the Bujagali Dam and does not respect the Kalagala Offset Indemnity Agreement, which was signed in 2012 by the Government of Uganda and the World Bank to protect an area of river downstream of the Bujagali Dam from flooding caused by future hydro projects. The dam directly impacts the Kalagala offset, home of the Kalagala Falls which is an important cultural and spiritual site.

The Isimba Hydroelectric Power Station is located on one of the White Nile's last remaining sections with important rafting rapids. Isimba's reservoir has submerged several important whitewater rapids, negatively affecting the rafting industry which drives the local economy in an underserved part of the country.

Prior to and during construction, there was no cumulative impact assessment despite several existing and planned dams on this stretch of river. The Environmental and Social Impact Assessments and Environmental Management Plans were not publicly available during the construction process.

There has been improper supervision and monitoring of subcontracted companies as many complaints and grievances (i.e. concerning improper contracts, low pay and poor treatment) from workers at subcontracted companies, ultimately affect the reputation of the contractor China International Water and Electric (CWE) and its parent company, China Three Gorges (CTG).

According to CWE, the project employed a high percentage of Ugandan workers (85 percent) and provided opportunities for workers to receive advanced training and to advance to higher positions.

Under guidance from CTG, CWE has remained open to dialogue with international NGOs about the project and has made some adjustments to operation after receiving recommendations. For example:

- Subsequent to feedback from International Rivers, CWE changed grievance forms from being only available in Chinese to being available in local dialect and in English and posted them in public spaces.
- Water boreholes were added on each side of the river after the company was alerted that the project construction site prevented local communities from accessing the river, their main source of water. In August 2019, local partners informed us that access to clean drinking water continued to be a major issue on both sides of the river.

Background information

Status of the project: Isimba was completed in March 2019. The initial agreement was to complete construction by August 2018, but the project faced delays.

EPC Contractor:

China International Water & Electric Corporation (CWE)

It is a wholly-owned subsidiary of one of the world's largest hydropower entities, China Three Gorges Corporation (CTG). CWE undertakes both BOT and EPC hydropower projects. Internationally, CWE has signed six BOT projects and 29 EPC projects with a total capacity of 5,351 MW. International Rivers and CTG began regular discussions concerning the impact of their overseas hydropower projects in 2014.

The client for this project is the Government of Uganda and the consortium comprises Artelia EAU & Environment from France and KKATT Consult Limited, a local company.

Resettlement impact: At least 2,076 people

Installed capacity: 183 MW

Total height of dam: 28.5m

Total Length: 1,525m

Reservoir: 28 km^2

Financiers: Export-Import Bank of China (85 %), Government of Uganda (15%)

Total cost: US $568 million

Timing of our assessment:
International Rivers held three meetings with CTG and CWE in Beijing (15/04/16, 16/11/16, 21/12/16) and conducted a site visit (06/2016) arranged by the company, as well as one visit as part of the IHA World Hydropower Congress in May 2017.

Limitation statement to our assessment:
The site visits were hosted by CWE and CTG.

Nile River rapids, Uganda. 2016

Selected comments on environmental commitments and performance

Disclosure

International standard: Environmental and Social Impact Assessments (ESIAs) are disclosed to "[help] Affected Communities and other stakeholders understand the risks, impacts and opportunities of the project".[1]

Company commitment: None for EPC projects.

Project performance: The full Environmental and Social Impact Assessment for Isimba was not publicly disclosed by the government. The Environmental Management Plan (EMP) was not not publicly available until after the project became operational, but CWE agreed to provide International Rivers with a copy upon request. In contrast, the addendum to the ESIA, commissioned by the World Bank to assess impacts of Isimba's reservoir on the Kalagala Offset Area (discussed below), was made publicly available as required by World Bank policy.

Environmental impacts and reporting

International standard: "The client will document... the measures taken to avoid or minimize risks to and adverse impacts on the Affected Communities, and will inform those affected about how their concerns have been considered".[2] "The client will provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues that involve ongoing risk to or impacts on Affected Communities".[3]

Company commitment: CWE Environmental Management procedures require environmental impact assessments, evaluation of risks and impacts and implementation of preventive measures prior to beginning construction. CWE commits to complying with local legislation and international standards and to using Chinese laws and regulations when these are more stringent than local ones.[4] CWE corporate policy does not require regular public reporting on implementation of its environmental management plans for EPC projects.

Project performance: The Isimba EMP addresses noise, water quality, waste management, wildlife, soil erosion, air quality, aquatic environment, traffic, and habitat destruction and includes a Social Impact Management plan. Land disturbance is not included in the EMP.[5] CWE informed us that it has a long-term monitoring plan for all environmental indicators in the EMP, which was approved by the Owner and the Consulting Engineer in August 2015.[6] CWE informed us that the Community Liaison Officer conducted monthly meetings with local communities and that they conducted monthly environmental reports on progress in implementing the EMP, which were disclosed in July 2019.[7] A biodiversity assessment conducted in 2018 identified that the Kariba weed, an invasive species, had intentionally been introduced for waste-water management. The report warned that the weed flourishes to the detriment of native species and that it would affect fish, domestic water use, transport on the river and fishing without rigorous measures for control.

Cumulative impacts and e-flows

International standard: The scope of ESIAs should cover all impacts within a project's entire area of influence, including "cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted".[8]

Company commitment: None.

Project performance: Despite several existing dams upstream and further developments under construction and planned below Isimba, no cumulative impact assessment was carried out. CWE stresses that the cumulative impact assessment is the responsibility of the developer, the Government of Uganda. The Government has not conducted such an assessment.

CWE explained that the Isimba Project is a run-of-the-river type station without water interception. The upstream inflow is equal to the discharge volume, and does not have an impact on the original flow of the river.[9] The Isimba operation is entirely reliant upon flows from the Bujagali dam, and the company doesn't have the ability to withhold significant volumes of water.

The biodiversity assessment conducted in 2018 stated that the flowing waters and rapids would be lost forever and stressed the utmost importance of conserving remaining stretches of rapids between Lakes Victoria and Kyoga and of creating another offset area to mitigate the loss of rapids.[10]

Biodiversity and protected areas

International Standard: "Mitigation measures will be designed to achieve no net [biodiversity] loss." For critical natural habitats, "a Biodiversity Action Plan... will be designed to achieve net [biodiversity] gains." For projects impacting a protected area, companies are required to consult "Affected Communities [and] implement additional programs...to promote and enhance the conservation aims and effective management of the area".[11]

Company commitment: CTG rates "biodiversity" as being of high strategic importance.[12] The company commits to ensure that ecosystem function is maintained at a level equal to or better than pre-construction conditions.[13] CWE commits to follow the Guide on Social Responsibility for Chinese International Contractors which stipulates that companies must "protect rare and precious fauna and flora species and their natural habitat, and reduce a project's impact on biological diversity" and that "during the implementation of a project, attention must be paid to the protection of ecological systems and restore in a timely manner damages that have already occurred." CWE commits to adopting a set of "No-Go areas" including national parks, World Heritage Listed Areas, habitats of threatened species and internationally listed and protected wetlands.[14]

Project performance:

Biodiversity

The CWE Environmental Monitoring Plan includes sections about wildlife, aquatic environment, and habitat destruction. According to CWE, aquatic life, wildlife, birds, and plants were relocated before impounding the reservoir.[15] At the request of the Government of Uganda, CWE contracted Makarere University of Kampala to conduct a biodiversity assessment in August 2018, before flooding. The study focused on the area that was to be flooded by the Isimba Hydropower Plant and covered 12.7km of free-flowing river. The study warned that local extinctions were possible and identified critically endangered and unique fish species which inhabit rocky habitats that would disappear after flooding. The study identified that the site was the most important micro and macro habitat for reptiles and a nesting ground to reptiles and amphibians. The Isimba Dam is expected to flood nesting grounds for the crested crane, Uganda's national bird and an endangered species.[16] A plant species, millicea excela, was found in the site to be flooded- the plant requires protection in the country due to its nationally endangered status.[17] The biodiversity assessment stated the necessity to conduct baseline studies and recommended extensive restoration and independent monitoring for years to come in order to minimize loss of biodiversity. We did not obtain evidence of a long-term plan, monitoring activities, or viable alternatives to protect biodiversity.[18]

Protected Areas

In 2007, the Government of Uganda and the World Bank signed an agreement to establish a biodiversity offset at Kalagala Falls in order to compensate for the loss of rapids, and damage to the environment and people when the Bujagali Dam was built. Isimba's reservoir will impact the Kalagala Offset Area, which is home to a site of significant cultural, spiritual, and biodiversity value for local communities. CWE claimed that Isimba would not affect the falls, and thus did not propose any mitigation measures.[19] A subsequent assessment showed that portions of the offset would be impacted, and the World Bank was compelled to establish a new offset upstream of Kalagala. In November 2016, CWE acknowledged that portions of the Kalagala Offset area would be impacted.[20] By impacting the Kalagala Offset, the reservoir has also submerged five rapids, which will significantly impact the whitewater rafting industry, one of few large employers in an underserved part of the country. Available documents show that lower dam heights were considered in the design of Isimba that would not impact the offset, but these were rejected in favor of the maximum height. Chapter 9 of the ESIA presents the developer's analysis of different designs under consideration.

Selected comments on social commitments and performance

Consultation

International Standard: "Effective consultation is a two-way process that should: (i) begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise; (ii) be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format and is understandable to Affected Communities...(vi); be documented".[21]

Company Commitment: CWE commits to maintaining an open dialogue with local communities and to conducting a mutually acceptable consultation regarding business activities and their possible effects.[22] CWE also commits to being transparent and culturally appropriate, as well as communicating in a language and manner that is appropriate for local populations.[23]

Project performance: CWE created a Community Engagement Plan for Isimba and put in place a Community Liaison Officer, responsible for holding meetings with communities and ensuring that the project team is aware of community affairs. We were told that the officer holds regular and issue-based meetings.[24] We did not meet directly with community members residing closest to the construction site. Those that live within the reservoir area, and will be compelled to move, told us that they have had no direct interaction with the company. Concerns about the resettlement process continue (see below). The SIA field surveys includes four whitewater rafter operators that are affected by Isimba HPP[25] but neither they nor other whitewater rafting operators were consulted by the company throughout the preparation or construction phases.

Resettlement and compensation

IInternational Standard: "To improve, or restore, the livelihoods and standards of living of displaced persons...through the provision of adequate housing with security of tenure at resettlement sites... Economically displaced persons who face loss of assets or access to assets will be compensated for such loss at full replacement cost".[26]

Company commitment: CWE aims to implement resettlement action plans that include livelihood options, resettlement site options, compensation and new infrastructure.[27]

Project performance: At least 2,076 people in the project area were displaced, 80 percent of whom rely on agriculture for their livelihoods.[28] In July 2019, CWE informed us that, according to the government's records, 93% of affected communities were compensated. During our visit, we had the opportunity to meet with community members who were to be displaced by the reservoir on the east side of the river, the majority of whom had not been compensated. Our local counterparts confirmed to us in July 2019 that this is still the case. During our visit, community members shared a number of issues related to the compensation process, including: requirement to pay a bribe to be considered eligible; cash-only compensation rather than land-for-land; being instructed not to cultivate their land and as a result lacking food or money to pay school fees. Additionally, some were shown on official lists as being compensated when they had not been.

CWE maintains that, as an EPC project, the government of Uganda is responsible for preparing and implementing the resettlement action plan. We encourage the company to follow best practice in due diligence by insisting that certain standards be met in the resettlement process, regardless of who is directly responsible. While the government of Uganda has fallen short of meeting its own responsibilities in ensuring positive outcomes for

displaced communities, these issues are systemic within Uganda, and the company should have conducted appropriate due diligence to determine the capacity of government to enforce compliance with international good practice standards in resettlement.

Grievance mechanism

International Standard: "The client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance".[29] "Communications and grievances received and responses provided should be documented...and reported back to the Affected Communities periodically".[30]

Company commitment: The Guidelines on Social Responsibility for Chinese Contractors, to which CWE is party, commits companies to "learn and respond to the opinions and suggestions of stakeholders". CTG outlined that one of their community engagement strategies is to establish mechanisms for community representatives to participate in project construction and development and to have adequate grievance redressal systems.[31] International best practice states that effective redressal systems cannot exist without basic transparency and disclosure and that redress mechanisms must include redress for failure to enact all of the obligations that may be relevant to communities.

Project performance: There is a grievance redressal mechanism at the community level. During our June 2016 site visit, CWE showed pictures of grievance forms, but the instructions on the forms were entirely in Chinese and were filled out in handwritten Chinese. Following our visit, CWE decided that the grievance forms would be available in local dialect and in English and that they would be posted in public spaces.[32] The Community Liaison Officer is fluent in English and local dialects, and told us he meets with village chiefs bi-monthly.

Though the contractor (CWE) is responsible for receiving reports regarding incidents, accidents and conflict in communities within the project area, the Uganda Electricity Generation Company Limit (UEGCL)'s supervisory Social Team processes them instead. The project consultative committee is responsible for passing on information to project-affected people (PAPs), translating project information flyers and addressing concerns of PAPs.33 In 2016, CWE reported that local communities had filed eight disputes and that all had been resolved.[34]

The Human Resource and External Coordination Department is responsible for the on-site complaints mechanism from workers and has an open door policy, where workers can walk in and express their dissatisfaction, and all complaints are registered.[35] There are suggestion boxes on the site, and a complaint hotline phone number.[36] As of June 2016, CWE office had received 18 complaints from the workers, all of which have been reportedly been settled.[37]

Benefit-sharing

International Standard: The IFC and World Bank define benefit-sharing as "the systematic efforts made by project proponents to sustainably benefit local communities". The IFC Performance Standards explain that developers must engage in effective engagement with stakeholders to create benefit-sharing programs 'that will help mitigate the risks and maximize the benefits of their projects'. IFC Performance Standards 1 (Risk Management), 5 (Land Resettlement), 7 (Indigenous People) and 8 (Cultural Heritage) make specific references to benefit-sharing.

Company commitment: CWE says that benefit-sharing is not included in their contract.

Project performance: CWE committed to implement local development activities as part of their corporate social responsibility. According to international best practice, the activities described by CWE as benefit sharing are in fact basic corporate social responsibility responses. CWE described the following activities:

- Giving priority to local suppliers who are able to provide materials and services (food, wood, oil, cement, PPE, treatment of solid waste) according to required quality levels and quantity.
- Donating school materials, mosquito nets, and agricultural machinery to the community.
- Supporting local women to cook and sell food to workers by constructing and furnishing a local kitchen.

- Renovating a primary school and constructing a primary school.
- Building a clinic which provides free medical care to staff and free medical services to nearby communities twice a year.
- Training 22 local engineers from the community.
- Improving the Nampanyi road and widened the Kasana-Busana Road (which also benefits the company).

Communities explained that their access to the river has been restricted due to the location of the construction site.[38] In 2016, CWE created access passages cutting through the construction site for two communities located on the banks. In August 2019, local partners informed us that there were not enough bore holes on both sides of the river for populations needing access to clean drinking water.

Labor

International Standard: The client "will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. The client will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women." "The client will provide a safe and healthy work environment".[39]

Company commitment: CTG's equal-employment management policies commit to respecting rights to equal pay, non-discrimination, and compliance with labor laws in the host country.[40] CWE strives for an accident free, illness-free and injury-free workplace.[41] CTG commits to promoting local employment by creating job opportunities and providing technical training. CTG abides to the guideline on Social Responsibility for Chinese International Contractors which includes requirements to offer maximum job opportunities to the community, and develop occupational skills training sessions for communities.

Project performance:

Wages and working conditions

There is no minimum wage in Uganda. International Rivers reviewed the data for payments made to Ugandan workers for the month of May 2016 and noted that the base salaries are low (UGX 185,000-250,000; $US 53-71). Workers reported having to work 12 hours a day, almost every day in order to save money. CWE responded that salaries were 30 percent higher than average in Southern Uganda. Overtime pay is x 1.5, working on holidays is x 2, and there is an allowance system augmented every six months with the possibility to double ones' salary after 3 years.[42] Our site visit in June 2016 noted that a UGX 20,000 ($US 6) monthly increase every six months was rarely applied, which suggested that turnover at the time was high. The project manager at Isimba explained that many workers were hired in March and April 2016 because this corresponded to peak time at the construction site.

In July 2015, at least 300 workers protested against poor pay and alleged mistreatment by their Chinese employers. 600 workers went on strike in 2016.[43] CWE explained that the strikes were more complicated than what was reported in the newspapers. CWE explained that since the strikes occurred, most staff accepted and were satisfied with their wages and that CWE continued to increase remuneration through promotion systems.

Since CWE subcontracted parts of the construction, workers hired by subcontractors were not subject to the same policies of creating sound contracts for workers, providing adequate pay, health care, and accommodations. CWE maintains that all workers were subject to the same policies of labor management, contract, salary and health care. Many workers in the mechanics division reported that they did not have appointment letters; as a consequence their salaries were not stable.[44] This was a source of many worker complaints over low pay and poor treatment.[45]

Workers also reported language barriers with Chinese staff leading to violence by Chinese supervisors towards Ugandan staff,[46] dismissing injured employees with no compensation or health care,[47] not providing adequate safety equipment, and no public holidays off. CWE explains that "due to differences in culture and expression, conflicts may occur occasionally in work" but the company attempts to resolve conflict by using "cultural communication".[48]

The company responded to our observations by stating that the project abides by Ugandan labor regulations, noting that staff work 48 hours per week and have 13 public holidays. The company also said staff work overtime at their own discretion and are compensated in accordance with Ugandan labor regulations, and that workers can ask for paid sick leave in accordance with the labor laws and regulations, provided that they can produce a certificate for sick leave issued by a doctor.

Health and safety

According to Ugandan labor regulations, workers cannot be dismissed because of injury and CWE has maintained that this situation has not occurred. CWE told us that they have purchased workmen's compensation insurance for all staff, and that they immediately assist injured staff as well as file insurance claims on behalf of concerned staff. In order to ensure timely treatment, CWE may pay for medical care before the insurance company provides compensation. CWE has received complaints about compensation from injured staff, and has settled these complaints after carrying out investigations.

According to CWE, company policy stipulates that staff cannot perform work unless they wear PPE in order to ensure safety. CWE told us that they distribute PPE to all staff on a regular basis, and keep signatures of receipt as a record. Some workers, however, told us that they are regularly required to work without PPE.

There is a health clinic at the project site which is staffed by two Chinese doctors, two local doctors, and two nurses and provides free clinic service to all staff and their spouses.[49]

Local Employment

In 2016, CWE reported having 2,442 employees of which 1,845 (75 percent) were Ugandan. In September 2015 the Uganda Electricity Generation Company board had accused CWE of failing to employ 1,000 Ugandans as stipulated in the contract. CWE responded that there is no such clause in the contract.

CWE has admitted to failing to employ sufficient numbers of competent, local senior technicians and management personnel at the beginning of construction as they had to mobilize such personnel from their headquarters in China.[50] CWE stated that they attach great importance to training local staff during project construction, and reported increasing numbers of Ugandan staff becoming skilled technicians and management personnel. Currently, approximately 600 skilled workers and 100 management personnel are Ugandan. CWE believes that this allows for improved management and communication with other local staff on the construction site.[51]

According to CWE, training is provided to local workers. In 2016 and 2017, 16 local technicians from MEMD and UEGCL were chosen by the Ugandan government to receive training on turbines, generators and power generation in China.[52]

Recommendations to CWE and CTG on Isimba Hydroelectric Power Station

Isimba Hydroelectric Power Station construction site, Uganda. 2016

1. In an effort to demonstrate adherence to high international standards, CTG and CWE should at a minimum integrate the UN Global Compact and report on the implementation of the ten Global Compact principles. CWE has informed us that they are currently in contact with the UN Global Compact and are considering how to join.

2. As part of their due diligence prior to accepting the contract, CWE and CTG should have ensured that the project would not adversely impact protected areas such as Kalagala Offset Area. Stronger company policies are needed to avoid such issues in the future. Similarly, due diligence is required to assess whether authorities have the track record and capacity to carry out involuntary resettlement, as the company ultimately bears some responsibility if resettlement outcomes are not met.

3. As company policy, CWE should require that comprehensive environmental and social impact assessments and legal compliance are conducted as a pre-condition for assessing risk and opportunity within a project investment. The importance of ensuring that quality E/SIA are conducted prior to accepting the contract allows for business managers to fully understand the project's legacy issues, as well as its cost/ benefit and risk profile. As part of these processes, it is also important that relevant documents be disclosed publicly.

   When a decision has been made to invest in a project, the company should also commit to transparent operations, fully disclosing key reports on websites and at project offices, as well as proactively sharing information prior to key processes or project milestone with project affected communities, NGOs and the general public. This should include details around any mitigation and action plans, and regular updates on progress toward meeting them.

4. The company should ensure the independent monitoring and review of contracts and implementation for subcontractors and hold them to the same high standards, in this case for employment practices. While it is commendable that CWE subcontracted many parts of the project to local contractors, CWE is ultimately responsible for the behavior and shortcomings of subcontractors. Feedback from MEMD indicated that this may have been a source of some of the worker complaints over low pay and poor treatment.

5. The company should undertake, or require completion of, cumulative impact assessments of projects. In the case of the Isimba Dam, this should have included a comprehensive understanding of the Bujagali Hydropower Hydroelectric Power Station on the White Nile and Nile River prior to project construction, including details around potential impacts and mitigation commitments that corresponded to the project footprint, operational regime, and stakeholder relations for Isimba.

6. The company should have conducted formal studies including biodiversity assessments prior to site preparation or project construction. It is important to confirm that there were no sightings or local reports of endangered or IUCN red-list species at the dam site and in the area around the Bujugali transmission line. The biodiversity assessment and biodiversity monitoring were conducted very quickly, just prior to flooding of the dam site.

7. The company should enable stakeholders (including women and men from all affected communities and sub groups or minorities within these communities, not just village chiefs) to participate in open meetings in order to improve the quality of the project.

8. It should ensure that wages for workers are appropriate, given their work hours. Workers have to work 12-hours/ day almost every day to save money.

