Advancing Ecological Civilization?

Chinese hydropower giants
and their biodiversity footprints

Executive Summary

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1. Executive Summary

Biodiversity plays a fundamental role in sustaining the world's ecosystems and its economies. The Sustainable Development Goals acknowledge that arresting biodiversity loss is necessary to reduce global poverty. Yet the world is experiencing a prolonged decline in biodiversity due to unchecked development into wild spaces and destruction of habitats, that threatens not only the loss of many of the world's species, but also human health - as the ongoing global pandemic attests[1] - and the global economy.

In 2021, China is scheduled to host the biennial summit of the Convention on Biological Diversity in Yunnan province, which accounts for just 4% of China's land area but harbors an estimated 50% of its biodiversity.[2] This summit is considered by many to be among the most important in its history given the urgency of arresting global biodiversity loss and the conference's aim to produce biodiversity targets for the next ten years. As host, China has been vocal in its promotion of the concept of "ecological civilization" and has pledged to prioritize ecological restoration following decades of unprecedented economic growth.

Absent from the agenda, but an important subtext to the meetings, is the influential and growing role that Chinese state-owned enterprises play in infrastructure development outside of China and the scale of ecological impacts they have wrought. This has only accelerated since President Xi announced the Belt and Road Initiative, which will entail trillions of dollars of investment into many ecologically sensitive sectors. This is particularly true of the hydropower sector, where Chinese companies are estimated to account for 70% of the global market. Two companies - Powerchina Resources and China Three Gorges Corp. - account for over half of all dams under construction today.[3]

Hydropower dams have had a particularly significant impact on global biodiversity and the ecosystem services that it provides. They have been found to be a key culprit in the 84% loss of freshwater species experienced since 1970. Dams and associated infrastructure such as roads and transmission lines have taken a significant ecological toll on terrestrial biodiversity as well, both directly by submerging or fragmenting habitats, as well as indirectly by bringing people and human settlements into previously inaccessible areas. Dams' impacts on wildlife and freshwater resources have also had a significant human cost. Declines in fish stocks, particularly downstream of dams, have impacted millions of river-dependent populations around the world and jeopardized a key source of protein for local diets.

The focus on China as host of the Convention on Biological Diversity summit, and its ambitious commitments to advance its vision of an "ecological civilization", represents a critical moment to reckon with a concerning trend: the increasing scale and severity of biodiversity impacts of these prominent Chinese state-owned enterprises in their hydropower investments.

This report is intended as a contribution toward important discussions about the role of Chinese state-owned enterprises, particularly PowerChina Resources and China Three Gorges and their subsidiaries, in helping fulfill China's commitment to the concept of ecological civilization and President Xi's pledge that the Belt and Road Initiative will be "eco-friendly" and that "biodiversity protection will be enhanced" as a result.[4]

1. Jeff Tollefson, '**Why Deforestation and Extinctions Make Pandemics More Likely**'. Nature. August 2020.
2. Biodiversity and Biodiversity Conservation in Yunnan, China. Biodiversity and Conservation. 13(4):813-826. April 2004.
3. **Reflections on Chinese Companies' Global Investments in the Hydropower Sector Between 2006-2017**.
4. Ministry of Ecology and Environment. **The Belt and Road Ecological and Environmental Cooperation Plan**. May 2017.

The report examines and draws lessons from twelve project cases - six from each parent company - toward informing a series of recommendations of how China Three Gorges, PowerChina Resources, and, by extension, all dam-building companies, can ensure that they do not exacerbate biodiversity loss and instead are aligned with China's commitments to protecting biodiversity.

Key Findings and Recommendations

Protected areas are not spared from dam construction, including in UNESCO World Heritage sites. A recent study found that over 500 dams under construction or planned worldwide would be built in protected areas. Half of the 12 projects examined in this report would directly impact protected areas that harbor considerable biodiversity, including national parks, Ramsar sites and even UNESCO World Heritage sites. The issue of dams impacting World Heritage sites has been increasing,[5] prompting the World Heritage Committee in 2016 to call for a prohibition on dams built within World Heritage sites.[6] In one case, PowerChina's subsidiary Sinohydro is the primary subcontractor on the Julius Nyerere dam in Tanzania, which is under construction in the middle of the Selous Game Reserve, a UNESCO World Heritage Site. In addition to directly submerging habitats of some of Africa's most iconic and endangered species such as the black rhinoceros, the construction of 120 km of roads into the heart of the reserve will exacerbate the already persistent problem of poaching, which had nearly wiped out the reserve's elephant and rhinoceros populations.

> **Recommendation:** Companies should adopt an explicit policy prohibiting dams that are constructed in or have significant impacts on protected areas, including UNESCO World Heritage sites.

A growing number of dams are impacting critically endangered great ape populations. Five of seven great ape species are critically endangered, a trend exacerbated by dam construction. According to one estimate, "by 2030, fewer than 10% of ape ranges in Africa and only about 1% of those in Asia will remain untouched by infrastructure development and the associated habitat disturbance."[7] Developments that bring humans into direct contact with ape populations have become increasingly concerning in light of apes' particular vulnerability to transmission and death from COVID-19.[8]

Three of the projects examined would have significant, if not catastrophic, impacts on our closest living relatives. The most prominent and worrying example is that of the Batang Toru dam, a highly controversial project in North Sumatra, Indonesia. PowerChina subsidiary Sinohydro long resisted urgent global calls to halt the project's construction after orangutans local to the project site were discovered to be a previously unknown and distinct species, called the Tapanuli orangutan. Conservationists warned that construction of the Batang Toru dam alone could precipitate their extinction within decades.

Sinohydro has also received intense criticism for its

Orangutans | Photo courtesy of Stuart Jansen

5. Rivers without Boundaries. **Heritage Dammed**, 2019.
6. UNESCO. State of Conservation of World Heritage Properties, 2016.
7. Arcus Foundation. State of the Apes: Infrastructure Development and Ape Conservation. 2018.
8. IUCN SGA. **Great apes, COVID-19 and the SARS CoV-2**. March 2020.

agreement to construct the Koukoutamba dam in Guinea, which would result in the deaths of up to 1500 critically endangered Western chimpanzees, and would be built in a national park established explicitly to protect what is one of the subspecies' last remaining habitats.

> **Recommendation:** Companies should adopt a policy prohibiting projects that will entail irreversible impacts on endangered species, particularly apes. Sinohydro should withdraw its involvement from Batang Toru and Koukoutamba dams immediately.

Dams planned on free-flowing rivers are of particular concern, including to biodiversity. Free-flowing rivers form the bedrock for local cultures and communities and have huge ecological significance, serving as one of the world's last bastions of dwindling freshwater biodiversity. The first dam constructed on a previously free-flowing river