9. As a matter of urgency, the company should ensure that communities who have seen their access to water restricted by company activities have free and convenient access to sustainable drinking water that meets WHO standards for Uganda

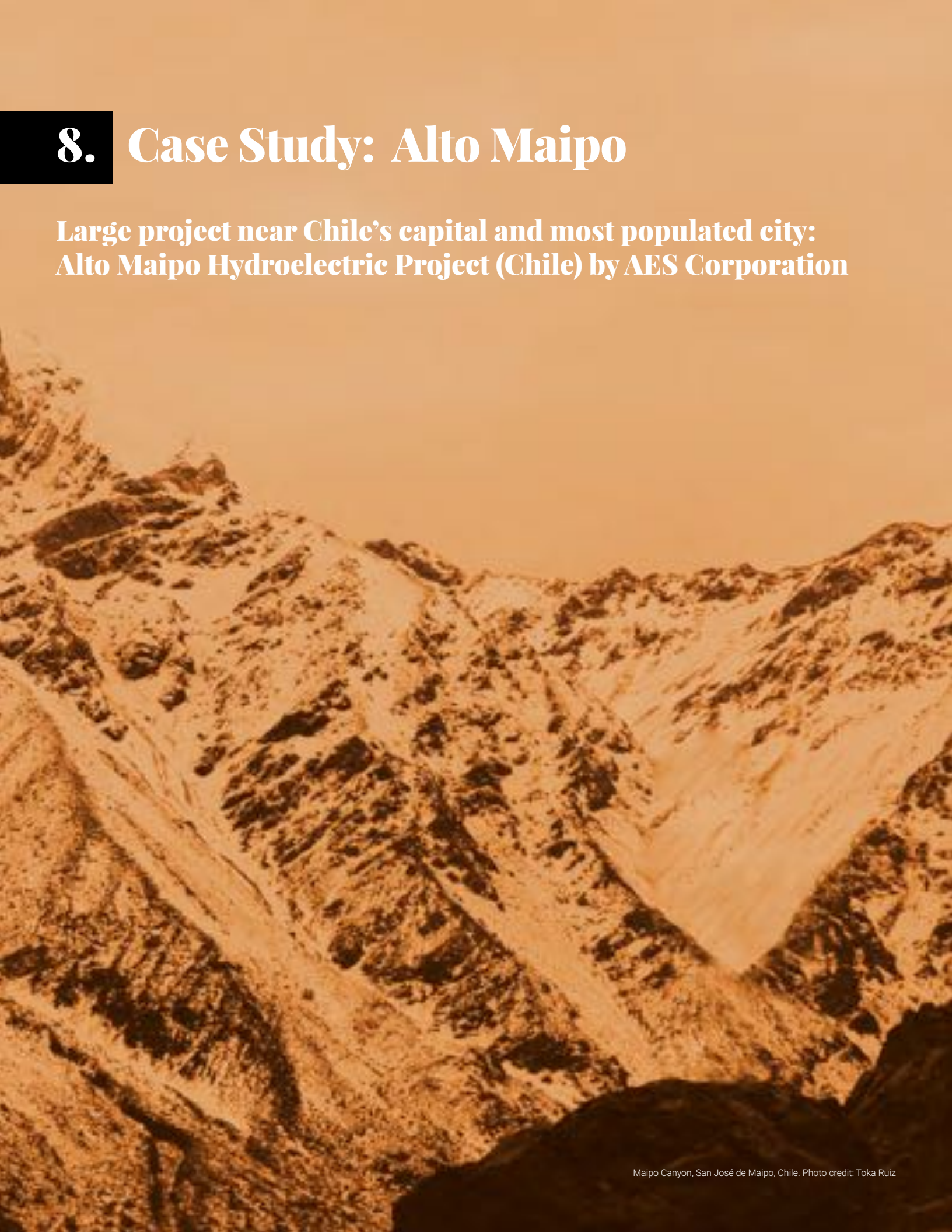
Isimba Hydroelectric Power Station construction site, Uganda. 2016

Endnotes

1. International Finance Corporation. Performance Standard 1.
2. Ibid.
3. Ibid.
4. International Rivers (2016). Notes from company interviews and site visit to Isimba Hydroelectric Power Station, June 2016.
5. China International Water & Electric Corp (2015). Uganda 183MW Isimba Hydropower Plant and Isimba Bujagali Interconnection Project Environmental and Social Management Plan, Version R1. September 2015.
6. Ibid.
7. Isimba Hydro-power Station Document Library (2019).
8. International Finance Corporation. Performance Standard 1.
9. International Rivers (2016). Notes from company interviews and site visit to Isimba Hydroelectric Power Station, June 2016.
10. Makarere University of Kampala (2018). Biodiversity in the Isimba Reservoir Area, edited by Derek Pomeroy.
11. International Finance Corporation. Performance Standard 6.
12. China Three Gorges Corporation (2013, 2015). Social Responsibility Report.
13. China International Water & Electric Corp (2015). Uganda 183MW Isimba Hydropower Plant and Isimba Bujagali Interconnection Project Environmental and Social Management Plan, Version R1. September 2015.
14. China International Water & Electric Corp (2016). PPT on Environmental Management and OHS.
15. China International Water & Electric Corp (2015). Uganda 183MW Isimba Hydropower Plant and Isimba Bujagali Interconnection Project Environmental and Social Management Plan, Version R1. September 2015.
16. International Rivers (2013). Uganda Dam Could Drown Local Jobs, Adventure Tourism.
17. Makarere University of Kampala (2018). Biodiversity in the Isimba Reservoir Area, edited by Derek Pomeroy.
18. China International Water & Electric Corp (2016). PPT on Community and Labor Management; China International Water & Electric Corp (2016). Monthly HSE Report for July 2016.
19. International Rivers (2016). Notes from company interviews and site visit to Isimba Hydroelectric Power Station, June 2016.
20. Including 1 hectare of Nile Bank Forest Reserve, some islands, the "Hair of the dog" rapids and the river embankments in the KoA.
21. International Finance Corporation. Performance Standard 1.
22. China International Water & Electric Corp (2016). Social and Environmental Risks Management Guidelines.
23. Ibid.
24. China International Water & Electric Corp. Community Outreach and Liaison Program Activity Reports from May 2017 and December 2016.
25. According to the AWE Environmental Engineers (2013). Social Impact Assessment for Proposed Isimba HPP, Dam and Reservoir; the impacted rafter operators are Kayak the Nile (U) Ltd, Nile River Explorers, Adrift Uganda Limited, Nalubale Rafting.
26. International Finance Corporation. Performance Standard 5.
27. China International Water & Electric Corp (2016). Social and Environmental Risks Management Guidelines.
28. AWE Environmental Engineers (2013). Social Impact Assessment for Proposed Isimba HPP, Dam and Reservoir.
29. International Finance Corporation. Performance Standard 1.
30. Ibid.
31. China Three Gorges Corporation (2013). Social Responsibility Report.
32. International Rivers (2016). Notes from company interviews and site visit to Isimba Hydroelectric Power Station, June 2016.
33. AWE Environmental Engineers (2013). Social Impact Assessment for Proposed Isimba HPP, Dam and Reservoir.
34. China International Water & Electric Corp (2016). Isimba Record of Community Disputes in 2015 and 2016.
35. China International Water & Electric Corp (2016). PPT on Community and Labor Management.
36. Ibid.
37. China International Water & Electric Corp, transcript of Complaint Handling Records.
38. International Rivers (2016). Notes from company interviews and site visit to Isimba Hydroelectric Power Station, June 2016.
39. International Finance Corporation. Performance Standard 2.
40. China Three Gorges Corporation (2013). Social Responsibility Report.
41. China International Water & Electric Corp (2016). PPT on Environmental Management and OHS.
42. International Rivers (2016). Notes from company interviews and site visit to Isimba Hydroelectric Power Station, June 2016.
43. Uganda Radio Network (2015). Isimba Dam Workers Strike Over Pay Cut. August 14, 2015; Daily Monitor, Uganda (2015). Isimba dam workers strike over poor pay, harassment. July 18, 2015.
44. International Rivers (2016). Notes from company interviews and site visit to Isimba Hydroelectric Power Station, June 2016.
45. Ibid.
46. For example, a driver reportedly made a formal complaint after being physically slapped by his Chinese superior. He was given minor compensation then dismissed (site visit).
47. Workers interviewed cited examples of five people from mechanics division having that predicament in the last two months.
48. International Rivers (2016). Notes from company interviews and site visit to Isimba Hydroelectric Power Station, June 2016.
49. China International Water & Electric Corp (2016). Sustainable Development Practices at Uganda Isimba Hydropower Project.
50. International Rivers (2016). Notes from company interviews and site visit to Isimba Hydroelectric Power Station, June 2016.
51. Ibid.
52. Ibid.
53. The UN Global Compact is the world's largest corporate sustainability and social responsibility initiative and includes 13,000 corporate participants. The ten principles in the UN Global Compact include areas related to human rights, labor, the environment and anti-corruption.

8. Case Study: Alto Maipo

Large project near Chile's capital and most populated city: Alto Maipo Hydroelectric Project (Chile) by AES Corporation



Maipo Canyon, San José de Maipo, Chile. Photo credit: Toka Ruiz

Summary and background on Alto Maipo Hydroelectric Project

Chile has a National Energy Strategy which aims to increase the share of hydropower generation in the total energy mix to 45 percent by 2024. There have been prominent fights in Chile over attempts to construct hydro dams in the Patagonia region. The country has other energy options as it possesses among the highest commercially viable solar potential in the world, especially in the north of the country.

The Proyecto Hidroeléctrico Alto Maipo (PHAM) is located in the high section of the Maipo Valley. This project is located close to the capital, Santiago, and the Maipo Valley, the best-known wine-producing region in Chile. The Maipo River is the major source of irrigation and potable water for the eight million people in the Metropolitan Region of Santiago.

The PHAM is a trans-basin diversion hydro project wherein water is drawn from the Volcán, Yeso, and Colorado rivers through intakes at the El Yeso reservoir and La Engorda River valley. Water is channeled through two underground powerhouses before being discharged into the Maipo River. PHAM requires 70 km of tunnels to be dug through the mountains to channel the rivers' flows. In addition to significant technical challenges, this also has the effect of dewatering stretches of the river below the intakes. The PHAM does not require a new transmission facility to be built and is located 12 km from the interconnection point.

PHAM has been criticized for potentially jeopardizing the source of Santiago's drinking water, and for being previously funded by the Antofagasta PLC mining company. There have been at least three national marches for Santiago's water as part of the No Alto Maipo campaign which have included over 100 organizations from around the country, as well as politicians and Chilean celebrities.[1]

The project's revised ESIA and EMP have been publicly available on a Chilean government website since 2008; the Cumulative Impact Assessment Report has been publicly available since 2013. Through the government of Chile's Environmental Oversight office, AES Gener publishes publicly documented, semiannual reports concerning environmental programs.

There were three trials and 14 charges against PHAM for not complying with the conditions, norms and measures established in the project's environmental permit. The courts rejected all three claims against PHAM but appeals are still pending.

PHAM did not conduct sufficient assessments on impacts to the water quality and sanitary structure of Santiago. This led to strong opposition and resistance from locals. A claim filed by a researcher at the Medical College of the Metropolitan Region demonstrated that the presence of toxic elements exceeding WHO and Chilean standards in the waters of the Maipo River basin, which correspond to water running nearby the excavation works of the PHAM tunnels. Chilean courts and the Environment Authority rejected this claim in December 2016 (ord. 2889 SMA) after inspecting the project and analyzing samples. The PHAM then filed a damage claim against the researcher for presenting misleading information.

PHAM implemented key changes to the project design in order to minimize impacts on the ecological flow in the Yeso River and the wetlands and to protect the ecological flow in the Colorado River. Nonetheless, the PHAM project is estimated to reduce the Yeso, Volcán and Colorado Rivers by up to 60 percent.[2] The project does not consider the 37 percent decline in the flow of rivers in the Maipo basin and the required minimum 20 percent monthly e-flows as stated in Chile's current legislation. Lower flows and droughts will impact the drinking and irrigation water supply and reduce the electricity that can be generated by PHAM.

The Sediment Study in the Environmental Impact Study demonstrates that PHAM will decrease the river's aggregate production by 22 percent. This threatens the sustainability of irrigation works and the stability of important roads and bridges which cross the riverbed. AES claims that any reduction in capacity for sediment transportation will not impact the rivers.

PHAM did not identify all of the stakeholders impacted by the project and did not consider impacts to downstream users and neighboring communes such as Paine, Puente Alto and San Bernardo. At the beginning of the project, there was no public participation in decision-making processes. This was later rectified, but impacted people reported that the engagement has not been adequate or meaningful as information is not reliably or regularly transmitted between the parties. AES responds that the impact zone was determined by Chilean environmental authorities, not by the company and that PHAM was required to inform impacted residents about the project in 2007. The project has an open house and community center in San José de Maipo. Many members in the community who oppose the project do not feel at ease going there to raise their concerns.

There are three IUCN Protected Areas within the project's area of influence. The project impacts at least five species of trees that are classified as "Vulnerable" under Chilean Law and 16 animal species classified as "Threatened" under Chilean law and that are on the IUCN Red List. The company states that there are mitigation and management plans for all of the protected species impacted by the project.

Background information

Status of the project: Construction began in 2013. The project has been repeatedly halted by technical challenges, including unanticipated geological conditions that have delayed tunneling. The two underground powerhouses were completed in 2018.

EPC Contractor:

AES Corporation's subsidiary AES Gener

The AES Corporation is headquartered in Virginia. It operates in 18 countries on four continents and has operated in Latin America since 1993. The company's primary business is the construction and operation of coal, diesel, gas, oil, and renewable energy power plants. The AES Corporation is the second-largest power generator in Chile. It operates through a subsidiary called AES Gener which is based in Santiago and manages the PHAM.

The project company in charge of PHAM is Alto Maipo SpA. It was originally 60 percent owned by AES Gener, 40 percent owned by Antofagasta subsidiary Los Pelambres. In January 2017, Los Pelambres backed out of the project due to cost overheads, changes in energy taxes, and friction with its partner. Strabag (an Austrian engineering and construction company) now owns about 7% of PHAM and AES Gener owns the remainder.

Resettlement impact: Reportedly none

Installed capacity: 531 MW

Tunnel Lengths:

Alfalfal II: 39km

Las Lajas: 28km

Financiers: IFC, IDB, OPIC, and multiple bilateral agencies and commercial banks. AES informs that Deutsche Bank, Itau, Banco Estado and BCI have since joined the lenders pool

Total cost: Originally US $2.05 billion, but there is an expected increase in the final cost of between 10-20%

Timing of our assessment:
AES declined our requests to meet both at their headquarters in the USA and at the project site in Chile. AES provided feedback and supporting documentation to answer questions questions concerning the project in 2016, 2017 and 2019. International Rivers and our partners conducted visits to the site in October 2016. " Sorry that I was not clear.

Limitation statement to our assessment:
We were not able to access the project site and therefore did not meet with project management staff or with workers. We were able to interview community members who are impacted by the project.

Cajon del Maipo El Manzano, Chile. Photo credit: Benjamín Gremler

Selected comments on environmental commitments and performance

Disclosure

International standard: Environmental and Social Impact Assessments (ESIAs) are disclosed to "[help] Affected Communities and other stakeholders understand the risks, impacts and opportunities of the project".[3]

Company commitment: None

Project performance: AES Gener conducted an ESIA for the Alto Maipo project. As required by the project's financiers (IFC among others), the revised ESIA and EMP have been publicly available on a Chilean government website since 2008.

Environmental impacts and reporting

International standard: "The client will document... the measures taken to avoid or minimize risks to and adverse impacts on the Affected Communities, and will inform those affected about how their concerns have been considered".[4] "The client will provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues that involve ongoing risk to or impacts on Affected Communities".[5]

Company commitment: AES' Environmental Policy requires rigorous and verifiable EIAs and requires biodiversity risks to be assessed and mitigation plans to be developed during pre-construction permitting and the environmental impact assessment. AES' Environmental policy aims to "meet or exceed the requirements of environmental rules and regulations imposed by local, regional, and national governments and by participating financial institutions." The AES' Code of Conduct states that some United States laws apply to AES businesses outside of the United States because it is a public company based in the United States. AES corporate policy does not require regular public reporting on implementation of its environmental management plans.

Project performance: Impacts and management measures identified in the EIA include air quality, noise, water, flora and vegetation, limnology, ground fauna, landscape, cultural heritage and infrastructure. The permanent impacts identified during the operation stage include water sources, ground fauna, limnology, and landscape. The project has developed a Forest Management Plan and Vegetation Restoration Plan, Dust Suppressant Application Program, Emission Compensation Program, Disposal Materials Plan, Sewage Waste Disposal, On-site disposal Management Plan, and Wildlife Rescue and Relocation Plan. Based on requests and recommendations from environmental and social due diligence studies by IFC, IDB and other financiers. AES Gener completed an Alternatives Analysis report which summarizes five project alternatives.

Community groups in San José del Maipo identified a number of gaps in the EIA, including: inaccurate and inadequate evaluations on the ecological flow; impacts on glacial and underground water; hydrogeological impact of the tunnel on aquifers and underground flows; accuracy of baseline water quality prior to construction; impacts on duck habitats in the Volcan River and the condor habitat in the Colorado River; the impacts on river sedimentation; impacts of climate change, desertification, and prolonged drought in the region; impacts on culture and traditional activities such as transhumance; impacts on archaeological patrimony sites such as Valle de las Arenas and Camino del Inca; and the deforestation of native tree species. AES claims that these concerns have been evaluated by the company and discarded or mitigated.

The company incorporated the construction of the Alfalfal Forebay, an accumulation reservoir of 300,000 cubic meters, without conducting technical or environmental evaluations.[6] Though this qualifies as a reservoir, AES refers to it by a different name and maintains that this installation does not qualify as a reservoir.

AES Gener has publicly disclosed semi-annual reports before Chile's Environmental Oversight office concerning progress toward meeting its commitments in the PHAM environmental management plan.

Cumulative impacts and e-flows

International standard: The scope of ESIAs should cover all impacts within a project's entire area of influence, including "cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted".[7]

Company commitment: As required in order to comply with IFC Performance Standards, AES commissioned a Cumulative Impact Assessment (CIA) for Alto Maipo that was made publicly available in 2013. AES Gener affirms that the CIA followed guidelines from the US government and IFC. However, the study failed to evaluate the indirect and cumulative impacts on the entire river basin.

Project performance: The Maipo River is the primary source of potable water for the Greater Metropolitan Region of Santiago. AES Gener informs that PHAM will return water five km before the intake of Las Vizcachas Potable Water Plant and reportedly signed an agreement with Aguas Andinas Company that would prevent PHAM to impact the drinking water supply. Yet, neither the EIA or the CIA mention the importance of the Maipo basin for drinking and irrigation water and do not assess impacts downstream of the dam where irrigation canals and drinking water connect Santiago with the south of the country. Nor did the company study impacts on the neighboring communes of Paine, Puente Alto and San Bernardo[8] as the company determines these to be outside of the area of influence.

A claim filed by a researcher at the Medical College of the Metropolitan Region demonstrated the presence of toxic elements exceeding WHO and Chilean standards in the Maipo River basin, and that they seem to come from the excavation works of the PHAM tunnels.[9] Chilean courts and the Environment Authority rejected this claim in December 2016 (ord. 2889 SMA) after inspecting the project and analyzing samples. The PHAM then filed a damage claim against the researcher for presenting misleading information. AES' technical reports demonstrate that the tunnels are not affecting the water source.[10]

A complaint and photographic evidence was submitted to the Superintendency of the Environment in 2015 to show that explosions and dust from the PHAM construction site are accelerating the degradation of the Meson Alto Glacier, which is already receding because of desertification.[11] This glacier forms part of the El Morado Natural Monument, an area of paleontological and archeological significance and one of the most popular tourist and recreational destinations in Chile. AES Gener claims that the ongoing reduction of the glaciers cannot be attributed to PHAM.

Based on requests and recommendations from the IFC, IDB and other financiers, the PHAM established an Ecological Flow Management Strategy[12], the report is available online.

Opponents have argued that AES Gener failed to consider the last ten consecutive years of drought, which has led to a 37 percent decline in the flow of rivers in the Maipo basin, thus overestimating the availability of river flows. As such, AES Gener will be unable to comply with the minimum 20 percent monthly e-flows as stated in Chile's current legislation. AES Gener affirms that the 10 percent annual average is more conservative for seasons with low flow.

According to the Alto Maipo Environmental and Social Management Report by the IDB, the project was revised to remove the flow intake at Las Cortaderas Stream to protect the ecological flow in the Yeso River and the vegas wetlands, remove all surface infrastructure in protected areas, and cancel the flow intake at Quempo Stream to protect the ecological flow in the Colorado River.

Stakeholders located downstream have raised multiple concerns about the impacts of project operations to downstream water users (i.e. farmers, kayakers/rafters) and the supply of potable water for Santiago's metropolitan region. AES refers to a 2013 study with technical data to state that that PHAM does not impact downstream water users and has no impact on potable water supply.[13]

Biodiversity and protected areas

International Standard: "Mitigation measures will be designed to achieve no net [biodiversity] loss." For critical natural habitats, "a Biodiversity Action Plan... will be designed to achieve net [biodiversity] gains." For projects impacting a protected area, companies are required to consult "Affected Communities [and] implement additional programs...to promote and enhance the conservation aims and effective management of the area".[14]

Company commitment: AES' Biodiversity Assessment & Protection requires that projects avoid direct impacts to World Heritage areas and IUCN protected areas. AES is also to avoid projects which lead or contribute to the extinction of species which are listed as endangered by the IUCN.[15] AES Gener claim that their affiliates must abide by AES' EMS framework and conduct relevant biodiversity and baseline studies and establish the risks related to biodiversity.[16]

Project performance: The project footprint during construction directly impacts terrestrial flora. Drastic reductions in water flow affects aquatic habitats and potentially lead to residual impacts on the ecological integrity of the Maipo, Yeso, Volcan, and Colorado Rivers.[17] The project will impact approximately 31 hectares of natural Schlerophyll forests along the Colorado and Volcan Rivers and 70 hectares of shrubs and grasses. The vegetation affected includes five species of Schlerophyll forest trees which are classified as "Vulnerable" under Chilean Law. The project area has a high variability of terrestrial fauna species, including amphibians, reptiles, birds, waterfowl, and mammals. The ESIA reported the presence of 16 animal species which are classified as "Threatened" under Chilean law and are on the IUCN Red List.[18] AES Gener informs that their efforts for vegetation restoration contribute to the preservation of biodiversity.

AES Gener agrees that there are three IUCN Protected Areas within the project's area of influence: Monumento Natural El Morado (IUCN II), the Santuario de la Naturaleza San Francisco de Lagunillas y Quillayal (IUCN IV), and Santuario del a naturaleza Cascada de las Animas (IUCN IV).[19] AES Gener informs that they have conducted supplementary studies have been conducted to analyze potential impacts to these sites.

There are three pending court cases against PHAM and 14 charges by the Superintendency of the Environment for not complying with the conditions, norms and measures established in the project's environmental permit. Nine of the charges are considered to be "grave".[20] In response to these charges, AES has submitted a compliance program committing to implement 47 separate corrective measures.[21] Chilean courts have since rejected the three court cases against PHAM, but appeals are still pending. In April 2018, the Environmental Regulatory Authority of Chile put on hold the sanctions process against PHAM and implemented an Environmental Compliance Program consisting of 64 actions and periodic reports. The company claims to have fulfilled 100% of these actions as of June 2019.

Selected comments on social commitments and performance

Consultation

International standard: "Effective consultation is a two-way process that should: (i) begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise; (ii) be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format and is understandable to Affected Communities...(vi) be documented".[22]

Company commitment: AES' Human Rights Policy is consistent with the United Nations' Guiding Principles on Business and Human Rights, which includes the need to conduct consultations with affected members.[23] AES Gener reports that they integrate the IFC's Performance Standards on Environmental and Social Sustainability in order to identify and manage potential impacts to the local communities.[24]

Project performance: According to IFC's project appraisal, AES Gener consulted and informed key stakeholders about the project prior to the development and submission of the ESIA. Preliminary consultation and disclosure activities began in 2006. Upon submission of the final ESIA (2008), AES conducted eight formal public participation meetings.[25] El Alfalfal and Los Maitenes-- the two most impacted communities--report that there was no citizen participation in AES processes at the beginning of the project, and limited information was distributed. The association of canalists and general users of the river were not consulted during the design of PHAM.[26]

The ESIA doesn't cover impacts related to gender or indirect and interactive social impacts.[27]

In 2014, in response to public criticism over the lack of stakeholder engagement and transparency, AES created a community relations department and prepared a Participatory Monitoring Plan to oversee the project's construction.[28] Impacted communities report that citizen participation in the environmental assessment process did not have a real impact on the project design, nor did it achieve social legitimacy. None of the written comments submitted by citizens received an adequate response.[29]

According to the *No Alto Maipo Campaign* representatives, during the first process of environmental evaluation, citizens entered 6,000 observations concerning the project. The first project was withdrawn in May 2008. In the same month, the company re-entered the project for environmental processing and citizens submitted 8,000 observations. The company responded to these by copying and pasting paragraphs from the EIA that did not necessarily respond to the observations.

Resettlement and compensation

International Standard: "To improve, or restore, the livelihoods and standards of living of displaced persons...through the provision of adequate housing with security of tenure at resettlement sites". "Economically displaced persons who face loss of assets or access to assets will be compensated for such loss at full replacement cost".30

Company commitment: AES' Human Rights Policy encourages their businesses to avoid relocation or resettlement whenever possible. If resettlement is to occur, AES businesses are to gather information through public meetings/hearings, letters, or emails in order to design mitigation measures and community benefits.

Project performance: The project does not require the physical resettlement of residents in the area, but it does involve economic displacement that will have both short- and long-term impacts on surrounding and downstream communities. AES states that since 2012, PHAM has conducted a biannual Social Indicator Monitoring Study which examines the social and economic development of communities deemed to be impacted.

An initial Sediment Study for PHAM indicates a decrease in the river's aggregate production by 22 percent which threatens the sustainability of irrigation works and the stability of important roads and bridges used by the community.[31] AES Gener has not undertaken measures to mitigate these impacts and claims that any reduction in sediment transportation will not have an impact on the rivers.

AES Gener reached an agreement with El Manzano's Community Irrigation Association regarding satisfactory measures to ensure that their water intake from the Colorado River continues to be sufficient and in accordance with the community's water rights.[32]

The National Tourism Service, in its observations to the Environmental Impact Study of PHAM, warned that the project could endanger the lives of visitors due to potential unplanned water discharges common in this type of facility. AES denies that the National Tourism Service made such comments.[33] The project impacts on jobs related to tourism in the Cajon del Maipo have not been properly evaluated or compensated.[34] The Upper Maipo is rafted year round and the Yeso and Colorado rivers are also hot spots for kayakers.

Grievance mechanism

International Standard: "The client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance."[35] "Communications and grievances received and responses provided should be documented...and reported back to the Affected Communities periodically".[36]

Company commitment: The grievance mechanism at PHAM was designed based on IFC guidelines and the principles of ISO 26000. The complaint procedure for PHAM was established in 2012 based on recommendations from environmental and social due diligence studies by the IFC and IDB and has been publicly available since then. AES Gener has stated that information on the grievance mechanism is disseminated at all meetings with the community and through neighborhood councils. As of June 2017, AES Gener reported that it had received 271 complaints through this channel.[37]

Project performance: Prior to 2012, the community relations field office in San José de Maipo provided a point of contact for local residents to obtain information. Reports from local communities indicate that the office did not maintain a systematic procedure to ensure that complaints or questions were resolved in a timely and transparent manner.

Community groups have pointed out the failure of the project's grievance mechanism to adequately resolve complaints stemming from the project. Residents living by the project site experience disruptions that are not compensated. They reported that trucks drove explosives through their towns, that heavy metals dumped into the marina are not treated, and complained of high noise levels and intense lights from trucks and machinery which were operating day and night (7am to 3am). To this, AES responds that "the management of explosives is a highly sensitive matter, made by external specialist subcontractors" under surveillance by local authorities.

The company stopped working at night due to the complaints, and built a wall at El Alfalfal to mitigate dust and noise. However communities report that the noise continued to be unbearable, especially ones produced by machines that break the ground. Construction work at unreasonable hours only ceased after local protests.[38] Residents have reported that the wall completely surrounds the village and has affected the access, activity and quality of life for local residents.[39] AES Gener reported that following a meeting with community members in 2014, the company spent $US 300,000 to expand this barrier, so that it was a perimeter fence, with access doors to the various properties and for animals to cross. This was reasserted by the president of the Directive Committee of Alfalfal.

According to the two most-impacted communities in El Alfalfal and Los Maitenes, domestic animals (goats, dogs and cats) have been stolen and/or killed (i.e. by traffic) since construction for PHAM began. According to the community members in San José del Maipo, the increase in people from outside of the community (with a peak of 2,500 mostly external workers) has significantly altered community life and resulted in an increased number of assaults in the community.[40] These impacts have neither been addressed nor compensated. To this, AES responded that the PHAM has conducted a biannual Social Indicator Monitoring study since 2012. The company reports that the latest analysis was conducted in 2018 and found that "there was no perception of negative impact on the community associated with quality of life, safety and public disorder due to the presence of workers staying outside camps."

More than 500 inhabitants in the region filed a petition against the company and also against the Environmental Assessment Service regarding high concentrations of toxic elements in the water. Studies by both the Medical College of the Metropolitan Region[41] and the water company Aguas Andinas[42] confirmed that water samples taken from sources close to excavation works of the PHAM tunnels contain concentrations of metals and metalloids that affect both drinking water and water for irrigation. These concentrations exceed Chilean standards and recommendations by the World Health Organization. The Superintendency of the Environment continues an investigation to determine if the contamination is due to the construction of PHAM. The company responds that Chilean courts and the Environmental Authority concluded in ord. 2889 SMA that there was no relation between the PHAM and the water quality in the region.

Benefit-sharing

International Standard: The IFC and World Bank define benefit-sharing as "the systematic efforts made by project proponents to sustainably benefit local communities." The IFC Performance Standards explain that developers must engage in effective engagement with stakeholders to create benefit sharing programs "that will help mitigate the risks and maximize the benefits of their projects". IFC Performance Standards 1 (Risk Management), 5 (Land Resettlement), 7 (Indigenous People) and 8 (Cultural Heritage) make specific references to benefit sharing.

Company commitment: AES has a company-wide document with guidelines for developing Sustainable Corporate Social Responsibility Programs.[43] AES supports programs and activities that focus on education and training to develop skills within communities.[44]

Project performance: In March 2009, AES Gener signed a Social Collaboration Agreement with the municipality of San José de Maipo and 16 of the 28 communities represented by the Union Communal de Juntas de Vecinos de San José De Maipo. The commitments include assuring that 500 job opportunities are filled by local workers and a Social Program Grant fund is established to support projects proposed by local stakeholders.[45] AES has committed to support El Alfalfal by enhancing houses through the provision of construction materials, not through financial compensation.[46]

The Alto Maipo Project and AES Gener Foundation have set up a Digital Literacy Program, a Study Program supported by the Ministry of Education for adults who haven't completed their secondary studies. The foundation organizes summer activities for locals and tourists.[47]

The AES Gener Foundation has reportedly developed a $US 66 million social investment program[48] that includes an agreement to provide $US 200,000 annually over a period of 30 years, through the Los Maitenes Foundation, to the community of San José de Maipo. Between 2014- 2018, PHAM reports to have funded over 300 community projects including scholarships, training programs for employability and support for local artisans. No Alto Maipo Campaign representatives believe that the total of this measure is not significant considering the investment, return and impacts of the project, and the amounts allocated are not sufficient for a commune with 14,000 inhabitants.[49]

AES had not fulfilled its promises with community members in El Alfalfal (2014) and Los Maitenes (2013) to improve water quality, mitigate noise impacts, and grant cash compensations to impacted families.[50] The company states that the agreements have been 90% fulfilled as of mid-2019.

Labor

International Standard: The client "will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. The client will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women...The client will provide a safe and healthy work environment".[51]

Company commitment: AES states that their safety requirements abide by all applicable workplace health and safety laws and that the company promptly reports safety concerns, incidents and violations. AES' Safety Management System (SMS) is built on the OHSAS 18001 Occupational Health and Safety Management System model and applies to all operating and construction sites. The SMS often exceeds local regulatory requirements. AES field offices are responsible for ensuring compliance with AES EHS requirements, including safety training.[52]

Project performance: According to AES Gener, the company performs periodic medical exams, provides workers with health insurance services through the Mutual de Seguridad (Chilean social security), promotes the obligatory use of applicable personal protective equipment, and offers incentives for good health and safety performance.[53] However, community members in San José del Maipo stated that workers are not provided with adequate health services, that there is no onsite hospital and no infrastructure to conduct surgery or address the needs of pregnant women.[54] The safety manuals and safety policies of AES and AES Gener are not publically accessible and we were not able to review them. The company responds that the contractor Strabag has set up medical facilities, including a maternity ward.

AES established a dedicated helpline called "Speaking Safely" that allows employees and others to anonymously voice concerns about workplace safety, both by phone and online. A third-party vendor handles reports in order to ensure confidentiality and anonymity.[55]

The social collaboration agreement between AES Gener and the community includes a Local Employment Creation Program which requires that at least 15 percent of the construction workforce be residents of the municipality of San José de Maipo.[56] AES states that between 2014 and 2017, the local employment for the project has ranged between 17 percent and 22 percent. However, community members in San José del Maipo do not believe that the company has fulfilled the promise of 15 percent local employment. Two local council members requested data on who has been hired from the community, but have not received an answer from the company.[57] The company says that employment information is sent the Municipal Labor Intermediation Office on a quarterly basis. They did not clarify whether this information is made publicly available. AES did agree to incentivize contractors to increase local workers to 25 percent of the workforce by paying an incremental bonus.[58] By June 2017, 188 local suppliers had provided services and invoiced $US 55 million.

There are eight unions at PHAM, including the biggest national union for construction workers and more than 37 union leaders. PHAM has an internal grievance procedure for workers, but workers from El Alfalfal and Los Maitenes explained that they experience retaliation and that employees are fired for complaining.[59] This is contrary to Chilean labour statutes that protect workers against employer retaliation. AES explained that formal labor claims to work authorities are anonymous.

In 2015, at least five strikes were staged on the site of the Alto Maipo project, mainly related to poor working conditions.[60] Workers living at the construction sites of El Yeso and El Volcan complained that they were working with water to the waist, without any safety equipment, and at risk of accidents due to tunnels collapsing; they also said they experienced discrimination and arbitrariness from foreign nationals who are in higher management positions.[61] AES deflected responsibility for handling labor conflicts to the contractor and responded that Strabag, the current contractor, has had fewer labor fines than CNM, the former project contractor (12 vs. 58).

El Yeso Glacier, Chile. Photo credit: Raphael Nogueira

Recommendations to AES Corporation on Alto Maipo Hydroelectric Project

1. Include the scenario "without project" in the Alternatives Analysis report.
2. Take measures to minimize impacts on biodiversity. The project impacts at least five species of trees that are classified as "Vulnerable" under Chilean Law and 16 animal species that are classified as "Threatened" under Chilean law and are on the IUCN Red List. There are three IUCN and legally protected areas within the project's area of influence.
3. Ensure that the EIA, e-flows and other environmental assessments consider the ten consecutive years of drought and large decline in the flow of rivers in the Maipo basin. AES Gener has overestimated the required e-flows by failing to consider the last ten consecutive years of drought. PHAM's 10 percent e-flows do not respect the minimum 20 percent e-flows required by Chile's current legislation. PHAM implemented key changes to the project design in order to protect the ecological flow in the Yeso River and wetlands and to protect the ecological flow in the Colorado River. These amendments are welcome and should continue.
4. Conduct further studies on impacts to local glaciers. There are reports that explosions carried out at the PHAM project site and dust from construction may be contributing to the degradation of eternal glaciers.
5. Ensure that social requirements are as robust as the company's Safety Management System (SMS). AES' SMS is built on international standards and applies to all international project sites. AES Corporation should similarly ensure that high standards for social requirements are also applied across all project sites. Currently, local teams are in charge of determining corporate social responsibility programs and addressing community grievances. The headquarters provides generic recommended guidelines and provides no oversight.
6. Conduct a separate SIA to address gender impacts, cumulative, indirect and interactive social impacts including the influx of outside workers to the area and impacts on tourism. There are impacts on local populations and downstream users even though the PHAM does not involve resettlement.
7. Mitigate impacts of erosion. The Sediment Study in the Environmental Impact Study demonstrates that PHAM will decrease the river's aggregate production by 22 percent. This threatens the sustainability of irrigation works and the stability of important road works which cross the riverbed as well as bridges over the Maipo River on the Maipo Highway.
8. Identify and involve all basin users in the project assessment. AES reports to have made efforts to identify all stakeholders potentially impacted by the project, but did not include canalists and downstream users. At the beginning of the project, there was no citizen's participation in AES processes. AES has reportedly created a $US 66 million social investment program, conducted public meetings and participated in community events, but the engagement has not been adequate or meaningful as information is not transmitted between the parties.
9. Mitigate the impacts of dust, noise and pollution in ways other than the barrier which was built to surround El Alfalfal. Despite spending $US 300,000 to expand the wall in an effort to mitigate the impacts of dust, noise and pollution, it has impacted the quality of life of local people by compromising their access and other activities.

10. Actively ensure that formal labor claims filed to the project site management are anonymous. Workers from El Alfalfal and Los Maitenes are concerned that if they complain, they will experience retaliation and perhaps be fired. Ensuring these protections would comply with Chilean labour statutes that protect workers against employer retaliation.

11. Respond to requests for data by two local council members who have asked for evidence that the PHAM is fulfilling its promise of 15 percent local employment.

12. Evaluate the indirect and cumulative impacts of PHAM on the entire basin and study impacts on neighboring communes such as Paine, Puente Alto and San Bernardo.

13. Conduct assessments on impacts to the water quality and sanitary structure of Santiago. AES' lack of action on this issue has led to strong opposition and resistance from locals. The company did not conduct studies on impacts of the project downstream of the restitution point, where there are irrigation canals, drinking water and other infrastructure projects, including for road and rail, that are important for the country. AES' technical reports showing that the tunnels do not affect the water source are not detailed enough.

14. Conduct adequate studies and evaluations prior to incorporating the construction of an accumulation reservoir of 300 thousand cubic meters.

Chilean activists protesting against the Alto Maipo Hydropower Project in Santiago, Chile, 2014. Photo credit: Inter Press Service

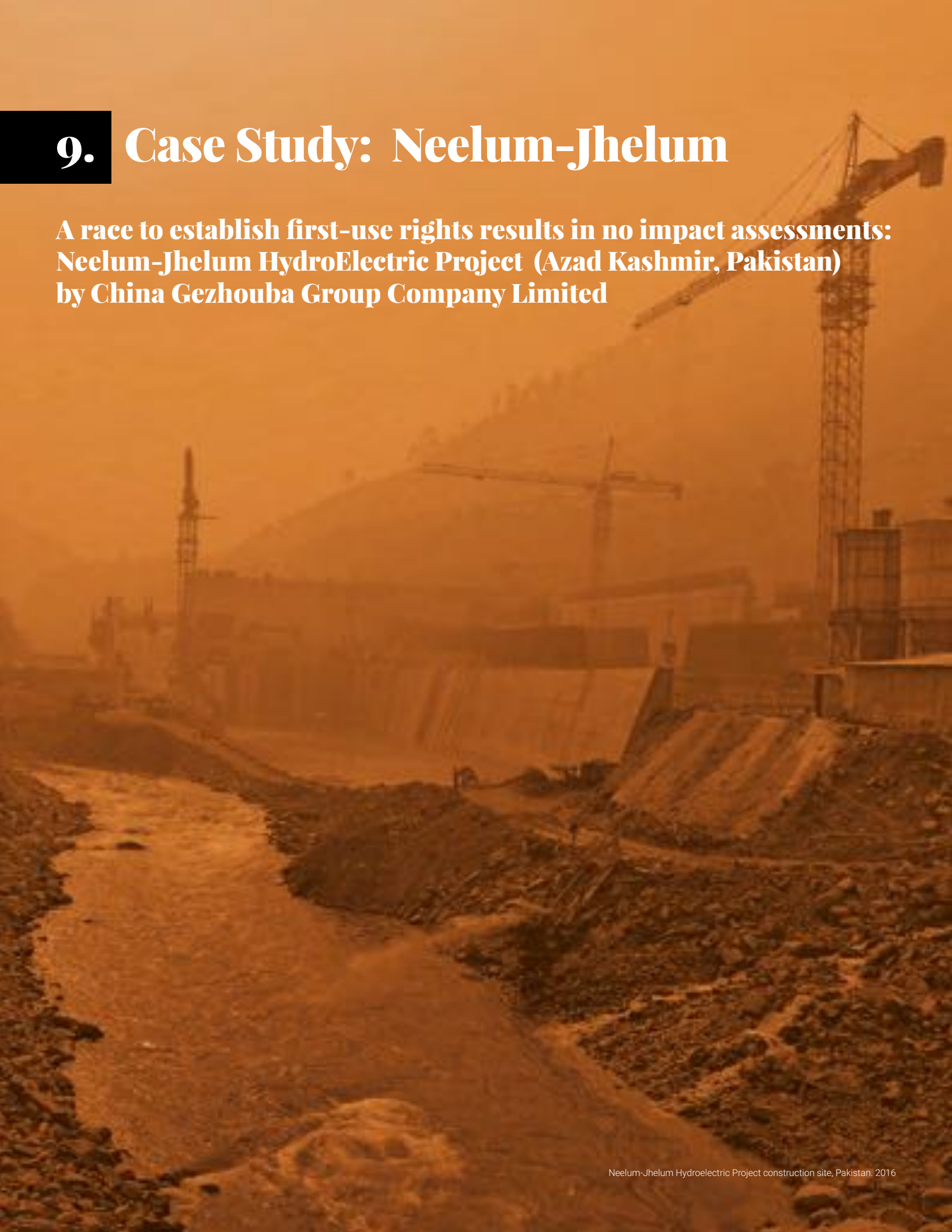
Maipo Valley, Chile. Photo credit: Diego Astorga

Endnotes

1. Salvemos el río Maipo (2015). 30,000+ People March in Chile to Save a River.
2. CIEL (2017). Fact Sheet: Chile's Alto Maipo Hydroelectric Project (PHAM).
3. International Finance Corporation. Performance Standard 1.
4. Ibid.
5. Ibid.
6. Ombudsman Office (2017). Complaint Before the Ombudsman Office and Advisory Adviser (CAO), January 24, 2017.
7. International Finance Corporation. Performance Standard 1.
8. Ombudsman Office (2017). Complaint Before the Ombudsman Office and Advisory Adviser (CAO), January 24, 2017.
9. UChile, Camila Medina (2016). No a Alto Maipo: "Gobierno debe asumir la responsabilidad por aprobar el proyecto".
10. Government of Chile, Superintendent for Environment. Environmental Assessment Resolution.
11. Ombudsman Office (2017). Complaint Before the Ombudsman Office and Advisory Adviser (CAO), January 24, 2017.
12. International Finance Corporation (2013). IFC Project Information Portal, Alto Maipo.
13. AES Corporation (2017). Alto Maipo SpA letter to International Rivers in 2016 and 2017.
14. International Finance Corporation. Performance Standard 6.
15. AES Corporation. Sustainability Report (2015).
16. AES Corporation Environmental Policy (2013). Alto Maipo Hydroelectric Power Project CH-L1076 Environmental and Social Management Report, September 2013.
17. International Finance Corporation (2013). IFC Project Information Portal, Alto Maipo.
18. International Finance Corporation (2013). IFC Project Information Portal, Alto Maipo.The baseline surveys show the presence of the Small Catfish, a native endemic species to Chile which is on the IUCN Red List category as "Data Deficient", the Torrent Duck which is categorized as "Endemic to Chile" in Chile's CONAF Red Book and "Least Concern" on the IUCN Red List, and the amphibian "Sapo Arriero" which is classified by Chile's CONAF Red Book as "Threatened" and by the IUCN Red List as "Near Threatened".
19. Inter-American Development Bank (2013). Alto Maipo Hydroelectric Power Project CH-L1076 Environmental and Social Management Report.
20. Ombudsman Office (2017). Complaint Before the Ombudsman Office and Advisory Adviser (CAO), January 24, 2017; Chile regulator says to sanction AES Gener's Alto Maipo project.
21. AES Corporation (2017). Alto Maipo SpA letter to International Rivers in 2016 and 2017.
22. International Finance Corporation. Performance Standard 1.
23. AES Corporation (2007). Code of Conduct, The AES Values, From Words to Action.
24. AES Corporation (2017). Alto Maipo SpA letter to International Rivers in 2016 and 2017.
25. Gobierno de Chile, Servicio de Evaluacion Ambiental (2009). Ficha del Proyecto: PROYECTO HIDROELÉCTRICO ALTO MAIPO Exp. N°105.
26. Ombudsman Office (2017). Complaint Before the Ombudsman Office and Advisory Adviser (CAO), January 24, 2017.
27. AES Gener. Environmental Impact Study – Alto Maipo Hydroelectric Project.
28. AES Corporation (2017). Alto Maipo SpA letter to International Rivers in 2016 and 2017.
29. International Rivers (2016). Notes from site visit in September 2016.
30. International Finance Corporation. Performance Standard 5.
31. Ombudsman Office (2017). Complaint Before the Ombudsman Office and Advisory Adviser (CAO), January 24, 2017.
32. International Finance Corporation (2013). IFC Project Information Portal, Alto Maipo.
33. AES Corporation (2017). Alto Maipo SpA letter to International Rivers in 2016 and 2017.
34. Ombudsman Office (2017). Complaint Before the Ombudsman Office and Advisory Adviser (CAO), January 24, 2017.
35. International Finance Corporation. Performance Standard 1.
36. Ibid.
37. AES Corporation (2017). Alto Maipo SpA letter to International Rivers in 2016 and 2017.
38. International Rivers (2016). Notes from site visit in September 2016.
39. Ombudsman Office (2017). Complaint Before the Ombudsman Office and Advisory Adviser (CAO), January 24, 2017.
40. International Rivers (2016). Notes from site visit in September 2016.
41. Medical College of the Metropolitan Region (2016)
42. Aguas Andinas (October 2016)
43. AES Corporation (2017). Alto Maipo SpA letter to International Rivers in 2016 and 2017.
44. Ibid.
45. Inter-American Development Bank (2013). CH-L1067 : Proyecto de Energía Hidroeléctrica Alto Maipo.
46. Agreement with Communities Alfalfal, Maitenes and Lo Valdes.
47. AES Corporation (2017). Alto Maipo SpA letter to International Rivers in 2016 and 2017.
48. AES (2018). About Us.
49. Ombudsman Office (2017). Complaint Before the Ombudsman Office and Advisory Adviser (CAO), January 24, 2017.
50. International Rivers (2016). Notes from site visit in September 2016.
51. International Finance Corporation. Performance Standard 2.
52. AES Corporation. Sustainability Report (2015).
53. International Finance Corporation (2013). IFC Project Information Portal, Alto Maipo.
54. International Rivers (2016). Notes from site visit in September 2016.
55. AES Corporation. Human Rights Policy.
56. International Finance Corporation (2013). IFC Project Information Portal, Alto Maipo.
57. International Rivers (2016). Notes from site visit in September 2016.
58. International Finance Corporation (2013). IFC Project Information Portal, Alto Maipo.
59. International Rivers (2016). Notes from site visit in September 2016.
60. More than 100 people contracted by Strabag halted construction work because they were upset that better wages and working conditions were offered to foreign workers; over 800 workers hired for mining operations in Las Lajas and El Alfalfal went on strike and accused the company of poor working conditions.
61. Biobio Chile (2016). Trabajadores de proyecto Alto Maipo cumplen mas de dos semanas en huelga.

9. Case Study: Neelum-Jhelum

A race to establish first-use rights results in no impact assessments: Neelum-Jhelum HydroElectric Project (Azad Kashmir, Pakistan) by China Gezhouba Group Company Limited



Neelum-Jhelum Hydroelectric Project construction site, Pakistan. 2016

Summary and background on the Neelum-Jhelum HydroElectric project

Hydropower accounts for approximately 30 percent of Pakistan's total electricity generation. The country has an estimated capacity of 50,000 MW, of which 7,300 MW have been developed.

Many of Pakistan's major rivers originate north of the country, and flow through India or the contested Kashmir region before entering back into Pakistan. The use of these resources is governed by the 1960 Indus Water Treaty which guarantees Pakistan water from the Indus, Chenab, and Jhelum rivers.

The Jhleum River is a tributary of the Indus River, 725 kilometers in length. The largest tributary of the Jhelum is the Neelum River. The Jhelum and Neelum rivers flow through India and Pakistan, including through politically sensitive Azad Kashmir.

India and Pakistan have been competing to develop hydropower on the Jhelum River in order to establish first-use rights. India's 330 MW Kishanganga hydro-electric power project and Pakistan's 969 MW Neelum–Jhelum Hydropower Plant both became operational in 2018.

Large hydro projects at various stages of development on the Jhelum River and its tributaries are expected to generate over 5,000 MW of electricity in the next ten years.[1] However, these projects would damage streams and rivers, and consequently local activists are fighting against proposed projects.

The Neelum-Jhelum Hydroelectric Project diverts water from the Neelum River through tunnels 41 kilometers upstream of Muzaffarabad to a power station on the Jhelum River. The Neelum-Jhelum Hydroelectric Project is the fourth-largest hydropower project in Pakistan in terms of generation capacity.

Pakistan sought arbitration at the Hague's Permanent Court of Arbitration in October 2011 due to impacts of India's Kishanganga hydropower project on the Neelum River in Pakistan. The Kishanganga dam has reduced the volume of water to the city of Muzaffarabad (population of almost 100,000) and the surrounding areas. Locals report that the Neelum-Jhelum Hydropower Plant has exacerbated the situation further.

There was no basin-wide planning prior to building the Neelum-Jhelum HydroElectric Project.

China Gezhouba Group Company (CGGC) agreed to take on the project before an EIA, EMP, SIA and geological studies had been conducted. CGGC deflected responsibility and explained that according to the contract, EIA and resettlement plans are the responsibility of the proprietor, Pakistan's Water And Power Development Authority (WAPDA). 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 HSE Department. The EIA was conducted years after project construction began and did not include details on cumulative impacts. Professionals from the power sector in Pakistan suggest that wind and solar would be preferable options as they carry less geological and hydrological risk[2].

CGGC allegedly designed the dam so that sediment in the upstream Neelum would return to the river via the reservoir or the pond and so that excessive sediment deposits do not block the river. CGGC has set a minimum ecological flow in order to prevent ecological impacts of water intake during the dry season. During operation, the river flow can be adjusted to different levels by controlling the gates and stopping one of the turbines.

CGGC sourced materials locally, including cement and steel. The ratio of Chinese to local employees was typically 1:4 throughout the project. CGGC made efforts to include local and Chinese women in the workforce. Cultural and religious barriers for Pakistani women made it difficult to retain them.

Background information

Status of the project: The project was initiated in January 2008, originally to be completed in 93 months by October 2015. The Neelum Jhelum project was inaugurated by the Prime Minister of Pakistan on April 13, 2018 and was operating at full capacity in August 2018.

EPC Contractor:

China Gezhouba Group Company Limited (CGGC).

The company was founded in 2006 and is a member of China Energy Engineering Group Co., Ltd. Gezhouba is second to Sinohydro International in terms of its overseas hydropower development. As of 2016, Gezhouba was the world's 45th largest contractor. Gezhouba has built 37 projects (26 of which are under construction) outside of China, for a total installed capacity of 33,700 MW. Gezhouba saw a drop in overseas projects between 2012-2015, but has achieved growth again in the last two years, with projects repackaged under the Belt and Road Initiative. The company's primary business is contract construction for power generation, transportation, and water infrastructure projects.

Resettlement impact: The company did not resettle anyone but locals reported that there were direct impacts to people from Nauseri and Chattar Kalas

Installed capacity: 969 MW

Total height of dam: 60m

Tunnel Lengths

Twin Tunnel: 19.6km

Single Tunnel: 8.94km

Tailrace Tunnel: 3.54km

Reservoir: The Neelum Jhelum project will include a reservoir with a total volume of around eight million cubic meters

Financiers: The financing arranged by the National Bank of Pakistan comes in the form of a specialized Islamic bond called a "sukuk" with value of $US 955 million. A number of Pakistani and Chinese commercial banks are invested in the project

Total cost: Currently projected as US $3.8 billion, original contract to the CGGC-CMEC consortium was US $1.5 billion (CGGC: US $1 billion, CMEC: US $ 500 million).

Due to cost overruns, officials have explained that half of the financing would be generated through a surcharge on every unit of electricity sold to consumers over eight years

Timing of our assessment:
International Rivers conducted meetings with the company in 2016 and 2017 and one site visit in November 2016

Limitation statement to our assessment:
Since this visit was hosted by CGGC, our team did not have the space and ability to meet with communities. Given volatility in the region at the time of our site visit, in November 2016, we were accompanied by CGGC and security from our arrival to our departure in Islamabad

Neelum-Jhelum Hydroelectric Project construction site, Pakistan. 2016

Selected comments on environmental commitments and performance

Disclosure

International standard: Environmental and Social Impact Assessments (ESIAs) are disclosed to "[help] Affected Communities and other stakeholders understand the risks, impacts and opportunities of the project".[3]

Company commitment: None.

Project performance: An Environment Impact Assessment (EIA) was not carried out and implemented before construction started; this violates CGGC's Regulation on Environmental Protection. Authorities produced the Environmental Assessment Report three years after construction began and disclosed it to the public.

Environmental impacts and reporting

International standard: "The client will document... the measures taken to avoid or minimize risks to and adverse impacts on the Affected Communities, and will inform those affected about how their concerns have been considered".[4] "The client will provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues that involve ongoing risk to or impacts on Affected Communities".[5]

Company commitment: CGGC is committed to complying with the environmental and social standards of the host country, and incorporates the environmental and social standards set by Chinese law as a minimum.[6] CGGC has "identified, accessed, publicized and implemented" international instruments such as the Convention on Wetlands, the Convention Concerning the Protection of the World's Cultural and Natural Heritage and the Convention on Biological Diversity.[7] CGGC's Regulation on Environmental Protection requires EIAs and the establishment of environmental management systems in accordance with the GB/T24001-2004 Standard.[8]

The company's legal affairs department is responsible for the centralized management of relevant laws, regulations and other requirements. The company's overseas units are responsible for identification, access and training of local laws, regulations and other requirements.[9] CGGC corporate policy does not require regular public reporting on implementation of its environmental management plans.

Project performance: An Environment Impact Assessment (EIA) was not carried out and implemented before construction started.[10] The proprietor, Pakistan's Water And Power Development Authority (WAPDA), ordered construction to start in 2008, against the advice of the company that conducted the project assessment and geological surveys. Concerned about risks of increased tension between Pakistan and India on transboundary water allocation, WAPDA ordered the project to continue without ensuring proper conditions for project construction. A comprehensive survey conducted later led to re-adjustments in the design, construction plan, and other internal changes. The revised design and construction plans required a new EIA, which was carried out during the construction process and was released in 2011.

CGGC deflected responsibility for the EIA to WAPDA. International Rivers was able to obtain a copy of the 2011 EIA and EMP which were released by WAPDA.

CGGC committed to restore and revegetate temporarily cleared roads, spoil ground, and quarry sites in a timely manner after construction in order to minimize adverse environmental and ecological impacts from construction.

Wastewater from the construction site was pre-treated in tanks before being discharged into the river. The project team informed us that they regularly cleaned the tank and collected water samples quarterly. We were told that the water quality test

results indicated that the construction site did not pollute the Neelum River. A senior engineer explained that construction may temporarily increase the concentration of sediments in the river flow, but that this would improve upon completion of construction. However, residents believe that dam construction has affected the safety of their drinking water. They explained that since construction began, their water supply has decreased in quantity and has become more polluted. WAPDA had promised to provide an alternative water supply, but this commitment was not fulfilled.[11]

The Environmental Management Plan (EMP) is part of the EIA[12] and contains relevant laws, regulations and standards on issues like drainage, gas emission, ambient air quality, noise, and drinking water, but does not contain corresponding treatment measures. There are requirements and corresponding measures for restoration of land and vegetation. The project supervision team has monitored test results and regularly conducted environmental inspections. The EMP in the EIA does not address soil erosion and siltation issues.

There is no evidence that CGGC reported publicly on progress toward meeting its commitments under the EMP.

Cumulative impacts

International standard: The scope of ESIAs should cover all impacts within a project's entire area of influence, including "cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted".[13]

Company commitment: None.

Project performance: There was no basin-wide planning process, and cumulative impacts were not considered or reported in the EIA despite the presence of multiple existing and planned projects on the Neelum and Jhelum rivers.

CGGC proposed ways in which basic ecological water functions can be maintained when the project generates power. The flow-rate for the four generators is 280m3/s. If this flow-rate is maintained, it will cause the section of the river between Nauseri to Muzaffarabad to be dry for more than seven months out of the year. Therefore, for this segment of the river, CGGC suggested setting a minimum ecological flow of 1-3m3/s in order to reduce ecological impacts of water intake during the dry season.

Neelum-Jhelum Hydroelectric Project construction site, Pakistan. 2016

The river flow can be adjusted to different levels by controlling the gates. The company explained that one out of the three turbines would be stopped in order to allow continued flow in case of water shortage in the river. After the project was handed over, there was no way for CGGC to ensure that WAPDA respects measures to shut off all generation to prioritize basic ecological water functions.

CGGC committed to protect mountain slopes and riverbanks impacted by construction. To mitigate erosion on these slopes, the company took regular measures, including stabilizing the surface with mounted steel mesh and shotcrete and installing drain pipes and drain grooves to allow normal water seepage and stabilize the soil.

CGGC stated that the construction process aimed to make full and reasonable use of all available land and the surface occupied by rivers and gullies, while not affecting river flows. As an example, the company stated that the iron and steel processing plant and the switching station in the generation plant were built on reclaimed land.

A senior manager at CGGC explained that the Neelum-Jhelum Hydroelectric Project would not cause sediment issues because the project adapts bottom-hole over-current structure, instead of the conventional surface-overflow dams that blocks the river. The sediment pond includes a specific function to wash the sand, so that all sand washed away from the pond will flow back to the Neelum River. Sediment in the upstream Neelum would return to the river via the reservoir or the pond. Therefore, the dam will not cause an excessive sediment deposits that would block the river and impact the operation of the dam. In addition, the project does not interrupt or divert rivers or gullies within the construction area. All of the original flow channels are maintained and strengthened in reaches where they are vulnerable. All of the structures except for the dam are located underground; CGGC has claimed that there would be minimal issues regarding surface soil erosion and sediment deposits.

Biodiversity

International Standard: "Mitigation measures will be designed to achieve no net [biodiversity] loss." For critical natural habitats, "a Biodiversity Action Plan... will be designed to achieve net [biodiversity] gains."[14]

Company commitment: The 2013 CSR Report states that the company respects nature and aims to safeguard biodiversity and that the company protects natural habitats, wetlands, forests, wildlife corridors, and agricultural land during construction. CGGC tries to protect the environment by first avoiding unnecessary structures, occupying less land, using "wasteland whenever possible instead of farmland or forest". Environmental protection plans and measures were proposed by the marketing department and reviewed by the HSE Department. The HSE Department is also responsible for supervising and inspecting their implementation.[15]

Project performance: CGGC claimed that there were no species on the IUCN Red List or areas with high biodiversity value in the project area. The Machiara National Park is nearby the project site and the EIA stated that it would not be impacted. According to the EIA, the project would not affect wildlife or migratory birds. The EIA reports that wastewater discharge from the construction sites and camps will have an impact on fish in the Neelum River, but will not lead to the extinction of species. No endangered fish species were identified.

The internal EMP contains wildlife protection measures, including the following: regulations instructing employees to stay away from wild areas (especially forests) so as not to disturb caves, nests, spawning areas, migration areas and feeding areas; and strict rules prohibiting field staff to hunt, trap or harass wildlife. Employees are prohibited from trafficking wild animals, must avoid night construction in areas close to wild areas; are forbidden from generating noise and unreasonable vibrations; and are not permitted to build outdoor fires beyond the campsite. The company allows the use of wood and shrubs for fuel during construction.

Selected comments on social commitments and performance

Consultation

IInternational standard: "Effective consultation is a two-way process that should: (i) begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise; (ii) be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format and is understandable to Affected Communities...(vi) be documented".[16]

Company commitment: The Information Exchange, Consultation and Communication Control Procedures and Regulation on Complaints require the company to establish smooth communication channels with stakeholders. Stakeholders involved typically include project owners, engineers, local government representatives and embassy officials. Mechanisms to involve stakeholders such as communities and civil society are not clearly defined. CGGC indicated that the company follows the same procedures when dealing with complaints from local community members and CSOs if they come through project owners or local government.

CGGC requires its headquarters to inspect a project once or twice a year, which includes meeting with the individuals that are identified as project stakeholders. Views and suggestions including from local communities are voiced through project owners or the local government.[17]

In Pakistan, public hearings must take place before the Environmental Protection Authority is able to approve projects.

Project performance: CGGC had not conducted consultation or public hearings and felt absolved because the project did not directly result in displacement. An outstanding resettlement dispute between WAPDA and local landowners had not been resolved during the time of our assessment.

Resettlement and compensation

International Standard: "To improve, or restore, the livelihoods and standards of living of displaced persons...through the provision of adequate housing with security of tenure at resettlement sites." "Economically displaced persons who face loss of assets or access to assets will be compensated for such loss at full replacement cost".[18]

Company commitment: None. CGGC maintains that as an EPC contractor, it is not responsible for conducting a SIA and reviewing the impacts of the project on local communities' livelihoods and living standards.

Project performance: CGGC did not have a resettlement plan for the Neelum Jhelum hydropower project. Yet the project flooded homes, schools, a power house, lands and orchards. In the absence of a proper resettlement plan, the value of flooded houses, land and orchards, especially in Nauseri and Chatter Kalas were vastly underestimated. The Neelum Jhelum diversion caused the water table to drop and dried up the springs that provided water to local communities; local residents were not compensated.

Governance and rule of law in the Autonomous Territory of Azad Kashmir are weakly enforced. The chairman of a trade union in Muzaffarabad explained that WAPDA did not honor its promises. CGGC was aware of the problems in the resettlement process. During several meetings, the company expressed its expectation for the owner to properly handle such issues. Affected people from Nauseri Village were allotted residential plots measuring three marlas (equivalent to 75m2) which does not meet the minimum requirements to sustain their lives.

Residents from Chatter Kalas filed resettlement disputes at the high court eight years ago but these remain unresolved.[19] During this time, land-owners have become de-facto landless. Displaced local people are now less financially stable and are struggling to maintain livelihoods. Affected people have not been adequately resettled nor have they been compensated.

The proprietor has not yet fulfilled its compensation commitments to land owners and residents in impacted communities.[20]

Complaints mechanism

International Standard: "The client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance".[21] "Communications and grievances received and responses provided should be documented...and reported back to the Affected Communities periodically".[22]

Company commitment: CGGC has a filing procedure for complaints which specifies a response time limit, a punishment mechanism and an accountability mechanism. Project departments need to report complaints and disputes to headquarters within 48 hours after receiving them. The company's inspection team visits the site twice a year to deal with people's disputes and listen to their needs and demands.[23]

Project performance: During our field visit, impacted land owners, villagers and WAPDA all affirmed that CGGC is proactive in communicating and has a good communication mechanism. CGGC was not able to provide statistics on consultation meetings since there are no such records. CGGC has not yet established a systematic negotiation and consultation mechanism. Two mass gatherings were reported to be caused by miscommunication. Both were resolved through coordination with landowners, community leaders, the local administration (police and local leadership), WAPDA and other stakeholders.

Labor

International Standard: The client "will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. The client will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women". "The client will provide a safe and healthy work environment".[24]

Company commitment: CGGC has a strategy of "globalized resource allocation and localized labor management" for international projects so as to propel local economic growth, provide local employment opportunities and improve local labor skills.[25] CGGC's Regulation on Recruitment of Foreign Employees for Overseas Units requires that all staff respect the laws of the host country and local culture, that labor contracts be signed with local employees; training to be provided; and compensation and benefits be commensurate with local standards.[26]

Project performance: CGGC holds meetings with employee representatives every year and uses the opportunity to consult and receive complaints. Those results are disclosed internally. The company also collects employees' opinions on company development and management, personal development and logistics.[27]

CGGC explained that the percentage of local employment is subject to local contract requirements and quotas. If local labor is available in the host country, CGGC will not use Chinese workers.[28] As of October 2016, there were 1,333 Chinese employees and 5,830 local employees (ratio 1:4 Chinese to local employees). CGGC reports to purchase over 80 percent of its materials locally, including cement and steel. CGGC subcontracts local partners to carry out project construction and equipment supply.

CGGC wanted to provide employment opportunities to people of both genders and hired local female staff to work in the project office. Unfortunately most of the local female employees resigned due to social, cultural and religious pressure and constraints. In late 2016, only one female Pakistani nurse was still working at the health station of the C3 project site. Since the beginning of the project, female Chinese employees have been working at the project sites and interacting with local communities.

Employees in each of the three construction sites have set up labor unions to represent themselves and negotiate with CGGC on salary, welfare and other labor issues.

CGGC established dispute and grievance mechanisms for labor issues. When disputes occur, local workers can report the problem to their direct supervisor or complain to the Human Resources department. If the dispute cannot be settled, the labor union can formally conduct official negotiation with CGGC. Labor representatives reported that the communication mechanism is open and effective.[29]

In 2010, there was unrest regarding low wages (ie PKR 9,000 ($US 64)/ month for drivers and non-skilled labor and PKR 15,000 ($US 107)/month for skilled labor). Local workers demanded that their salaries be commensurate with labor laws. Following a 21-day strike and negotiations, a committee decided to increase the wages of workers and provide compensation for overtime work, access to health and accommodation facilities. The committee revised the wages to PKR 13,000 ($US 92) /month for drivers, PKR 12,000 ($US 86)/ month for non-skilled labor and PKR 20,000 ($US 143)/ month for skilled labor. WAPDA, the local labor union, Labor Department, community leaders and CGGC also implemented a mechanism to resolve any issues which might emerge in the future.

We did not find reports of discrimination or non-payment of wages. CGGC was not able to offer a specific number of discrimination cases that have been filed. CGGC explained that the most common method to settle disputes caused by cultural conflicts between Chinese and local workers (such as improper use of language) is to take disciplinary action against Chinese workers, asking them to apologize or resign. In extreme situations, Chinese staff may be repatriated.[30]

CGGC provides skills training for local workers. CGGC has trained a group of local management specialists who instruct local employees on themes including transportation, logistics and safety supervision. Most occupational training is conducted through local vocational schools. All employees with special operational functions, such as electricians, are required to possess certifications from vocational schools. CGGC also provides safety education and first aid training to the proprietor, supervision managers and engineers. Those who have not received training at the beginning of the construction project, receive relevant training like first aid, fire prevention, counterterrorism and technical skills later during the project.[31]

Employees we interviewed were generally satisfied with the work and facilities (including canteens, toilets, prayer room) on the project site, which were designed and built to respect local culture and religious customs. The work site and worker dormitories were equipped with barrels of (treated) water to supply safe drinking water to both Chinese and Pakistani employees. The management is aware that some Pakistani employees are accustomed to and continue to drink water directly from the spring.

Many local workers expressed satisfaction at having been employed at the construction site for seven to eight years and have improved their skills; some have become management staff. Many expressed their willingness to continue working for CGGC on other projects once the construction for the NJ hydropower project ends. They also said that their long-term employment with CGGC provides stable income as well as training opportunities. Therefore, in general, these workers are satisfied with their wages and employment arrangements. Some of the workers interviewed, however, expressed less satisfaction concerning their wages, claiming that they did not receive wage increases or bonuses. Representatives from the labor union explained that the daily wages for unskilled workers is lower than the market price.

Recommendations to China Gezhouba Group Corporation on Neelum Jhelum Hydroelectric Project

1. Ensure that resettlement and compensation plans, even if they are not established by CGGC, are adequate and that the process is transparent. WAPDA used resettlement and compensation plans which were not comprehensive and did not cover every impact of the project. Compensation commitments and disputes were left unresolved for as long as eight years. Displaced people from Chatter Kalas became landless, less financially stable and face problems regarding their livelihoods. CGGC should not rely only on relations with Pakistani authorities to understand the extent of social and environmental impacts.

2. Systematically conduct basin-wide impact assessments for all hydropower projects, even if they are run-of-river or diversion projects. The management at CGGC explained that the Neelum-Jhelum HydroElectric Project has a light impact on the river and surrounding ecosystem because it is a diversion project. The EIA suggests otherwise.

3. Ensure a safe water supply for villagers downstream of the project. CGGC should find better methods to inform villagers about plans to treat and test the water quality. During our interviews, CGGC reported that water was treated before being returned to the river and that they conducted quarterly water quality tests. However, locals reported being concerned that water quality had higher sedimentation and deteriorated after construction. CGGC could provide an alternative water supply, which is an unfulfilled commitment made to the communities by WAPDA.

4. Ensure that all workers, including skilled and unskilled, have wages that are competitive. While CGGC's Regulation on Recruitment of Foreign Employees for Overseas Unit informs that wages for overseas workers are competitive, representatives from the labor union said that the daily wage offered to unskilled workers was under the market price and that some workers did not receive their bonuses. CGGC should ensure that wages are above market price.

5. Engage with communities and CSOs, rather than delegating this responsibility to the project owner or local government. Stakeholders included in CGGC's Information Exchange, Consultation and Communication Control Procedures only include project owners, engineers, local government and embassy officials because CGGC deems that community relations are beyond its contract scope as EPC contractor. CGGC should recognize that this is not always safe or effective for CSOs and communities to make complaints through the local government or the project owner. CGGC can give better recourse to communities and CSOs to make complaints.

6. Clarify the timeframe within which CGGC acknowledges receipt of complaints and how and when they are resolved. CGGC explained to us that the project department needs to report complaints to the company headquarters within 48 hours of receipt.

7. Keep a record and statistics from consultation meetings. At the time of our analysis, CGGC had not established a systematic negotiation and consultation mechanism for the project.

8. As much as possible, ensure that WAPDA will continue to monitor and take precautions to ensure that the river sustains basic ecological functions and flow. CGGC takes a responsible approach to ensure basic ecological flows, including shutting off two out of the three turbines during the dry season and when water flow is low. These are important provisions because when the EIA was completed in 2011, it reported that water diversion would cause the section of the river between Nauseri to Muzaffarabad to be dry for more than seven months.

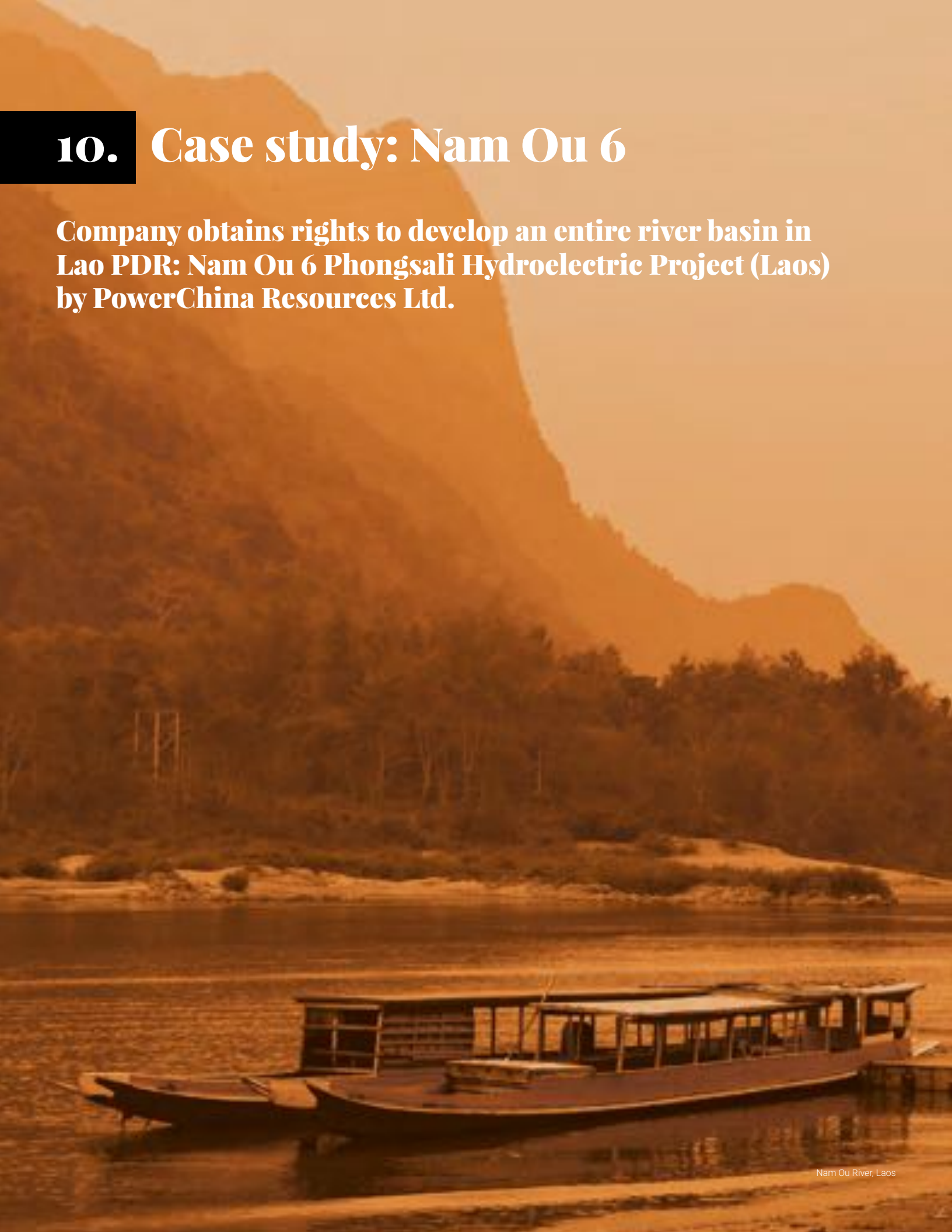
Endnotes

1. The Third Pole (2019). Protests bring CPEC's Kashmir dam to a halt.
2. Ibid.
3. International Finance Corporation. Performance Standard 1.
4. Ibid.
5. Ibid.
6. International Rivers (2017). Notes from company meetings in Beijing and interviews with CGGC, landlords and residents, local communities, labor union representatives during site visit 2015-2017.
7. China Gezhouba Group International Engineering Co (2010). Notice on the 2010 List of Laws, Regulations and Other Requirements about Quality, Environment, and Occupational Health and Safety.
8. International Rivers (2017). Notes from company meetings in Beijing and interviews with CGGC, landlords and residents, local communities, labor union representatives during site visit 2015-2017.
9. Ibid.
10. Ibid.
11. Ibid.
12. Neelum Jhelum Consultants (2010). Neelum-Jhelum Hydroelectric Project Engineering Services for Construction Supervision of Neelum-Jhelum Hydroelectric Project, EIA Report Volume 1 of 2, March 2010 Draft.
13. International Finance Corporation. Performance Standard 1.
14. Ibid.
15. International Rivers (2017). Notes from company meetings in Beijing and interviews with CGGC, landlords and residents, local communities, labor union representatives during site visit 2015-2017.
16. International Finance Corporation. Performance Standard 1.
17. International Rivers (2017). Notes from company meetings in Beijing and interviews with CGGC, landlords and residents, local communities, labor union representatives during site visit 2015-2017.
18. International Finance Corporation. Performance Standard 5.
19. International Rivers (2017). Notes from company meetings in Beijing and interviews with CGGC, landlords and residents, local communities, labor union representatives during site visit 2015-2017.
20. Ibid.
21. International Finance Corporation. Performance Standard 1.
22. Ibid.
23. International Rivers (2017). Notes from company meetings in Beijing and interviews with CGGC, landlords and residents, local communities, labor union representatives during site visit 2015-2017.
24. International Finance Corporation. Performance Standard 2.
25. China Gezhouba Group International Engineering Co (2010). Notice on the 2010 List of Laws, Regulations and Other Requirements about Quality, Environment, and Occupational Health and Safety.
26. International Rivers (2017). Notes from company meetings in Beijing and interviews with CGGC, landlords and residents, local communities, labor union representatives during site visit 2015-2017.
27. Ibid.
28. Ibid.
29. Ibid.
30. Ibid.
31. Ibid.

Neelum-Jhelum Hydroelectric Project construction site, Pakistan. 2016

10. Case study: Nam Ou 6

Company obtains rights to develop an entire river basin in Lao PDR: Nam Ou 6 Phongsali Hydroelectric Project (Laos) by PowerChina Resources Ltd.



Nam Ou River, Laos

Summary and background on the Nam Ou 6 Hydroelectric Project

The government of Laos has prioritised plans for extensive hydropower development across the country, much of which is expected to be exported to neighbouring countries in order to generate revenues. Over 100 medium and large dams are in operation, under construction, or planned in Laos. Currently, Laos exports two thirds of its hydropower to Thailand and Vietnam. Thayer Scudder, one of the world's foremost experts on the social impacts of hydropower, has asserted that the government of Laos does not have the capacity to deal with the environmental and social impacts of any of the over 60 dams which are planned over the next 30 years.[1] Moreover, freedoms in the country are highly restricted, which limits the ability of communities to voice their concerns. Transparency is low, corruption is high and the government lacks the capacity to monitor the impacts of dam projects. The collapse of the Xepian-Xe Nam Noy hydropower dam in July 2018 killed dozens of people and displaced over 6,000, raising further questions about the safety of dams and the accountability of dam developers for such tragedies.

The Nam Ou 6 Hydropower Project is a part of the Nam Ou Cascade Hydropower Project which consists of seven dams (one storage reservoir and six run-of-river dams) along the Nam Ou River, a major tributary of the Mekong River. The cascade spans 350 kilometers of the 450 kilometer-long Nam Ou River.

The Nam Ou Cascade Hydropower Project represents the first time that a Chinese company has obtained the rights to develop a cascade along an entire river basin outside of China. When completed, the entire project will have a combined projected capacity of 1,272 MW.

PowerChina Resources has a team of 17 people to manage environmental and social issues at the Nam Ou Cascade Hydropower Project, one of the biggest teams working on this project. Most of the members are based at the various field sites, while some are based in the main office in Luang Prabang.

While the company has been forthcoming in sharing information with International Rivers, the final EIA and SIA have not been fully publicly disclosed, which goes against best- practice norms for the hydropower industry and Government of Laos' Policy Guidelines for Sustainable Hydropower Development.

One of the most important concerns, given that PowerChina Resources is developing the entire river basin, is the lack of evidence that the company is participating in or contributing to broader watershed management planning for the Nam Ou River. The information contained in the draft EIA only addresses the catchment area of Nam Ou 6 and the Social Impact Assessment only addresses social impacts to the hinterlands and downstream areas.

PowerChina Resources has informed that they have set the minimum flow[2] from each of the dams as equivalent to the minimum monthly natural flow rate consistent with the 1995 Mekong Agreement.[3] While this does not affect the overall yearly contributions of the Nam Ou to the Mekong River, it does change the monthly contributions which can have a "significant impact on aquatic biota and ecosystem health".[4]

The area has high biodiversity value, yet no alternatives were considered to protect endangered species or biodiversity. The Nam Ou is home to over 139 fish species, 35 of which are endemic to the Mekong Basin, 9 are listed as Endangered on the IUCN Red List.[5] The Draft EIA recognizes at least one species as being Endangered on the IUCN Red List.[6] Most of the fish species found in the Nam Ou mainstream will be unable to survive in reservoir conditions and will likely disappear altogether from reservoir environments.

The upper portion of the Nam Ou 6 inundation area is within the Phou Den Din National Protected Area.

Background information

Status of the project: Completed in October 2016

BOT Contractor:

PowerChina Resources Ltd.

The company was established in 2012 and is a subsidiary of Power Construction Corporation of China, a Fortune 500 company. The Nam Ou Hydropower Cascade in Laos was initiated by Sinohydro and was continued and completed by PowerChina Resources after the companies merged.

The first phase of the Nam Ou Hydropower Cascade includes Nam Ou 2, 5, and 6 and was developed by Nam Ou River Basin Hydropower Co., Ltd (NOHPC) which is a holding subsidiary of PCR (85 percent) and Électricité du Laos (15 percent). Following the construction of all seven dams, there will be a 29-year concession period, after which ownership and operation of the cascade will be transferred to the Laotian government.

Resettlement impact: 2,500 people from 425 households in eight villages

Installed capacity: 180 MW

Total height of dam: 88m

Reservoir length: 362 m

Financiers: Phase I is funded by China Development Bank. Phase II is funded by China Development Bank, China Exim Bank and China Construction Bank

Total cost: Combined cost of Nam Ou cascade: US $2.8 billion

Timing of our assessment:
International Rivers conducted meetings with the company in 2016 and 2017 and site visits in September 2016 and November 2017.

Limitation statement to our assessment:
Since these site visits were hosted by PowerChina Resources, our team had limited space and ability to meet with communities. Company staff chose the community members with whom we met and were present during interviews. There were no unscripted meeting with community members.

Nam Ou River, Laos

Selected comments on environmental commitments and performance

Disclosure

International standard: Environmental and Social Impact Assessments (ESIAs) are disclosed to "[help] Affected Communities and other stakeholders understand the risks, impacts and opportunities of the project".[7]

Company commitment: PowerChina Resources committed to following World Bank Environmental and Social Safeguards Policies as de facto international standards for their projects in countries with insufficient or no regulatory frameworks.[8] These safeguards include provisions for public disclosure, but company policy does not explicitly require disclosure of EIAs. PowerChina Resources is committed to complying with local laws and regulations, as per guidance from China's central government, including the State Council and China's Ministry of Commerce.

Project performance: The EIA for Nam Ou 6 includes an Environmental Management and Monitoring Plan and a Social Management and Monitoring Plan which outline a management and monitoring strategy for the construction and operation phases of the Project.[9]

The final EIA was not publicly disclosed. When International Rivers' wrote to PowerChina Resources for key project documents, we were referred to the Lao Government. Officials did not respond to our requests. For the purposes of assessment, we were only able to obtain the draft EIA.[10]

Cumulative impacts

International standard: The scope of ESIAs should cover all impacts within a project's entire area of influence, including "cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted".[11]

Company commitment: PCR has stated that they strive to improve their environmental management. At present, environmental responsibility of the company is largely limited to proper waste management at the dam sites. A Cumulative Impact Assessment was conducted by the company, but was not made public. We were not able to obtain information on ways in which the Cumulative Impact Assessment has been used to inform decisions on the design and operation of the Nam Ou cascade in order to mitigate wider impacts. The project developers have not, to date, acknowledged the overall health of the river and maintenance of flow regimes that support critical ecosystems.

Project performance: The Nam Ou is an important tributary to the Mekong River. The Nam Ou's flow contribution to the Mekong estimated at 610m3/sec[12] and fish species migrate from Cambodia and Vietnam via the Mekong to the Nam Ou.[13]

The overall river morphology, aquatic habitats and productivity for the entire river system will change.[14] The cascade will increase the dry season flows reaching the Mekong confluence by up to 73 percent and peak wet season flows will be reduced by 13 percent.[15] In addition, 70 percent of sediment transport to the Mekong River will be trapped by the cascade.[16]

The draft EIA does not contain information on transboundary impacts. There is no evidence that PowerChina Resources is participating in or contributing toward broader watershed management planning for the Nam Ou River. An IFC initiative, which included the local government, initiated a river basin profile of the Nam Ou in 2013; PowerChina Resources representatives were not involved.[17]

The Cumulative Impact Assessment recommended a watershed management strategy using the Rapid-Basin wide Hydropower Sustainability Assessment (RSAT) and the establishment of a Nam Ou River Basin Committee, with financial contributions from the hydropower company.[18]

There is no evidence that either were established. There is also no evidence to suggest that PowerChina Resources or the Lao government have engaged with river basin organizations such as the Mekong River Commission to assess or inform key stakeholders of transboundary impacts.

The draft EIA only addresses the catchment area of Nam Ou 6 and the Cumulative Impact Assessment addresses social impacts to the hinterlands and downstream areas. Villagers at Hat Sa, just a few kilometers downstream of Nam Ou 6, told us that they do not know the pattern for water release and were not given official announcements or warnings. PowerChina Resources responded that official announcements had been made but shop owners did not respond to the evacuation orders. There is a signboard at the bus stop/ pier saying that all river-related activities[19] are forbidden due to dam operation. The signage indicates that the dam operator is not responsible for any damages caused.[20] Shop owners at Hat Sa complained their shops were flash-flooded on several occasions and that goods were swept away.[21]

After the Nam Ou 2,5 and 6 dams became operational in 2016, the flow patterns for the Nam Ou River during the dry season increased and flow during wet season decreased. While this does not affect the overall yearly contributions of the Nam Ou to the Mekong River, it does change the monthly contributions which can have a "significant impact on aquatic biota and ecosystem health".[22] PowerChina Resources has informed that they have set the minimum flow[23] from each of the dams as equivalent to the minimum monthly natural flow rate consistent with the 1995 Mekong Agreement.[24] The 'acceptable minimum flow' in the Mekong Agreement is only applicable to the Mekong mainstream, not to tributaries like the Nam Ou River. The draft EIA states that the Normal Water Level for economic output was selected because of low populations in the area. The environmental flow determination does not fully consider the biological diversity's value or protection. The upper portion of the Nam Ou 6 inundation area is within the Phou Den Din National Protected Area, which contains an Important Bird Area and contains bird, fish and mammal species that are of high conservation significance.[25] Most of the fish species in the Nam Ou mainstream will not be able to survive in reservoir conditions and will likely disappear altogether from reservoir environments.

Nam Ou River, Laos

The development of Nam Ou 6 is expected to result in the loss of 2,000 hectares of land due to reservoir inundation and another 234 hectares due to infrastructure and land use at the construction site.[26]

The draft EIA addresses erosion and sedimentation issues during construction and operation. On several occasions, we found that access roads into the construction site and between dam construction sites were not paved. Given that large machinery operate on these roads, this caused moderate soil erosion of banks along the Nam Ou river.[27]

Duang Chanlerr Group Ltd was given approval by the Lao government to use explosives to excavate a road next to Nam Ou 6 in March 2013. This destroyed the soil structure and stability. Roads entered into the scope of land requisition and caused damage to the stability of the foundation of the explosives storage.[28]

Biodiversity and protected areas

International Standard: "Mitigation measures will be designed to achieve no net [biodiversity] loss." For critical natural habitats, "a Biodiversity Action Plan... will be designed to achieve net [biodiversity] gains." For projects impacting a protected area, companies are required to consult "Affected Communities [and] implement additional programs...to promote and enhance the conservation aims and effective management of the area".[29]

Company commitment: PowerChina Resources commits to abide by the IFC General EHS Guidelines on Air Emissions and Ambient Air Quality (2007), the WHO Air Quality Guidelines (Global Update 2005), the IFC General EHS Guidelines on Wastewater and Ambient Water Quality (2007), and the WHO Guidelines for drinking-water quality (2008).

Project performance: The Nam Ou River may lose an estimated 66 of percent of fish biodiversity.[30] The area has high biodiversity value but no other alternatives were considered to protect endangered species or biodiversity.[31] The upper portion of the Nam Ou 6 inundation area is within the Phou Den Din National Protected Area. The Phou Den Din National Protected Area includes the headwaters of the Nam Ou Catchment and covers approximately 2,220 km2 in northern Phongsali Province. It contains an Important Bird Area, recognized as being of high global conservation significance.

The stretch of the Nam Ou within the National Protected Area is uninhabited and provides unique habitat within the country and the wider region, providing a large stretch of undisturbed riparian forest across a range of altitudes. Patches of Primary Upper Mixed Deciduous Forest in the vicinity of Nam Ou 6 had previously been minimally disturbed by human activities and represent the most floristically diverse vegetation type in the Nam Ou area. Overall the project area is of moderate biodiversity significance, based on flora species identified in its vicinity.

There is little information regarding terrestrial wildlife in the Nam Ou 6 project area. An indigenous knowledge survey, conducted with local villagers identified 265 species, of which 23 are globally threatened species listed on the 2010 IUCN Red List. Most of the fish species found in the Nam Ou mainstream will not be able to survive in reservoir conditions and over 60 percent of fish biodiversity will disappear from the Nam Ou River.[32] The draft EIA recognized the presence of several rare birds and mammals and the likelihood that additional threatened fauna would be identified in the project area if further surveys were to be conducted.[33]

Had Hin village, located upstream of Nam Ou 6, had a strong community-run forest protection program. When the lower parts of the forest were inundated by the reservoir, Vietnamese loggers targeted the area and illegally cut trees located outside of the designated area.[34]

The draft EIA lists measures to mitigate impacts on biodiversity from construction and operation, but whether or not this happened is not known because EIA and EMP not disclosed. Further, the project design document contains conflicting statements regarding impacts from construction. On one hand, it states that "main negative impacts will be due to construction and will be addressed by mitigation measures when construction is over." Further down, the document states that "environmental protection and ecological mitigation measures will be implemented according to suggestions in the EIA during both construction and operation periods. Therefore all these impacts will be reduced or eliminated and the construction and operation of the project will have no significant adverse environmental impacts".[35]

Selected comments on social commitments and performance

Consultation

International standard: "Effective consultation is a two-way process that should: (i) begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise; (ii) be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format and is understandable to Affected Communities...(vi) be documented".[36]

Company commitment: PowerChina Resources explained during meetings that they ensure community acceptance by undergoing stakeholder consultation processes and solicit ongoing stakeholder feedback and to involve stakeholders in consultation and development of plans.

Project performance: At the outset of the project in 2010, PowerChina Resources and Électricité du Laos conducted meetings with provincial and district authorities in Luang Prabang Province and in Phongsali Province to introduce the project, the proposed EIA and outline impacts.[37]

PowerChina Resources conducted village-level interviews and household surveys in 2010 with six villages within the proposed reservoir impoundment area and one village affected by construction. Participation ranged between 25 percent to 100 percent and the socio-economic surveys conducted included questionnaires, focus group discussions (including with women) and household inventory of loss surveys.[38]

PowerChina Resources administered 30 questionnaires to participants at a consultation in 2010 to determine the villagers' acceptance and understanding of the project. The survey results were summarized in the project design document and indicated that the majority of villagers were in favor of the project because they thought it would bring them electricity and higher standards of living.[39]

International Rivers found inconsistency in the community consultations and outreach conducted by the developer. PowerChina Resources representatives told us that they visited high-impact villages requiring total relocation as much as twice a week to share information about the relocation and compensation package. In communities determined by the EIA to be medium-impacted, outreach and consultations were non-existent. Villagers were confused about the impacts of the dams because multiple surveys conducted by PowerChina Resources provided conflicting information on changes in water level. It also appeared that the company and the local government were sharing conflicting information with local communities.[40]

Had Hin village is at the very edge of the reservoir and PowerChina Resources deems it to be impacted by Nam Ou 7. The village's water source (which used to be directly from the free-flowing Nam Ou) and farming have been impacted by both Nam Ou 6 and Nam Ou 7 and villagers do not have an opportunity to voice their concerns.[41]

Villagers are aware that the supply of fish will be reduced, but do not have information on other impacts to their food security (e.g. loss of riverweed and other river foods).

Indigenous Peoples

International Standard: "If...relocation is unavoidable the client will not proceed with the project unless [Free, Prior and Informed Consent (FPIC)] has been obtained." "Where significant project impacts on critical cultural heritage are unavoidable, the client will obtain...FPIC." "Where a project proposes to use the cultural heritage...of Indigenous Peoples for commercial purposes," the client must "obtain their FPIC." Efforts to engage and any agreements made with indigenous communities should be reflected in an Indigenous Peoples Plan.[42]

Company commitment: None. Laos and China have endorsed the United Nations Declaration on the Rights of Indigenous Peoples, which includes provisions for free, prior and informed consent and obligations to conduct robust consultations. However, while the government recognizes 160 ethnic subgroups within 49 ethnic groups within Laos, all ethnic groups have the same status, and the concept of indigenous peoples is not recognized by the government.

Project performance: Nam Ou 6 requires the resettlement of 2,500 people in eight villages. All of the people resettled are from ethnic minorities or indigenous tribes, including Lao Seng (48 percent), Lue (36 percent), Lao-Tai, MuangVa, Tan and Had Hin (the remaining 11 percent). No Indigenous Peoples Plan was conducted for Nam Ou 6. Similarly, resettlement and compensation plans do not include measures to ensure the protection of indigenous or minority cultures and practices or the preservation of indigenous natural resources management.

Resettlement and compensation

International Standard: "To improve, or restore, the livelihoods and standards of living of displaced persons...through the provision of adequate housing with security of tenure at resettlement sites". "Economically displaced persons who face loss of assets or access to assets will be compensated for such loss at full replacement cost".[43]

Company commitment: PowerChina Resources strives to ensure additional benefits and capacity building for directly affected stakeholders and the broader community; and develop appropriate compensation, mitigation and enhancement strategies.

Project performance: The Nam Ou 6 dam requires the resettlement of 2,500 people from 425 households in eight villages.[44] All affected people are from indigenous tribes, including Lao Seng (48 percent), Lue (36 percent), Lao-Tai, MuangVa, Tan and Had Hin (the remaining 11 percent).[45]

A Social Impact Assessment (SIA) was carried out, but it is not fully publicly available. The draft EIA assesses the livelihoods, health, education, income levels, and other measures to calculate living standards. The EIA does not detail social impacts on a village level, but rather describes health impacts, economic development and gender impacts in a basic way, with broad generalizations that are not place-specific. All of the social impacts listed are positive, such as increased job opportunities, access to education, and access to marketplaces. Gender impacts are addressed by claiming that women will have more job opportunities because they can be hired to work in restaurants and hotels near the dam site and can mobilize to provide food to construction workers.[46] There is no discussion of possible negative social impacts or measures to mitigate them.

Villagers reported that there was not sufficient support for resettlement and that resolving local grievances comes with complications. Community engagement is concentrated in villages that required significant or total relocation, and is characterized by frequent communication between PowerChina Resources and the village leadership (as frequently as two to three times per week), and in some cases town meetings. There is little evidence that these meetings have resolved confusion between villagers about upcoming moves or compensation levels.[47]

In Baan Huam Sang, a resettlement site built to host relocated households from four different villages, villagers reported that their houses were poorly built with low-quality materials, were situated in unsuitable locations, and were often damaged during storms.[48] Families in Baan Huam Sang had reportedly not received compensation several months after they had moved.[49] Villagers in Baan Huam Sang were not provided with farmland and can no longer grow rice and crops. In 2016, some would return to their old village in order to farm.[50] Villagers from Baan Huam Sang explained that the layout in their original village was conducive to community life, whereas the new village is master planned in a linear way, centered around the main road which is noisy, exposed to heavy traffic, and dangerous for children. They also reported that the fields that they use are inconveniently located across the river.[51] The company has since reported that they constructed a road so that villagers could access the fields. Villagers described reports of conflicts, quarrels, and minor robberies among resettled villagers in Baan Huam Sang, as people from different villages and ethnicities are now clustered together in one big village.[52]

Villagers from Had Hin, upstream from Nam Ou 6, once grew riverbank gardens during the dry season, but can no longer do so because the land is submerged and there are impacts from the backwaters from the dam.[53]

Ban Bak Chaek resettlement village had limited support from PowerChina Resources and villagers had to build their own toilets. An Australian NGO provided four standpipes in order to allow water usage from the stream.[54] Half of the villagers did not agree to move.

Villagers in Ban Phon Kum explained that PowerChina Resources seemed to resent their chief because he often expresses concerns and complaints. They said that only one representative per family is allowed to attend meetings between villagers and the company. Generally men attend these meetings and women will only join in the event that men cannot. Villagers also expressed fear of being arrested for voicing their views.[55]

There have not been any measures to compensate for individuals and groups impacted economically by the project, including tourism operators. Despite claims by officials from PowerChina Resources that boat tourism may be boosted (without providing evidence to support these claims), tourism and related business (guesthouses, restaurants, shops, boats) has been severely affected because there is no through-route due to Nam Ou 5.[56] Boat drivers report lost income as the number of tourists has declined sharply. Some have moved to offer boat rides in the Nam Ou 6 reservoir, but their income is lower than before the dam was built.[57] The Lao government reported a decrease in tourism and tourism related income.[58]

Grievance mechanism

International Standard: "The client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance."[59] "Communications and grievances received and responses provided should be documented... and reported back to the Affected Communities periodically".[60]

Company commitment: PCR explained that they address complaints through negotiation and by allowing communities to participate early on in planning and decision-making. The company said that they use a committee to resolve conflicts. We did not receive evidence to confirm that these measures are being taken.

Project performance: There is a step-by-step grievance mechanism described in the draft EIA. PowerChina Resources explained that once complaints are filed, they work with local government to resolve them. They claim that most complaints are resolved within one to two weeks and that more difficult problems may require additional time. PowerChina Resources admitted that there were processing problems early on and that some claims took longer to process.[61] These issues persisted in later years.

Grievances are generally filed to express concern over the impact of the dam's reservoir and localized flooding, and the quality of housing materials being used at the resettlement site.[62]

Labor

International Standard: The client "will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. The client will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women." "The client will provide a safe and healthy work environment".[63]

Company commitment: PowerChina Resources policies state that projects must be in compliance with the local rule of law, respect local culture, religion and customs, provide locals with skills training and equal employment and business opportunities, and contribute to the local society development.[64] PowerChina Resources commits to compliance with international standards such as ISO 14001 and OHSAS 18001, and to implement a strict production safety system that ensures employee safety and occupational health and a good production safety record.

Project performance: The draft EIA recommends that the company implement a preferential employment policy that will maximize use of local residents from affected villages and provinces in the construction and operation workforce. It recommends providing training programs for skill-building and long-term employment.[65] However, there is little or no local employment.[66] The draft EIA recommends that training programs be created, but we have no information regarding whether they have been implemented. The Draft EIA generally assumes that the workforce will be comprised of the local communities, so it makes the incorrect assumption that the grievance process for local affected people

would be the same for construction and operation workers who come from neighbouring countries or other parts of Laos.[67]

The draft EIA has recommendations about proper methods for blasting that will minimize safety risks in the construction site. We did not find further information about a safety management plan or incident response plan.

Our observation and interviews with the workforce reveal that Chinese laborers have good living conditions. Chinese workers are separated from Vietnamese workers, who have poorer conditions.[68] There are few Lao people in the workforce because local people deem the project to be difficult and to pay insufficient wages.[69]

Recommendations to PowerChina Resources on Nam Ou 6 Hydropower Project

Meeting with PowerChina Resources in Luang Prabang, Laos

1. Ensure compliance with Lao government policy and implementation guidelines on sustainable hydropower, which include provisions on, public disclosure of project documents, including impact assessments and monitoring and management plans (5.10), benefit-sharing (5.13), participation of affected people and their rights to sustainable livelihoods (5.8).

   Make the current and draft EIA, Environmental Management and Monitoring Plan, Social Management and Monitoring Plans available to the public. When International Rivers' wrote to PowerChina Resources for key project documents we were referred to the Lao Government. The Lao Government never answered formal requests. As per Lao Government policy (2015) and implementation guidelines on sustainable hydropower (2016), PCR should make public progress reports and disclose spending on environmental and social safeguards.

2. Contribute to broader watershed management planning for the Nam Ou River, given that PowerChina Resources is developing the entire river basin area. The Cumulative Impact Assessment recommends a watershed management strategy for the river basin using the Rapid Basin-wide Hydropower Sustainability Assessment Tool framework and the establishment of Nam Ou River Basin Committee, with financial contributions from the hydropower company.

3. Engage with river basin authorities such as the Mekong River Commission to assess or inform key stakeholders and communities of transboundary impacts. The draft EIA does not mention transboundary river impacts.

4. Provide suitable employment to residents from affected communities. The draft EIA recommends that the company implement a preferential employment policy that will maximize use of local residents from affected villages and provinces in the construction and operation workforce. It recommends providing training programs for skill-building and long-term employment. Lao labor code also gives preferential employment to local affected people.

5. Ensure that the living conditions for Vietnamese and Lao workers are on par with those of Chinese workers. Our observation and interviews show that living conditions are not the same. The eating and sleeping quarters for the Vietnamese and Lao workforce are very basic compared to those provided for Chinese workers.

6. Ensure that the grievance process and training materials are adapted for workers and available in Vietnamese to reflect that the majority of workers are Vietnamese.

7. Conduct and complete resettlement and compensation prior to site preparation or construction, as per international norms, Lao law and company policy. Even though PowerChina Resources has subcontracted resettlement activities to a Lao company, it should ensure compliance and management of all subcontracted companies and must complete resettlement prior to beginning construction.

8. Ensure that good quality materials adapted to the local climate are used for construction of new houses and communal areas. Conduct comprehensive consultations with villagers in the master plan design for their new villages and address specific cultural needs.

9. Address complaints filed by community groups in a timely and proactive manner. When a complaint has been received, the company should acknowledge receipt to the complainant. If villagers can submit and have complaints acknowledged or resolved in a timely manner, there will be less miscommunication between the parties.

10. Allow space to ensure that marginalized members of villages to participate in decision processes that impact their communities. Generally meetings are attended by men, with women attending only if the man of the household cannot. Women are typically the stewards of water resources for their households and communities but are often marginalized by private and public sector decision making. Oxfam's manual *Balancing the scales, using gender impact assessment in hydropower development can be a useful tool*.

11. Consult with all affected villages during the review of environmental flow requirements for Nam Ou 6.

12. Implement effective vigilance against illegal loggers in the area and support to the community-run forest protection system, like the one in Had Hin village.

13. Put in place a long-term plan to monitor livelihoods, support and share benefits with communities that are impacted and located in upstream and downstream areas, including those that are considered to be moderately or minimally impacted. Villagers from these places reported that there was no outreach by the company. Many people from villages considered to be "not impacted" are no longer able to use water from the river because rotten biomass in the reservoir impacted the water quality of the river.

14. Develop a better warning system for when water is released. There are no official announcements or warnings and the water release is unpredictable. The signage at the bus stop/ pier is insufficient.

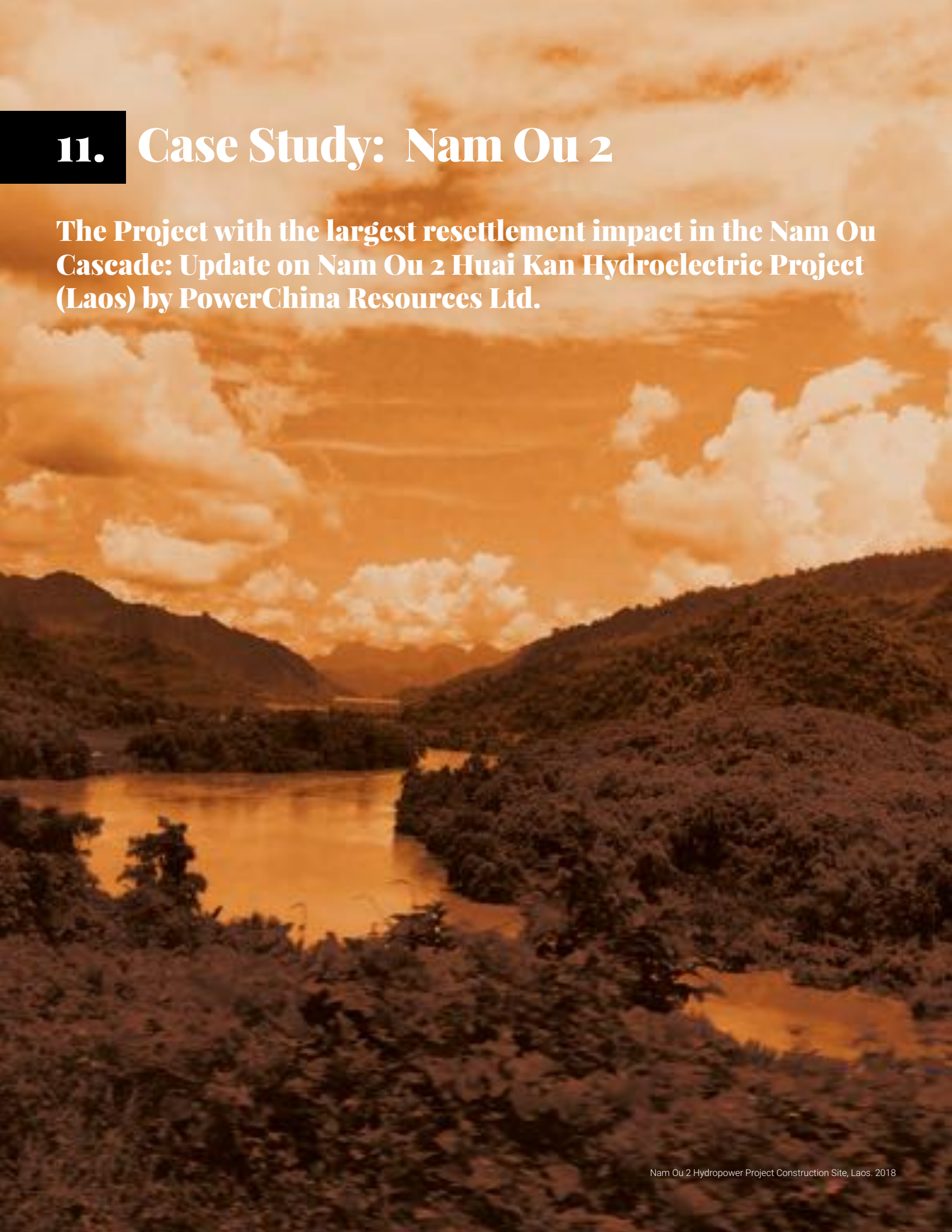
Nam Ou River, Laos

Endnotes

1. New York Times (2014). Leslie, Jaques. Large Dams Just aren't Worth the Cost.
2. 'Minimum flows' differ from 'environmental flows' which are the "quantity, frequency, timing, and quality of water and sediment flows necessary to sustain freshwater ecosystems and the human livelihoods and well-being that depend on these ecosystems" (Brisbane Declaration, 2007). Information on environmental flow requirements for the Nam Ou are not available (IFC).
3. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
4. International Finance Corporation (2017). Nam Ou River Basin Profile Summary Document. page 56.
5. Ibid.
6. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
7. International Finance Corporation. Performance Standard 1.
8. International Rivers (2017). Notes from meetings and site visits in 2016 and 2017.
9. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
10. Ibid.
11. International Finance Corporation. Performance Standard 1.
12. International Finance Corporation (2017). Nam Ou River Basin Profile Summary Document.
13. Ibid.
14. Ibid.
15. Ibid.
16. Meynell, Peter-John (2016). Cumulative Impact Assessment of the Nam Ou hydropower cascade, PPT.
17. PowerChina Resources (2013). Workshop Report - First Technical Working Group Meeting and Training Workshop on Integrated River Basin Management in Key River Basins in Lao PDR, Luang Prabang, Lao PDR September 30 - October 5, 2013.
18. PowerChina Resources. Powerpoint Presentation on Cumulative Impact Assesment.
19. such as fishing, riverbank gardening, gold panning, camping along the river, and looking after livestock
20. International Rivers (2017). Notes from meetings and site visits in 2016 and 2017.
21. Ibid.
22. International Finance Corporation (2017). Nam Ou River Basin Profile Summary Document. page 56.
23. 'Minimum flows' differ from 'environmental flows' which are the "quantity, frequency, timing, and quality of water and sediment flows necessary to sustain freshwater ecosystems and the human livelihoods and well-being that depend on these ecosystems" (Brisbane Declaration, 2007). Information on environmental flow requirements for the Nam Ou are not available (IFC).
24. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
25. Ibid.
26. Ibid.
27. International Rivers (2017). Notes from meetings and site visits in 2016 and 2017.
28. PowerChina Resources Progress Report (2013) on Nam Ou 2, 5, 6, April 2013.
29. International Finance Corporation. Performance Standard 6.
30. Meynell, Peter-John (2016). Cumulative Impact Assessment of the Nam Ou hydropower cascade, PPT.
31. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
32. Meynell, Peter-John (2016). Cumulative Impact Assessment of the Nam Ou hydropower cascade, PPT.
33. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
34. International Rivers (2017). Notes from meetings and site visits in 2016 and 2017.
35. CDM-PDD-FORM (2015). Nam Ou 6 Hydropower Project. Project design document form for CDM project activities (Version 06.0).
36. International Finance Corporation. Performance Standard 1.
37. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
38. Ibid.
39. CDM-PDD-FORM (2015). Nam Ou 6 Hydropower Project. Project design document form for CDM project activities (Version 06.0).
40. International Rivers (2017). Notes from meetings and site visits in 2016 and 2017.
41. Ibid.
42. International Finance Corporation. Performance Standard 7.
43. International Finance Corporation. Performance Standard 5.
44. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
45. Ibid.
46. Ibid.
47. International Rivers (2017). Notes from meetings and site visits in 2016 and 2017.
48. Ibid.
49. Ibid.
50. Ibid.
51. Ibid.
52. Ibid.
53. Ibid.
54. Ibid.
55. Ibid.
56. Ibid.
57. Ibid.
58. The Laotian Times (2017). Nam Ou 3 Dam Eliminates River Cruises.
59. International Finance Corporation. Performance Standard 1.
60. Ibid.
61. International Rivers (2017). Notes from meetings and site visits in 2016 and 2017.
62. Ibid.
63. International Finance Corporation. Performance Standard 2.
64. PowerChina Resources Sustainable Development Policy.
65. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
66. International Rivers (2017). Notes from meetings and site visits in 2014.
67. Earth Systems (2011). Volume 7, Cascade 6- Phongsali Hydropower Project, Environmental Impact Assessment.
68. For the mainly Vietnamese workforce, eating and sleeping quarters are very basic (open-air accommodation, dirt floors). In contrast, the Chinese workforce we spoke with described their conditions are very or quite good (air-conditioned units, two persons per room, TV, and rest and recreational facilities). (site visit)
69. International Rivers (2017). Notes from meetings and site visits in 2016 and 2017.

11. Case Study: Nam Ou 2

The Project with the largest resettlement impact in the Nam Ou Cascade: Update on Nam Ou 2 Huai Kan Hydroelectric Project (Laos) by PowerChina Resources Ltd.



Nam Ou 2 Hydropower Project Construction Site, Laos. 2018

Summary and background on the Nam Ou 2 Hydroelectric Project

The government of Laos has prioritised plans for extensive hydropower development across the country, much of which is expected to be exported to neighbouring countries in order to generate development revenues. Over 100 medium and large dams are in operation, under construction or planned in Laos. In order to build them, Laos has invited foreign investors to bring the necessary financing, technical expertise and resources to develop hydropower projects across the country. The country currently exports two-thirds of its hydropower, primarily to Thailand and Vietnam. Thayer Scudder, one of the world's foremost experts on the social impacts of hydropower, has asserted that the government of Laos does not have the capacity to deal with the environmental and social impacts of any of the more than 60 dams which are planned over the next 30 years.[1]

The Nam Ou 2 Hydropower Project is a part of a larger development of a seven-dam cascade spread across a distance of over 350 kilometers on the 450 kilometer Nam Ou River.

The 1,272 MW Nam Ou Cascade Hydropower Project represents the first time that a Chinese company has obtained the rights to develop a cascade along an entire river basin outside of China.

As this project is part of a cascade which spans almost 80 percent of the length of the Nam Ou River, there is a need to understand and attempt to mitigate cumulative and environmental impacts. The Cumulative Impact Assessment for the Nam Ou Cascade is not publicly available and suggests that the Nam Ou Cascade will significantly alter flows reaching the Mekong confluence, trap 70 percent of sediment which is usually transported into the Mekong River and reduce fish biodiversity by 66 percent.[2]

Nam Ou 2 was part of the first phase of this cascade project, along with Nam Ou 5 and Nam Ou 6. The Nam Ou 2 dam site is located 53 kilometers upstream of the confluence of the Nam Ou and the Mekong River.

Nam Ou 2 was completed in October 2016 and is now under operation by PowerChina Resources (PCR). Upon completion of the second phase of the project, (including Nam Ou 1, 3, 4, and, 7) in 2020, PCR will operate the cascade for a 29-year concession period during which they will earn profits from the operation of the dams. Following the concession period, the project's operation will be transferred to the Government of Laos. This is a BOT contract which means that the company is responsible for every aspect of the project, from financing, complying with local laws, completing proper environmental and social assessments, undertaking impact monitoring and mitigation, and ensuring timely delivery of the project.

The Nam Ou 2 Cascade has the largest resettlement impact of the seven dams in the Nam Ou Hydropower Cascade, and displaced 2,297 households. The new villages to resettle inhabitants that were displaced by Nam Ou 2 were among the first in the cascade to be built and inhabited, starting in 2014.

Some members of Ban Had Kip village cited positive relations with the company because they were able to vote for their preferred location and what materials to use to build housing in the new village. The company has made efforts to improve communication with local people. For example, some project management staff speak basic Lao, which eases direct communication with representatives from local communities and workers.

PCR outsourced the construction of resettlement villages to a local company, and is responsible for its oversight. Resettlement and compensation occurred during project construction. This means that the Nam Ou 2 project is in violation of the 2005 Laos' Prime Minister's Implementing Decree on Compensation and Resettlement of People Affected by Development Projects (192)[3] which requires that it be completed at least one month before the commencement of construction work.

The Nam Ou 2 Hydropower project, as well as the other projects in the Nam Ou cascade, have impacted livelihoods including for fishers, collectors of river weed (a significant source of income for women and elders), collectors of non-timber forest products and people reliant on tourism (including guest house owners, boat operators, shop owners). PCR does not have provisions to protect, compensate or find alternate arrangements for people who have lost and continue to lose livelihoods in these sectors.

For communities seeking to voice concerns, the complaints and grievance mechanism was not initially available in local languages and many complaints were not acknowledged within 15 days of receipt, as per Lao law.

PCR's view of environmental responsibility is limited to proper waste management at the dam sites. The project developers have not, to date, acknowledged the overall health of the river and maintenance of flow regimes that support critical ecosystems. PCR shared the EIA and EMP with International Rivers but these documents are not publicly available.

Background information

Status of the project: Completed in October 2016

BOT Contractor (reviewed for this study):

PowerChina Resources Ltd.

The company was established in 2012 and is a subsidiary of Power Construction Corporation of China, a Fortune 500 company. The Nam Ou Hydropower Cascade in Laos was initiated by Sinohydro and was completed by PowerChina Resources, after the companies merged. The first phase of the cascade included dams 2,5, 6 and was developed by Nam Ou River Basin Hydropower Co., Ltd (NOHPC) which is a holding subsidiary of PCR (85%) and Électricité du Laos (15%).

Resettlement impact: 25 villages, 2,297 households. This is the largest number of resettled people resulting from the seven dams in the Nam Ou Hydropower cascade

Installed capacity: 120 MW

Total height of dam: 52m

Financiers: Phase I of the Nam Ou Hydropower Cascade is funded by China Development Bank

Total cost: Combined cost of Nam Ou Hydropower Cascade is US $2.8 billion

Project Timeline: Phase I was fully completed in October 2016. As of May 2016, construction on the second phase has begun. The entire project is scheduled to be completed by 2020. There is a 29-year concession period, after which operation will be transferred to the Laotian government.

Timing of our assessment:
We conducted meetings with management from PowerChina Resources and the local management teams as well as site visits in September 2016, November 2017, and August 2018.

Limitation statement to our assessment:
Our most recent site visits (2017, 2018) were hosted by PowerChina Resources; our team did not have the space and ability for unaccompanied, in-depth meetings with communities.

Update from our 2015 assessment:
In the 2015 benchmarking report, the Nam Ou 2 project by PCR ranked 4th out of the seven projects reviewed for their company policies. The company has not substantially revised their policies since 2015. Company commitments that we were able to uncover were general reflections of international standards--such as those established by the World Bank's Safeguard Policies-- but lacked practicality. The project failed to translate these commitments on the project level and ranked fifth in our 2015 assessment of project implementation.

PCR has made efforts to improve its relationship with International Rivers. Since 2015, PCR has hosted us on site visits, provided access to high-level and relevant management personnel, provided information related to the project and prepared presentations with updates on the status of the project.

Since the publication of our report in 2015, International Rivers was invited to conduct three meetings at the Nam Ou Hydropower Project (NOHP) head office in Luang Prabang and three site visits to the Nam Ou Cascade, in September 2016, November 2017, and August 2018. Following each visit, International Rivers submitted observations to the company. During each, company representatives were constructive and responded to questions and concerns raised by International Rivers. A representative from PCR (formerly in Investment Department 1 at PCR headquarters in Beijing and then appointed to the environmental and social department at the NOHPC in Laos) presented and participated in a seminar convened by the China Association for NGO Cooperation and International Rivers in October 2018. The representative from PCR affirmed the company's appreciation for PCR's cooperation with International Rivers and stated that the relationship had afforded an opportunity for frank and constructive dialogue.

In the past three years, International Rivers staff have had discussions and meetings with more than 15 staff from PCR. Meetings have included high-level officials such as the Vice President of PCR; the General Manager, Deputy General Manager, Vice Chief Engineer, the Deputy Director of Resettlement and Livelihoods Restoration Office at the Nam Ou River Basin Hydropower Co. Ltd.; the General Manager and Director of HSE Office at Nam Ou Power Co. Ltd; and external advisors to the company who are experts on environmental and social management.


Nam Ou 2 Hydropower Project Construction Site, Laos. 2018

Selected comments on environmental commitments and performance

Cumulative impacts

International standard: The scope of ESIAs should cover all impacts within a project's entire area of influence, including "cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted".[4]

Company commitment: PCR strives to improve their environmental management. At present, environmental responsibility of the company is largely limited to proper waste management at the dam sites. We were not able to obtain information on ways in which the Cumulative Impact Assessment (CIA) has been used to inform decisions on the design and operation of the Nam Ou cascade in order to mitigate wider impacts.

Project performance: The project developers have not, to date, acknowledged the overall health of the river and maintenance of flow regimes that support critical ecosystems.

Peter-John Meynell, an independent consultant, conducted a CIA for the Nam Ou Hydropower Cascade which has not been made publicly available. A publicly available summary of the CIA findings state that the overall river morphology, aquatic habitats and productivity for the entire river system will change.[5] The cascade will increase the dry season flows reaching the Mekong confluence by up to 73 percent and peak wet season flows will be reduced by 13 percent.[6] In addition, 70 percent of sediment transport to the Mekong River (equivalent to 4.2 million tonnes per year) will be trapped by the cascade. The CIA suggests that the Nam Ou River may lose an estimated 66 percent of fish biodiversity.

It also notes that cumulative impacts on the river ecosystem will have corresponding social and economic impacts due to loss of agricultural and forest land, reduction in fishing yields, increase in demand and prices for fish and non-timber forest products.

Studies published by the Stockholm Environment Institute and the Mekong River Commission in 2017 and 2018 affirm that dam construction, together with riverbed mining and climate change, will cause drastic reduction in sediment and nutrient transport in the Mekong Basin, with severe implications for ecosystems, agriculture, fisheries and local livelihoods.[7] The SEI study found that if all dams in the Mekong basin are constructed, including the Nam Ou cascade, sediment load reaching the Mekong Delta would be reduced by 97 percent, with dire consequences for the future sustainability of the Mekong Delta and its populations.

Nam Ou 2 Hydropower Project Construction Site, Laos. 2018

Selected comments on social commitments and performance

Grievance mechanism

International Standard: "The client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance".[8] "Communications and grievances received and responses provided should be documented...and reported back to the Affected Communities periodically".[9]

Company commitment: PCR explained that they address complaints through negotiation and by allowing communities to participate early on in planning and decision-making. The company said that they use a committee to resolve conflicts. We did not receive evidence to confirm that these measures are being taken.

Project performance: Over the years, many of International Rivers' reports to PCR have referred to complaints from communities, including from villages around Huai Kan and Nam Ou 2, which remained unaddressed by the company. We found that there were gaps and miscommunication during the processing of complaints as well as a lack of transparency concerning what happened once complaints were lodged. Local residents told us that individuals did not receive confirmation that their complaint had been received and that there was no further communication about the issue being considered, processed or resolved.

We have recommended that PCR disclose and explain the complaints and grievance mechanism to the villagers in their local languages and that the company comply with Lao law by addressing complaints within 15 days of receipt. During a site visit in November 2017, PCR informed that they planned to prepare an online grievance mechanism for local villagers. We did not receive confirmation or evidence of it being implemented or used successfully. Nam Ou 2 did not heed Laos' 2005 Prime Minister's Implementing Decree on Compensation and Resettlement of People Affected by Development Projects (192) which provides that the "acquisition of assets, compensation, resettlement will be completed at least one month prior to the initiation of construction work".

During site visits in 2017 and 2018, we saw that project staff from NOHPC spoke basic Lao which eased direct communication with local workers and local communities.

Resettlement and compensation

International Standard: "To improve, or restore, the livelihoods and standards of living of displaced persons...through the provision of adequate housing with security of tenure at resettlement sites." "Economically displaced persons who face loss of assets or access to assets will be compensated for such loss at full replacement cost".[10]

Company commitment: As a BOT operator, PCR is in charge of ensuring legal compliance, including ensuring that resettlement is conducted according to local laws[11] and international standards (i.e. the International Finance Corporation's performance standards).

Project performance: PCR reports to have spent $US 65 million on resettlement. They explained that resettlement for this project was conducted under close cooperation with provincial government authorities in Phongsali and Luang Prabang and that they subcontracted the implementation of the construction and process of resettlement to a local company called KKS Construction Building Co. Ltd (KKS).

PCR explained that since the resettlement projects are located in mountainous areas where transportation conditions are difficult, resettlement work has been challenging and has been implemented at the same time as project construction in order to take advantage of newly built access roads.

Nam Ou 2 Hydropower Project Construction Site, Laos. 2018

During meetings in 2016 and 2017, PCR was unable to respond to questions concerning how KKS spends the funds for resettlement and there were no public reports concerning monitoring of KKS. PCR is aware of the basic process for compensation, but could not give satisfactory answers to more detailed questions. The company explained that compensation and management for each dam differ because they fall under different provincial administrations in Phongsali and Luang Prabang.

We learned that PCR assesses the security of resettlement sites suggested by the government before contracting KKS to begin construction. This measure to assess the security of the site is important and must be continued. When PCR found three unexploded bombs at a suggested resettlement site associated with Nam Ou 2, the company deemed that site to be inappropriate and found an alternative location.

Ban Had Kip village in Luang Prabang Province was built for people who were displaced by Nam Ou 2 and is the cascade's first resettlement site. This resettlement site was completed in June 2014, at which time it provided 136 homes for 649 people. Since then, other villagers from the area have moved in order to benefit from services in the new village. During a visit in 2017, the village appeared to be clean and conditions were good. PCR workers and villagers had planted fruit trees (mostly papaya), many of which were fully grown and already producing fruit. We also observed many butterflies in the village, which is common for the area and is an indicator for a healthy ecosystem. Many villagers had built extensions to the homes. The houses in Ban Had Kip were built out of wood (chosen by the villagers) rather than concrete like the other resettlement villages that we had visited. We saw a school, market and meeting hall, which looked impressive but unused.

PCR has given consideration for certain elements in the spatial planning for the resettlement villages. For example, temples are typically located at the highest elevation to emphasize their importance. Resettlement site locations are selected and decided by committee meetings attended by affected residents and then approved by the provincial government. PCR can take additional measures to ensure that the site selection process more inclusive of all affected, including for women.

Generally, women are more adversely impacted by resettlement. Displacement takes away their economic, social and cultural resources, without adequately compensating for their losses in livelihoods or contributions to the community.[12]

While some residents welcome the construction of dirt roads along the river, many villagers reported that they are anxious about the impending hydrological and aquatic ecosystem changes that follow reservoir impoundment.

A field survey of 1,500 households in 75 villages undertaken for the International Finance Corporation (IFC) indicates that 70 percent of sampled households fish in the Nam Ou. It is therefore important to plan for appropriate compensation and benefits. Some local people in the resettlement sites still fish on the Nam Ou River and return to their old farmland because this allows them to continue their livelihoods. There is no evidence to suggest that they will be able to continue doing so over the longer term, in light of impact from the dams. In addition to fishing, other river-related livelihoods include a prawn fishery located in the limestone karst mountainous areas near Muang Ngoy, and the collection and sale of river weed (kai), which is a significant source of income for women and elders. Prior to the construction of the Nam Ou Cascade, women would sell the freshwater weed to markets in Luang Prabang for roughly 10 million LAK (1,200 US$), each year/season. There is no compensation for those who lost their incomes from this occupation and the amount of river weed has decreased significantly since construction began. Villagers throughout the Nam Ou basin also rely on the collection of non-timber forest products for livelihoods and household use. There is no evidence to suggest that PCR has considered how to compensate for these losses, nor that the company has formulated plans for alternate sources of income.

A family at Ban Pak Bak, at the confluence of the Pak River and the Nam Ou, informed us that their riverside land had been inundated by 10-15 meters and that they can no longer use their garden on the river side to grow vegetables (garlic, basil, onion, white radish, lettuce, beans, etc.). The family now has to grow their vegetables uphill, in their fruit orchard.

They received a one-time compensation of 300,000 LAK ($US 35) for the loss of their plants, but said that they were not compensated for the land that they lost. PCR responded that all compensation included land value.

Communities along the Nam Ou in Muang Khau, Muang Ngoi, Nong Khiaw and Pak Ou have earned livelihoods by taking tourists to different spots along the Nam Ou River. Many have reported reduced tourist traffic due to dam construction and PCR has not made provisions to compensate for these losses in income.

Nor has PCR committed to protecting the tourism industry. The company explained that there is no compensation for small-scale boat drivers and related business such as family-run guesthouses and shops. In fact, PCR argued several times that the reservoir will actually help improve tourism as it will become safer to drive boats on a river free from rapids. However this information contradicts what we have observed, statements from the government of Lao PDR and interviews with local people.

Cruise trips on the Mekong River and Nam Ou are reported to be some of the most popular sightseeing options in Laos.[13] Communities have experienced reduced tourist traffic due to dam construction, thereby reducing cash income. Many tourism businesses along the Nam Ou (Muang Khau, Muang Ngoi, Nong Khiaw, Pak Ou) have been affected, without being recognized or compensated by PCR.

The reservoir at Nam Ou 2 has reached Nong Khiaw. In the past, there were many boats in this area, but currently it is no longer possible to hire a boat to travel upstream to Nong Khiaw. Nong Khiaw is an important tourist point for the Nam Ou. In 2016, the boat drivers association in Nong Kiaw had sent a letter to the Lao government complaining about loss of income because of the construction of Nam Ou 2 and Nam Ou 5 and demanding compensation for all affected tourist boats, equivalent to the price of a boat- 28 million LAK ($US 3,200). In November 2017, Lao authorities confirmed that the completion of the Nam Ou 3 dam would terminate all cruising possibilities between the two riverside towns and that boat transport and cruises would be replaced by bus transportation. In August 2018, a tourist boat driver told us that compensation for people who had operated boats for tourism is under negotiation, presumably with the government.

Benefit-sharing

International Standard: The IFC and World Bank define benefit-sharing as “the systematic efforts made by project proponents to sustainably benefit local communities”. The IFC Performance Standards explain that developers must engage in effective engagement with stakeholders to create benefit-sharing programs “that will help mitigate the risks and maximize the benefits of their projects”. IFC Performance Standards 1 (Risk Management), 5 (Land Resettlement), 7 (Indigenous People) and 8 (Cultural Heritage) make specific references to benefit sharing.

Company commitment: There is no clear mechanism or practice outlined for profit-sharing or benefit-sharing between PCR and the affected communities.

Project performance: During our interviews, the company outlined the means through which they are sharing benefits and providing support for education and vocational training. These include:

- Maintaining village roads and housing for the first two to three years, and ongoing support for upkeep of water supply and housing as needed for the duration of the concession agreement.[14]
- Subsidizing the electricity produced from the dams for one year. A cash payment of 600,000 LAK ($US 75) or LAK 50,000 ($US 5.90) per month for the year was included as part of compensation.
- Providing approximately 20 scholarships for students looking to study an engineering or hydropower-related degree in China.
- Supporting vocational training and internship opportunities in Luang Prabang at Supanuwong University, a program adopted from the Nam Theun 2 Hydropower Project.

The electrification rate in the provinces of Phongsali, Oudomxay and Luang Prabang is among the lowest in the country, especially in rural areas. Local communities and schools in the vicinity of the dams experience power outages regularly. Though PCR has committed to provide electricity subsidies to resettled households for one year, there is no further commitment to ensure local access to the cascade’s electricity on an ongoing basis. There is limited information on longer-term plans for how

the generated electricity will be used and sold. Électricité du Laos is a state corporation and the single buyer from the Nam Ou Cascade seems to be in discussions with Vietnam about exporting the electricity from the Nam Ou Cascade, provided that adequate transmission lines can be put in place.

A local villager who we interviewed at Ban Had Kip village, (nearby Nam Ou 2, explained that his 3 person household pays 5,000 LAK (0.60 US$) per month for their water bill, and 50,000 LAK (6 US$) per month for electricity. The electricity bill was covered by the company for 12 months. There is no compensation for the water bill. Villagers who were displaced by Nam Ou 2 otherwise had free access to water through the river. When we brought this up to PCR, the company responded that this pricing was determined by the government and that they did not have the ability to change it.

In November 2017, we observed that though some houses at Ban Had Kip village seemed to be empty, many others had additions made from bamboo or tin. It was also evident that the village had grown as new homes were being built close to the resettlement village. PCR explained that this was because the services and facilities in Ban Had Kip village are desirable to local people.

PCR has provided new villages with one water station for every two to three. We are told that this is an improvement from previous village design where three village would be furnished with one to 1-3 wells in total.

New temple in resettlement village, Laos. 2017

New temple in resettlement village, Laos. 2017

Recommendations to PowerChina Resources on Nam Ou 2

Nam Ou 2 Hydropower Project Construction Site, Laos. 2018

1. PCR should broadly consult communities involved in decision-making throughout the planning, construction and 29-year operation of the projects. During our site visits in 2017 and 2018, we observed that NOHP management staff had learned Lao and that they had a favorable rapport, but that this was limited to designated village heads who had been resettled.

2. PCR should disclose and explain the complaints and grievance mechanism to the villagers in their local languages. The company should also comply with Lao law by addressing complaints within 15 days of receipt. Nam Ou 2 did not heed Laos' 2005 Prime Minister's Implementing Decree on Compensation and Resettlement of People Affected by Development Projects (192) which provides that the "acquisition of assets, compensation, resettlement will be completed at least one month prior to the initiation of construction work."

3. Since PCR is ultimately responsible for resettlement, it should ensure that the highest standard is implemented by the sub-contracted company across all resettlement sites.

4. Conduct a gender analysis on the Nam Ou Cascade, using Oxfam's manual *Balancing the Scales on gender impact assessment in hydropower development* which was written for the Southeast Asian context. Generally community meetings are attended by men. Women are typically the stewards of water resources for their households and communities but are often marginalized by private and public sector decision making.

5. The full Cumulative Impact Assessment should be publicly disclosed, and actions taken to reduce the cumulative impacts on the environment and people. The cumulative impact assessment should, as per the Government of Lao hydropower policy guidelines, enable affected communities to understand and anticipate broader impacts of the cascade on the basin ecosystem and on local livelihoods.

6. Recognize and provide compensation to villagers who have lost livelihoods or streams of revenue from the tourism sector, especially for those who owned and managed boats, guest-houses, shops or who earned a living by cultivating riparian products.

7. Ensure that there are sufficient markings on roads to ensure road safety now that resettled villages are located by roads and highways.

8. Since the Nam Ou Cascade is owned and operated by one company, PCR could implement an operating regime that commits to ensuring and maintaining key environmental and social outcomes essential to the preservation of important ecosystem functions by using e-flows (Richter). Such a strategy would require the use of scientific methodologies to ensure proper modeling, which should be developed by an international and multi-disciplinary team that includes civil society organizations and community representatives.

9. PCR should apply lessons about resettlement, compensation and benefit-sharing learned during the implementation of Phase I of the project to inform Phase II. While there were nine resettlement sites for 820 households in Phase I, there are likely to be 17 resettlement sites for more than 1,200 households in Phase II.

10. PCR should make every effort to establish trusting relationship with resettled and other affected communities. As per the BOT agreement, the company will own and operate the project for 29 years. Maintaining sound relationships with affected communities is critical to the project's success as well as the reputation of the Chinese banks investing in the host country and wider region. Benefit-sharing would strengthen relationships between the project company and project-affected communities. At a minimum, PCR should ensure electricity access for project-affected communities for free or at a reduced rate for a significant period of time. PCR might consider other benefit-sharing models to ensure long term support and skills development, such as a community development fund and community access rights to fisheries and other resources.

Tree on Nam Ou River, Laos

Endnotes

1. New York Times (2014). Leslie, Jaques. Large Dams Just aren't Worth the Cost.
2. Meynell, Peter-John (2016). Cumulative Impact Assessment of the Nam Ou hydropower cascade, PPT.
3. Decree 192 was replaced by Decree 84 which was adopted in 2016.
4. International Finance Corporation. Performance Standard 1.
5. IFC (2017). Nam Ou River Basin Profile: Environmental & Social Characteristics of a Key River Basin in Lao PDR.
6. Ibid.
7. Stockholm Environmental Institute (2017). Case Study on Sediment in the Mekong River Basin: Current State and Future Trends.The Mekong River Commission (2017). The Study on Sustainable Management and Development of the Mekong River including Impacts of Mainstream Hydropower Projects.
8. International Finance Corporation. Performance Standard 1.
9. Ibid.
10. International Finance Corporation. Performance Standard 5.
11. Including the Decree on Compensation and Resettlement of People Affected by Development Projects and the Decree on the Approval and Promulgation of the 'Policy on Sustainable Hydropower Development' in Lao P.D.R.
12. Oxfam Australia, Challenge Program on Water and Food (2013). Balancing the Scales: Using Gender Impact Assessment in Hydropower Development.
13. The Laotian Times (2017). Nam Ou 3 Dam Eliminates River Cruises.
14. No specific detail was provided of this arrangement.

12. Case Study: Lower Sesan 2

Cambodia's largest hydropower station: Lower Sesan 2 Hydropower Project (Cambodia) by China Huaneng Group Co. Ltd.'s subsidiary, Huaneng Lancang River Hydropower Inc.[1]

Sesan River in Cambodia

Summary and background on the Lower Sesan 2 Hydropower Project

The Lower Sesan 2 Hydropower Project is located in Stung Treng Province in northeastern Cambodia. The dam sits at the confluence of the Sesan and Srepok rivers, blocking both rivers from the Mekong mainstream. Together with the Sekong, these tributaries of the Mekong River form the 3S river system, an area rich in fish and natural resources and which flows through Cambodia, Vietnam and Laos.

The 400 MW Lower Sesan 2 dam is the largest source of hydropower in Cambodia, representing one-fifth of the country's installed capacity. The contract agreement type is Build-Operate-Transfer (BOT). The project was completed in December 2018, and under the terms of the agreement the dam will be operated by the builder for 40 years before transferring ownership to the Cambodian government.

The Lower Sesan 2 Hydropower Project is expected to produce electricity for domestic use in Cambodia, including transmission to neighbouring provinces and Phnom Penh. Previous agreements proposed to export a portion of the electricity produced to Vietnam; it is unclear whether this proposal still stands as the power distribution is opaque and the Cambodian government has issued conflicting statements. The developers previously announced that affected communities would have access to electricity produced by the project at a reduced cost. Reports from people we have spoken to in the affected villages suggest that while people in resettlement sites have access to electricity, it is not at a reduced cost, or costs were only lowered for a short period immediately following resettlement.[2] We have not been able to confirm further details regarding this measure and its implementation.

In the 2015 benchmarking report, China Huaneng and the Lower Sesan 2 Hydropower ranked the worst out of the seven projects reviewed and the company consistently declined to respond to requests for information from International Rivers. Since then, several reports have documented the project's violation of community rights, including statements in a 2018 report by the UN Special Rapporteur on the situation of human rights in Cambodia.[3]

Over 5,000 people were relocated to make way for the Lower Sesan 2 project reservoir, the majority of whom are ethnic minority and indigenous peoples. The project is predicted to have serious social and environmental impacts on the river system and the livelihoods of local communities. Expected impacts to migratory fisheries in the 3S basin and Mekong River system are particularly severe. In 2012, an independent study projected that the Lower Sesan 2 Hydropower Project will cause a 9.3 percent drop in fish biomass in the Mekong Basin and threaten more than 50 fish species with extinction.[4] Another report published in 2009 found that as a result of Lower Sesan 2, approximately 80,000 people in the Sesan and Srepok basins will lose access to migratory fish stocks.[5] While the project's compensation plan lists only six villages in the reservoir area, independent research asserts that the Lower Sesan 2 dam impacts more than 250 villages.[6]

Key Consultants Cambodia Inc. (KCC) was contracted to conduct the EIA, which was completed in 2009, but the final report was not made publicly accessible. In the assessment, KCC failed to adequately consult with affected communities and to actively identify and address all the project's social and environmental impacts.[7] Furthermore, the EIA report did not include a detailed study of the dam's impacts across the wider Mekong River system and the Tonle Sap Lake, and its potential transboundary impacts in neighboring countries. Huaneng Lancang River Hydropower Inc. has divulged little information about the design and construction of a fish passage and other mitigation measures that aim to lessen impacts on fish populations.

Background information

Status of the project: The project was inaugurated in December 2018

BOT Contractor (reviewed for this study):

Huaneng Lancang River Hydropower Inc., a subsidiary of China Huaneng Group.

The project was built by the Hydro Power Lower Sesan 2 Co. Ltd., a joint company comprised of the Huaneng Lancang River Hydropower Inc. (51%), Cambodia Royal Group (39%) and Electricité du Vietnam (10%).

Huaneng Lancang River Hydropower Inc. (founded in 2001 and formerly known as Hydrolancang International Energy) is a subsidiary of the China Huaneng Group (incorporated 1985), one of the top-five power-generating companies. While Huaneng Lancang River Hydropower Inc. manages large number of hydropower projects along the Lancang River in China; this was the company's first international project.

As a key state-owned enterprise approved by the State Council, China Huaneng closely mirrors Chinese government policies. As such, it is taking an active role in the implementation of the Belt and Road Initiative and the facilitation of economic and power cooperation between China and Cambodia.[8] The Lower Sesan 2 Hydropower Project is important to the company and to the Chinese government, as it realizes both of these objectives.

Resettlement impact: approximately 5,000 people, many of whom are indigenous and ethnic minorities

Installed capacity: 400 MW

Total height of dam: reported to be 75m

Financiers: Financing from project companies, backed by loans, bonds and equity from Chinese and international banks. Investors in HydroLancang International Energy include 15 major Chinese banks

Total cost: US $816 million

Timing of our assessment:
Following the publication of International Rivers' 2015 report, Huaneng Lancang River Hydropower Inc. agreed to meet with International Rivers in August 2015, October 2015, and July 2016.

Limitation statement to our assessment:
We were not able to access the project site and therefore did not meet with project management staff or with workers. Up until March 2019, we have conducted interviews with community members affected by the project.

Update from our 2015 assessment:
During the period of assessment for International Rivers' 2015 benchmarking report, China Huaneng Group was unresponsive to requests for information and requests for meetings. Following the publication of the report in July 2015, Huaneng Lancang River Hydropower Inc. asked to meet and arranged for executives, including their Chairman, to travel to meet with us in Beijing. The company's motivation to meet us was to rectify the poor ranking that the Lower Sesan 2 Hydroelectric Project received in the 2015 benchmarking report. Lower Sesan 2 was Huaneng's first hydropower project outside of China and Huaneng put pressure on its subsidiary, Huaneng Lancang River Hydropower Inc. for this negative review. We met again with Huaneng Lancang River Hydropower Inc. at our request in Kunming in October 2015. The same year, the Chairman of Huaneng Lancang River Hydropower Inc. (who has since retired) participated in exchanges with NGOs, notably the "2015 Greater Mekong Forum on Water, Food and Energy" held in Phnom Penh in October. This willingness on the part of the company to meet and exchange with NGOs was a step towards greater transparency. Despite these initial efforts, the Lower Sesan 2 Hydroelectric Project continued to face community resistance and was marred by negative attention concerning the environmental and social impacts and lack of consultation with affected communities.

International Rivers and Huaneng Lancang River Hydropower Inc. participated in a third meeting in Beijing in July 2016, during which International Rivers once again requested information such as the final environmental assessment report, plans for the fish passage design, support programs for people whose livelihoods depend on fisheries and agriculture, water quality monitoring reports, design modifications and information regarding the implementation of resettlement and resettlement work. Despite initially committing to share project documents, the company later explained that it was not able to share these documents without the authorization of the Cambodian government.

In September 2017, Huaneng Lancang River Hydropower Inc. acknowledged receiving a letter from International Rivers and from representatives of families and communities directly affected by the construction of the Lower Sesan 2 dam outlining concerns about unresolved issues in the resettlement and expressing concern for the safety of 718 individuals who had refused compensation and resettlement.

The project's violation of community rights was documented by the UN Special Rapporteur on the situation of human rights in Cambodia in 2018 in a briefing that noted that the indigenous people, especially the Bunong, "were losing their homes and much of their spiritual forest and burial grounds to the reservoir's water, leaving them at risk of losing their livelihoods".[9] China Huaneng Group, which had been a member of the UN Global Compact since 2008, was expelled in September 2018 for "failure to communicate progress." The company no longer agreed to meet with International Rivers (or our partner, the China Association for NGO Cooperation) in 2017 and 2018 and communication became less direct as junior employees were tasked with responding to our emails.

Despite repeated requests since 2015, Huaneng Lancang River Hydropower Inc. has never agreed to host International Rivers for a site visit at the Lower Sesan 2 project site. Huaneng Lancang River Hydropower Inc. explained that International Rivers should first seek approval from the Cambodian government, but declined to advise on how to facilitate this contact. Decision-making in Cambodia on large-scale developments is highly centralized and lacks transparency.[10] International Rivers was not able to independently secure government approval. This assessment instead contains documentation on environmental impacts, including review of relevant documents, and views from affected communities. Since we were not able to access the project site and did not receive feedback from Huaneng Lancang River Hydropower Inc., the report does not contain information pertaining to workers or other issues on which we lacked access to information.

Selected comments on environmental commitments and performance

Disclosure

International standard: Environmental and Social Impact Assessments (ESIAs) are disclosed to "[help] Affected Communities and other stakeholders understand the risks, impacts and opportunities of the project".[11]

Company commitment: Huaneng aims to abide by local laws. In Cambodian law, EIAs are mandatory. They are the responsibility of the project developer and must be reviewed by the Ministry of Environment before being submitted to the Council for the Development of Cambodia for final approval.[12]

A new draft Environmental Impact Assessment Law is under development and contains detailed requirements for conducting EIA reports and guidelines for public participation in the EIA process.[13] However the new law is yet to come into effect. Many projects in Cambodia have substandard EIAs that are used as a "rubber stamp" rather than a means to improve project design and decision-making.

Project performance: Hydrolancang became involved in the project after the EIA had been undertaken and project approvals secured from Cambodian authorities. The EIA was conducted in a timely manner and approved in 2010, but the final version was not made public. The EIA fell short of national standards and international best practice in a number of ways.[14] The developers failed to adequately consult with affected communities.[15] The report lacked detailed plans and budgets for environmental mitigation and monitoring, as well as feasibility assessments of resettlement plans and livelihoods replacement schemes.[16] The EIA noted that the socio-economic impacts from fishery losses would be "one of the largest single impacts of the dam".[17] Despite this, the assessment did not attempt to quantify downstream impacts on fish, sediment and water flows in the Mekong Basin and Tonle Sap Lake.

Media reports and consultations with Huaneng Lancang River Hydropower Inc. indicated that Lower Sesan 2 has undergone a redesign,[18] yet very limited information has been publicly released regarding the design changes, including changes in dam height, reservoir size, proposed operation of mitigation measures or an updated EIA. International Rivers was not able to obtain these documents from the company.

Cumulative and transboundary impacts, erosion and e-flows

International standard: The scope of ESIAs should cover all impacts within a project's entire area of influence, including "cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted".[19]

Company commitment: As a signatory to the UNGC from 2008 and until it was expelled in September 2018, Huaneng was required to uphold Principles 7, 8 and 9 in the UN Global Compact. These require companies to support a precautionary approach to environmental challenges, take greater environmental responsibility and encourage the development and diffusion of environmentally friendly technologies.[20]

Project performance: The dam is located 1.5 km downstream of the confluence of the Sesan and Srepok Rivers, approximately 20 km upstream from the Mekong mainstream and completely cuts off these two rivers which are of great importance to Cambodia and to the ecological system of the Mekong basin.

Hydrolancang takes a narrow view of environmental responsibility, largely limited to the project site and surrounding areas rather than the wider impacts of the project on the ecosystems of the 3S and Mekong basins.

Vietnam has already constructed a cascade of dams in the Sesan, including the 720 MW Yali Falls, built 70 km from the Cambodian border in 1996. These dams have altered water quality and flow regimes of the Sesan River and its tributaries. The extraction of water for irrigation and agriculture has changed the seasonal and overall amount of water in the river. The groundwater in the area has been rapidly declining. Huaneng Lancang River Hydropower Inc. did not properly consider these factors in the design and operation of the Lower Sesan 2 dam.

The Lower Sesan 2 dam is expected to cause substantial changes to the sediment and hydrological flows of the Mekong River and its tributaries, including predicted reduction in sediment flows downstream of approximately six to eight percent.[21] The loss of sediment also threatens downstream soil fertility and agricultural production, potentially as far as the Mekong Delta in Vietnam. Alterations to water flows may impact downstream habitats by reducing wetland areas during the flood season, changing river morphology, and altering river bank vegetation. Riverbank gardens, an important source of food and income for local communities, are at risk of inundation due to flow changes during dam operation.

The EIA report did not examine impacts across the wider Mekong River system and the Tonle Sap lake, or likely transboundary impacts. The EMP did not include threats to livelihoods and food security for Cambodian communities

Environment and Biodiversity

International Standard: "Mitigation measures will be designed to achieve no net [biodiversity] loss." For critical natural habitats, "a Biodiversity Action Plan... will be designed to achieve net [biodiversity] gains." For projects impacting a protected area, companies are required to consult "Affected Communities [and] implement additional programs...to promote and enhance the conservation aims and effective management of the area".[22]

Company commitment: In 2015 and 2016, Huaneng Lancang River Hydropower Inc. remained vague about the construction of a fish passage to lessen impacts on fish populations. A fish passage has since been built but the design details or related studies have not been made public. The project EIA found 106 fish species and 34 long-distance migratory fish species in the project area.

Project performance: The dam floods over 305 square kilometres of land, and an additional 7,086 ha of forest have been destroyed by building resettlement villages in the inundation area; 18,670 ha of natural forest land and 4,896 ha of rivers and streams have been lost.[23] The project floods woodland located close to National Protected Areas and habitats identified by the World Wide Fund for Nature as particularly important to the environment and surrounding ecosystems.

The 3S river system is a global biodiversity hotspot for fisheries that supports 329 fish species.[24] An independent study projected that the Lower Sesan 2 Hydropower Project would cause a 9.3 percent drop in fish biomass in the Mekong Basin, while threatening to push to extinction more than 50 fish species,[25] therefore also impacting the economy and food security.

The Lower Sesan 2 dam is located in an Important Bird Area. There was no evidence that the project had taken steps to mitigate impacts on birds.

Selected comments on social commitments and performance

Consultation

International standard: "Effective consultation is a two-way process that should: (i) begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise; (ii) be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format and is understandable to Affected Communities...(vi) be documented".[26]

Company commitment: None. Cambodian EIA law and the Constitution both require public participation in "the political, economic, social and cultural life of the nation" and that any "suggestions from the people shall be given full consideration by the grant of the State".

Project performance: The EIA report noted likely impacts affecting approximately 30,000 people upstream and tens of thousands of people downstream. The EIA process did not respect the right to information of affected communities and did not encourage participation in decisions regarding the project and proposals for resettlement and compensation. Key Consultants Cambodia was responsible for conducting the EIA and was hired by Huaneng Lancang River Hydropower Inc. to conduct initial consultations in 2008 with village leaders from areas around the dam site and reservoir area. Information during these consultations was not clearly conveyed to participants as comments were delivered in Vietnamese and translated into Khmer through an interpreter.[27] The majority of affected communities from outside of the reservoir area were not consulted.[28] Of the community representatives who were invited to consultations (a few hundred individuals), most felt that the consultations were not participatory, did not provide adequate information regarding the dam's impacts, and that the information provided concerned only the benefits of the project.[29]

Asset surveys were conducted without prior notice and without providing information on the resettlement and compensation plans or timelines. Villagers reported being required to thumbprint completed survey documents to indicate their agreement to resettlement and compensation terms, despite the absence of clear information.[31]

Indigenous Peoples

International Standard: "If...relocation is unavoidable the client will not proceed with the project unless [Free, Prior and Informed Consent (FPIC)] has been obtained." "Where significant project impacts on critical cultural heritage are unavoidable, the client will obtain...FPIC." "Where a project proposes to use the cultural heritage... of Indigenous Peoples for commercial purposes," the client must "obtain their FPIC." Efforts to engage and any agreements made with indigenous communities should be reflected in an Indigenous Peoples Plan.[32]

Company commitment: None. Cambodia and China have endorsed the United Nations Declaration on the Rights of Indigenous Peoples which includes provisions for free, prior and informed consent and obligations to conduct robust consultations.

Project performance: 5,000 members of predominantly indigenous minorities, including Bunong, Kreung, Jarai, Pov and Lao, were forced to relocate in violation of their rights to free, prior and informed consent. Contrary to IFC standards, no Indigenous Peoples Plan was conducted for Lower Sesan 2. Similarly, resettlement and compensation plans do not include measures to ensure the protection of indigenous or minority cultures or the preservation of indigenous natural resources management.[33] For example, no compensation was provided for losses in cultural and sacred sites and burial grounds, or the resulting loss of traditional and spiritual practices associated with these sites. The design of resettlement sites and provision of compensation did not consider cultural needs, nor the way in which indigenous communities use land communally or reside with extended families.

Complaints mechanism

International Standard: "The client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance".[34] "Communications and grievances received and responses provided should be documented...and reported back to the Affected Communities periodically".[35]

Company commitment: We could not find information pertaining to Hydrolancang's complaints mechanism. The project resettlement and compensation policy described a complaints procedure within the resettlement committee which includes government representatives. Community members and local organizations we spoke to have no knowledge of this or information as to whether the complaints procedure is operational.

Project performance: There has not been an adequate means for communities to file complaints, throughout the lifespan of the project. On several occasions, project-affected villagers submitted formal petitions and letters to government agencies, project companies, the National Assembly and the Chinese Embassy, but did not receive official responses. Communities who have expressed grievances regarding the project reported experiencing threat and intimidation.[36]

In July 2017, civil society representatives and 23 indigenous peoples who were traveling from Mondulkiri to show solidarity with the communities of Stung Treng were detained. They were released after around 100 people from Kbal Romeas village protested the incident.[37]

Over 100 families who have refused to resettle remain in areas near old Srekor and Kbal Romeas, two villages that were flooded. Their requests for recognition and support to remain in their old villages remain unresolved. During the summer of 2018, some of these villagers stated in interviews that they preferred to die on their homelands than move to the new site.

Structures flooded by the Lower Sesan 2 Hydropower Project, Cambodia

Resettlement and compensation

International Standard: "To improve, or restore, the livelihoods and standards of living of displaced persons...through the provision of adequate housing with security of tenure at resettlement sites." "Economically displaced persons who face loss of assets or access to assets will be compensated for such loss at full replacement cost".[38]

Company commitment: None identified. Article 44 of the Cambodian Constitution requires fair and just compensation in advance of any confiscation of property.

Project performance: The resettlement and compensation plan and policies for Lower Sesan 2 do not support the right to 'fair and just' compensation safeguarded in the Cambodian Constitution and fall short of international standards and best practice.

Studies report that the Lower Sesan 2 dam impacts more than 250 villages, including ones close to the dam site and reservoir and others along the Sesan and Srepok Rivers.[39] Five villages that were flooded were listed in the 2012 compensation plan (SraeKor 1, Srae Kor 2, Srae Sranok, Kbal Romeas, and Chrab). These five villages include approximately 5,000 individuals, many of who are from indigenous and minority ethnic groups, including Bunong, Kreung, Jarai, Pov and Lao.

According to project documents, each affected family was entitled to receive an 80m2 house (or cash compensation to build their own house), and 1,000m2 of household land. The project documents state that cash compensation is provided for lost property items, such as crops, trees, fences and wells.

During our meeting in Kunming in October 2015, Huaneng Lancang River Hydropower Inc. shared an internal brief from the field office in Cambodia with the headquarters in China that included photos showing the "before" and "after" photos of houses prior to resettlement and in the newly created villages. The company shared these images with us to evidence a supposedly drastic improvement in housing for local communities. Locals from the area later confirmed to us that the "before" images that had been selected to show housing were in fact sheds in the fields where farmers rest.

Locals confirmed that the large new houses that were photographed were ones that had been assigned to the village chief and local police and explained that the cost of building those houses was higher than what had been allocated for the housing of other resettled villagers.

Villagers report being given little information about relocation and compensation plans, including amounts of compensation offered for property items. They also reported irregularities and concerns regarding the resettlement and compensation plans and process. The land in some of the resettlement sites did not compensate for livelihoods impacted by loss of access to forests, fisheries and non-timber forest products. Compensation amounts did not consider lost productive value of items on land including fruit trees and crops. Some families received smaller amounts of land and cash compensation than promised, and several families within an extended kin group only received one compensation package.

Wells in some resettled villages are not operational during the dry season and resettled people must buy water at their own expense.

During the construction period, the resettlement village was surrounded by housing for hundreds of workers and restaurants, karaoke bars and brothels. This rapid change and influx of foreign workers and workers from other areas caused a major disruption to the way of life and values of the villages. Resettled people reported major concerns about social impacts and the health and safety of their communities, including for women, young people and vulnerable community members.

During the fall of 2017, Huaneng Lancang River Hydropower Inc. acknowledged receiving but did not respond to community requests to assist remaining Kbal Romeas families with relocation to Sreveang[40], a site of their own choosing.

While most villagers in the reservoir area have now moved to resettlement sites, over 100 families from Srekor and Kbal Romeas villages continue to refuse to relocate or accept the compensation offered. For months after the dam was inaugurated, affected communities faced militarization of the site with police checkpoints restricting access to and from the area. The involuntary displacement of many families has deepened poverty and eroded community identity and well-being. The project resulted in the removal of a bridge that was inundated by the reservoir. The bridge allowed for easy access to Stung Treng town for medical services, schools and markets. The families who remain in the reservoir area, refusing to relocate, have faced access challenges and requested a new road be built to improve their situation.

A number of reports[41] had recommended halting construction until resettlement and compensation had been adequately addressed as per international, Cambodian and Chinese norms.

Benefit-sharing

International Standard: The IFC and World Bank define benefit-sharing as "the systematic efforts made by project proponents to sustainably benefit local communities." The IFC Performance Standards explain that developers must engage in effective engagement with stakeholders to create benefit-sharing programs "that will help mitigate the risks and maximize the benefits of their projects". IFC Performance Standards 1 (Risk Management), 5 (Land Resettlement), 7 (Indigenous People) and 8 (Cultural Heritage) make specific references to benefit-sharing.

Company commitment: Benefit-sharing falls under Huaneng's "Declaration on Sustainable Development" which is broad and includes references to putting people first, sharing benefits and contributing to benefit societies.[42]

Project performance: China Huaneng reports that recruitment, training and employment of Cambodian employees (the precise numbers of which are undisclosed) in the operation and management of the power station created more job opportunities for local labor and served to improve the relationship between the enterprise and local community.[43]

However, Lower Sesan 2 has compromised the livelihoods and source of food security for tens of thousands of people who depend on river and forest resources. Resettled villagers previously farmed rice on a seasonal basis, but now need to learn new techniques for crop rotation; they also need to work throughout the year. Villagers now need to do more fishing and logging in order to afford electricity and petrol. Resettled villagers report lacking space to raise animals.

The project agreement allocated $US 1.98 million for livelihood rehabilitation, but there is no clear plan for the use of these funds and no income restoration measures appear to have been implemented.

A 2009 study found that as a result of Lower Sesan 2, approximately 80,000 people in the Sesan and Srepok basins would lose access to migratory fish stocks.[44] The Cambodian government has written directives around the importance of considering the requirements of fish as food when considering the development of hydropower.[45] During interviews in 2015 and 2016, Huaneng Lancang River Hydropower Inc. said that they would add non-native fish to the 33,560 hectare reservoir in order to improve fishing opportunities for resettled people. Adding non-native fish to the reservoir will exacerbate the habitat loss of native fish species. The company has not made any visible efforts to develop mechanisms to protect the food security of communities beyond the resettlement area.

Recommendations

Sesan River in Cambodia

1. We recommend that the company ensure adequate studies on impacts to fish and birds, study and disclose cumulative and transboundary impacts, consider alternative project locations, and assess feasibility and effectiveness of mitigation measures such as building fish passages before investing in the project or beginning construction. Where social and environmental impacts are predicted to be severe and cannot be effectively mitigated, the company should reconsider its investment.

2. As the BOT contractor, Huaneng Lancang River Hydropower Inc. is responsible for ensuring the compliance of its subcontractors. A commission of inquiry was established to investigate the operations of the logging sub-contractor, Ang & Associated Lawyers Ltd., in 2013, but reports indicate that illegal logging activities have persisted. Huaneng Lancang River Hydropower Inc. should take immediate steps to halt illegal logging.

3. Conduct due diligence to examine the wider impacts and adequacy of the existing studies. Going forward, during Huaneng Lancang River Hydropower Inc.'s operation of the dam, monitoring of the ongoing environmental and social impacts will be critical.

4. In countries like Cambodia where laws and their implementation are known to be weak, Huaneng Lancang River Hydropower Inc. should commit to international and Chinese standards. Furthermore, the approvals provided and details of the updated project designs should be made public or reviewed by independent consultants.

5. Increase transparency and communication with villagers on compensation and resettlement plans. We recommend that the company conduct consultations on community needs for long term livelihoods programs and transference, and the rights of indigenous peoples to preservation of cultural traditions and cultural practices of indigenous peoples. We recommend that the company ensure that measures are taken to ensure secure land tenure, including an option for communal land tenure and access to community forest for indigenous communities.

6. Since many will suffer from losing their traditional livelihoods, Huaneng Lancang River Hydropower Inc. should create plans for livelihood training and income generation plans (ie- new farming techniques) in consultation with affected communities. Huaneng Lancang River Hydropower Inc. should share details regarding how the company will share electricity with local communities, including with regard to proposed amounts and duration. Benefit-sharing models, such as a community development fund, could act as a long-term support model for helping to maintain livelihoods. The company should ensure that measures are in place to monitor forest clearing for farming and overfishing in the project reservoir.

7. Huaneng Lancang River Hydropower Inc. should take measures to ensure the safety and security around the dam site and control threats to health and public safety. Huaneng Lancang River Hydropower Inc. should conduct a gender impacts assessment. Oxfam's manual "Balancing the scales, using gender impact assessment in hydropower development" would be of value as it was written within a Southeast Asian context.

8. Huaneng Lancang River Hydropower Inc. should ensure that a safe, neutral and transparent complaint mechanism be established for affected community members to pose questions, air grievances and seek redress. It could be comprised of committees that include representatives from affected communities. The company should ensure that information regarding grievance mechanisms and complaints procedure is clearly explained to the villagers in their local languages. When an effective grievance mechanism is implemented, the company should provide assurances regarding the types of complaints that will be handled directly by the company independent of local authorities, so that complainees will not face repercussions for filing a complaint

Endnotes

1. In 2017, the company was restructured and listed on the Shanghai Stock Exchange. As part of the listing the company's name changed slightly. They were previously known as China Huaneng Group Co. and Hydrolancang International Energy.
2. International Rivers. Community Interviews. August and September 2018.
3. UN Human Rights Council (2018). Report of the Special Rapporteur on the situation of human rights in Cambodia.
4. Ziv et al. (2011). Trading-off fish biodiversity, food security, and hydropower in the Mekong River Basin.
5. Baird, Ian (2014). Cambodia's Lower Sesan 2 Dam is a Disaster in the Making. East Asia Forum, August 2014.
6. Ley, Kem (2015). The compensation policies and market property price LS2 dam development project,. Rivers Coalition in Cambodia, Phnom Penh.
7. Baird, Ian (2009). Best Practices in Compensation and Resettlement for Large Dams: The Case of the Planned Lower Sesan 2 Hydropower Project in Northeastern Cambodia. Rivers Coalition in Cambodia.
8. China Huaneng Group (2017). Sustainability Report, 2017.
9. UN Human Rights Council (2018). Report of the Special Rapporteur on the situation of human rights in Cambodia.
10. Middleton, Carl (2008). Cambodia's Hydropower Development and China's Involvement. Published by International Rivers and Rivers Coalition in Cambodia.
11. International Finance Corporation. Performance Standard 1.
12. Open Development, Cambodia. Ministry of Environment's Draft Law on Environmental Impact Assessment, 5th Revision (2014).
13. Open Development Cambodia (2015). Hydropower Dams.
14. Harris, M. 2016. 'Diverted Justice: The role of law in Cambodian hydropower development. A case study of the Lower Sesan 2 Dam Project' in David J.H. Blake and Lisa Robins (eds), Water governance dynamics in the Mekong Region. M-Power Vol. 5, Strategic Information and Research Development Centre (SIRD).
15. Baird, Ian (2009). Best Practices in Compensation and Resettlement for Large Dams: The Case of the Planned Lower Sesan 2 Hydropower Project in Northeastern Cambodia. Rivers Coalition in Cambodia.
16. NGO Forum on Cambodia (2009). Lower Sesan 2 Hydro Project Environmental Impact Assessment Review; Harris, M. 2016. 'Diverted Justice: The role of law in Cambodian hydropower development. A case study of the Lower Sesan 2 Dam Project' in David J.H. Blake and Lisa Robins (eds), Water governance dynamics in the Mekong Region. M-Power Vol. 5, Strategic Information and Research Development Centre (SIRD).
17. Key Consultants Cambodia Ltd. (2008). Environment Impact Assessment for Feasibility Study of Lower Sesan 2 Hydropower Project.
18. International Rivers (2014). International Groups Demand New EIA for Lower Sesan 2 Dam.
19. International Finance Corporation. Performance Standard 1.
20. UN Global Compact (2018). UNGC listing for China Huaneng Group.
21. Cambodia Daily (2011). The Battle for the 3S Rivers.
22. International Finance Corporation. Performance Standard 6.
23. Ley, Kem (2015). The compensation policies and market property price LS2 dam development project,. Rivers Coalition in Cambodia, Phnom Penh.
24. Baran, Eric, Samadee Saray, Shwu Jiau Teoh, and C.T. Tran (2011). Fish and Fisheries in the Sesan River Basin – Catchment Baseline, Fisheries Section. WorldFish Center.
25. Ziv et al. (2011). Trading-off fish biodiversity, food security, and hydropower in the Mekong River Basin.
26. International Finance Corporation. Performance Standard 1.
27. Baird, Ian (2009). Best Practices in Compensation and Resettlement for Large Dams: The Case of the Planned Lower Sesan 2 Hydropower Project in Northeastern Cambodia. Rivers Coalition in Cambodia.
28. Ibid.
29. Ibid.
31. ibid
32. International Finance Corporation. Performance Standard 7.
32. International Finance Corporation. Performance Standard 1.
33. Sreveang is four kilometers from the Se San River and seven kilometers from the old road linking from Chrop village to Ratanakiri province.
34. Ibid.
35. Ley, Kem (2015). The compensation policies and market property price LS2 dam development project,. Rivers Coalition in Cambodia, Phnom Penh.
36. Asia Indigenous Peoples Pact (2017). Cambodia: Homes of indigenous communities risk further flooding as Lower Sesan II dam closes gates and authorities detain indigenous peoples and civil society representatives on the way to Stung Treng.
37. International Finance Corporation. Performance Standard 5.
38. Ley, Kem (2015). The compensation policies and market property price LS2 dam development project,. Rivers Coalition in Cambodia, Phnom Penh.
39. Harris, M. 2016. 'Diverted Justice: The role of law in Cambodian hydropower development. A case study of the Lower Sesan 2 Dam Project' in David J.H. Blake and Lisa Robins (eds), Water governance dynamics in the Mekong Region. M-Power Vol. 5, Strategic Information and Research Development Centre (SIRD).
40. Ley, Kem (2015). The compensation policies and market property price LS2 dam development project,. Rivers Coalition in Cambodia, Phnom Penh.
41. China Huaneng Group (2015). Sustainability Report, 2015.
42. China Huaneng Group (2017). Sustainability Report, 2017.
43. Baird, Ian (2014). Cambodia's Lower Sesan 2 Dam is a Disaster in the Making. East Asia Forum, August 2014.
44. Cambodia Ministry of Agriculture, Forestry and Fisheries, Inland Fisheries Research and Development Institute. (2013). Food and Nutrition Security Vulnerability to Mainstream Hydropower Dam Development in Cambodia

Boat transporting goods on the Sesan River, Cambodia. 2014

13. Conclusion

It is difficult to overstate the importance of healthy, free-flowing rivers. Among their many functions, they regulate the carbon cycle and protect against increasingly unpredictable and extreme climate events, replenish land with sediment and minerals, and protect biodiversity by nurturing critical ecosystems. Human civilization continues to be intrinsically linked to rivers, with millions of people dependent on them for their livelihoods and food security.

The biggest threat to riparian systems is the construction of hydropower projects[1] which could impact more than 300,000 kilometers of rivers by 2050.[2] Dams cut and fragment rivers and are accompanied by infrastructure that results in localized erosion and deforestation while often providing electricity for polluting industries. With over 3,700 hydropower projects planned globally,[3] it is critical to understand and assess the full range of their impacts.

The world needs clean sources of energy to keep up with population growth and energy needs. The governments of many countries studied for this report plan to increase electrification through hydropower. For example, Laos aims to use hydropower to transform itself into the "battery" of Southeast Asia and Chile aims to increase hydropower generation by 45 percent by 2024. With average cost overruns of 96 percent and time overruns of 44 percent,[4] hydropower diverts much-needed resources away from cleaner energy such as solar and wind. Decentralized, localized, cost-effective solutions with far fewer detrimental environmental and social impacts are available. In fact, all six of the companies reviewed for this report have broad energy portfolios that include wind and solar options.

Hydropower companies and industry associations have long justified their projects by disproportionately emphasizing some of the short-term benefits of hydropower. Chinese hydropower companies in particular claim that their projects are intended to develop economies and alleviate poverty. However, their definition of poverty is centered around income and ignores food security, health, education, culture, and well-being. Yet these very necessities are stripped away from communities affected by hydropower development. Perhaps the only in-depth and long-term study of large dams throughout the world found that living standards worsened in 82 percent of cases.[5]

In coming years, the industry may face increasing numbers of dam failures as most projects do not plan for an increasingly volatile climate. The industry may feel constrained as the world prepares to make stronger global commitments to protect biodiversity with new global targets being established in 2020. Local groups and media will continue to become more effective agents for advocating against the most destructive projects.

This report featured seven case studies of large hydropower projects that became operational between 2017 and 2019. Because the case studies are recent, the environmental and social impacts uncovered during our site visits and analysis of the available project documentation covers only the short term. The case studies presented in this report were chosen to illustrate the most prevalent dam building companies in the world. As such, and because Chinese enterprises comprise at least 70 percent of the global hydropower market,[6] all but one of the companies chosen were Chinese.

The main findings in this report are consistent with International Rivers' observations from having monitored and engaged with leading hydropower companies over the past ten years. Namely,

Leading companies must embed proper due diligence into how they evaluate potential projects, even if it means passing on potentially profitable business opportunities. In one encouraging example, in 2013, Sinohydro International withdrew from the Agua Zarca Dam in Honduras on the grounds that their client was involved in controversial and inappropriate activities with local communities.[7] If companies aspire to be responsible actors in the sector, we need to see them adopt a higher risk threshold, whereby they set out key bottom lines for involvement. Certain projects simply should not be built because of their irreversible impacts, violations of agreements to maintain protected areas, or location in countries where affected communities lack meaningful avenues to raise concerns.

Woman collecting Kai riverweed along the Nam Ou River, Laos. 2014

By and large, companies lack adequate due diligence processes to guide whether it is appropriate to become involved in a new project. The case studies in this report show that China International Water and Electric (CWE), a subsidiary of China Three Gorges Corporation, accepted a contract to build the Isimba Dam on the White Nile in Uganda despite the fact that the reservoir would submerge important protected areas.[8] AES Corporation continued construction of the Alto Maipo project in Chile in the face of widespread public protest over the project's impacts on the primary drinking water supply to the capital, Santiago.[9] Huaneng pushed forward with the Lower Sesan 2 hydropower project in Cambodia despite widespread protests from communities and UN documentation of human rights abuses resulting from project implementation.[10]

Most of the companies are primarily concerned about staying on schedule during project building, to the detriment of social and environmental objectives. PowerChina Resources, for example, did not respect Lao law to resettle and compensate before beginning construction of the Nam Ou Hydropower Cascade in Laos, which is expected to displace over 10,000 individuals.[11]

Company policies fall well short of accepted international standards. Our assessment compared company policies against internationally accepted standards, using key requirements and principles of IFC Performance Standards as a reference because of their near-universal application. This spanned from core objectives such as achieving improved living standards for resettled communities to requirements that companies assess the cumulative impacts of multiple projects on a river basin. Though all global standards require disclosure of key project documents, most of the projects reviewed did not do so. Only one project (Alto Maipo in Chile by AES) made the environmental impact assessments publicly available prior to beginning construction.

Since company regulations and hydropower industry guidelines are typically not considered to be binding, companies implement stronger measures if they are obligated to do so by laws in the host country.

In cases when country laws are insufficient or not readily implemented, we did not find instances where companies were successful in insisting that governments accept and apply the companies' own (higher) sustainability commitments. China Gezhouba Group Company deflected responsibility to the project proprietor when the government of Pakistan ordered construction of the Neelum Jhelum Dam to continue without ensuring proper conditions for project construction.[12]

Even countries with strong laws on paper can be undermined by conflicting standards aimed at facilitating economic development and exploitation of natural resources. While Cambodia has strong laws recognizing the rights of indigenous peoples, the Lower Sesan 2 hydropower project by China Huaneng Group resulted in the involuntary resettlement (often forced removal) of over 5,000 indigenous people in violation of national law.

Companies engaged through Engineering Procurement Construction contracts deflect responsibility for environmental and social impacts. Hydropower corporations consistently relinquish environmental and social responsibilities and hide behind contract types. Responsible contractors should ensure that proper analysis and baseline studies are completed prior to starting project construction, regardless of their contract type. This makes it easier to ensure robust implementation of policies to protect the environment and communities. The four companies reviewed in this report that were engaged through Engineering Procurement Construction contracts (China Gezhouba Group Company, China Three Gorges, AES, Sinohydro International) did not accept responsibility for the environmental and social outcomes of the projects.

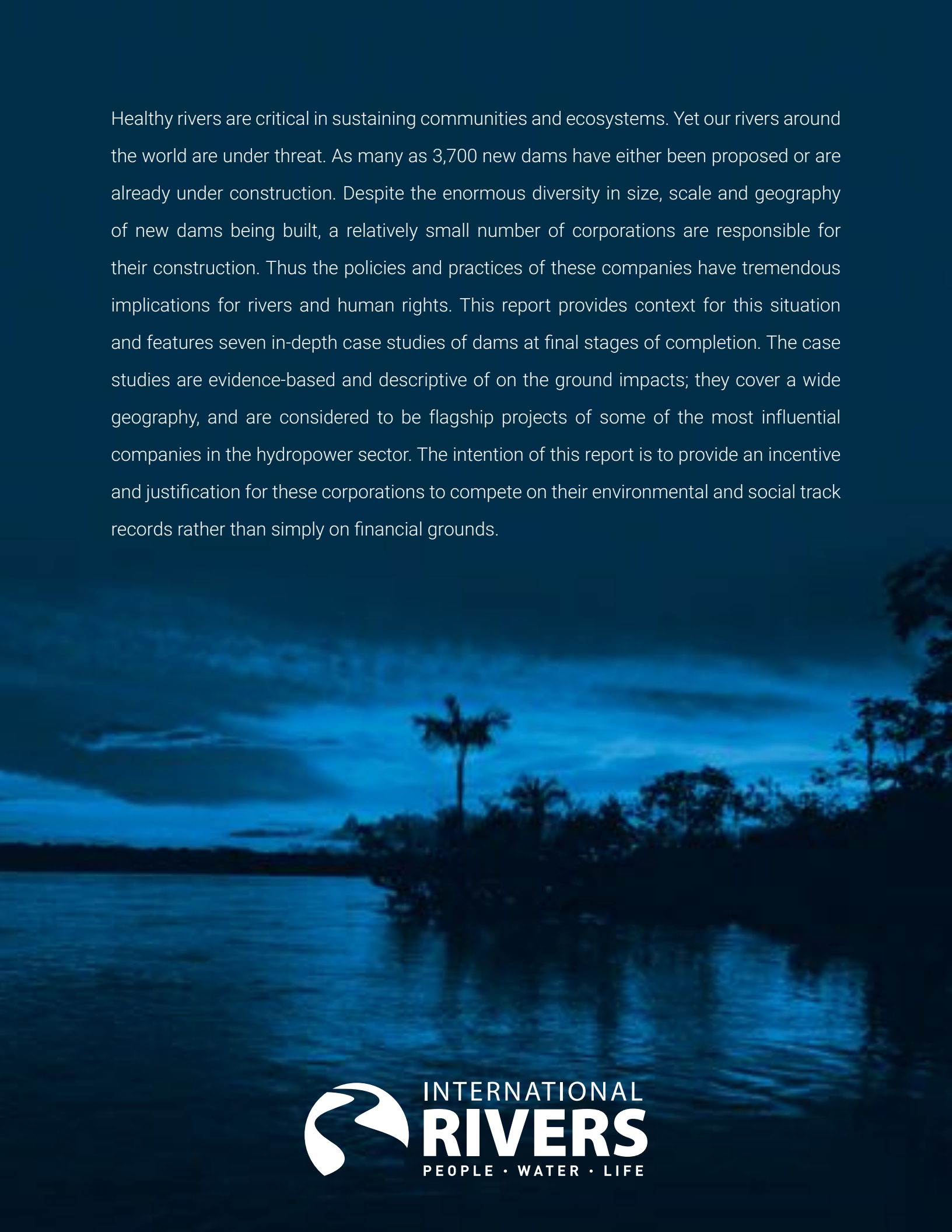
International Rivers envisions a world where water and energy needs are met without degrading natural ecosystems or increasing poverty, and where people have the right to participate in decisions that affect their lives. With hydropower representing the greatest threat to free-flowing and healthy rivers, it is essential that the leading hydropower companies undertake and publicly disclose rigorous and comprehensive studies on the environmental, social and economic impacts of their projects.

Endnotes

1. Vörösmarty et al. (2010). Global threats to human water security and river biodiversity.
2. The Nature Conservancy (2015). "The Power of Rivers A Business Case".
3. Global Dam Watch (2015). "The Future Hydropower Reservoirs and Dams Database".
4. Ansar et al. (2010). "Should We Build More Large Dams? The Actual Costs of Hydropower Megaproject Development".
5. Scudder, Thayer (2019). Large Dams: Long Term Impacts on Riverine Communities and Free Flowing Rivers, Springer, page 250.
6. People's Daily (2019). Chinese enterprises represent 70 percent of global hydropower market.
7. Sinohydro Group (2013). Sinohydro Group response to Business and Human Rights regarding Agua Zarca Dam, Honduras.
8. Infrastructure Industry News for Uganda (2015). World Bank apprehensive of Isimba Power dam.
9. Salvemos el río Maipo (2015). 30,000+ People March in Chile to Save a River.
10. UN Human Rights Council (2018). Report of the Special Rapporteur on the situation of human rights in Cambodia.
11. Lao PDR (2005). Decree on Compensation and Resettlement of People Affected by Development Projects and the Decree on the Approval and Promulgation of the 'Policy on Sustainable Hydropower Development' in Lao P.D.R.
12. International Rivers (2017). Notes from company meetings in Beijing and interviews with CGGC, landlords and residents, local communities, labor union representatives during site visit 2015-2017.

Sunset in Nu River Valley, China. Photo by Li Xiaolong.

Healthy rivers are critical in sustaining communities and ecosystems. Yet our rivers around the world are under threat. As many as 3,700 new dams have either been proposed or are already under construction. Despite the enormous diversity in size, scale and geography of new dams being built, a relatively small number of corporations are responsible for their construction. Thus the policies and practices of these companies have tremendous implications for rivers and human rights. This report provides context for this situation and features seven in-depth case studies of dams at final stages of completion. The case studies are evidence-based and descriptive of on the ground impacts; they cover a wide geography, and are considered to be flagship projects of some of the most influential companies in the hydropower sector. The intention of this report is to provide an incentive and justification for these corporations to compete on their environmental and social track records rather than simply on financial grounds.



INTERNATIONAL RIVERS

PEOPLE · WATER · LIFE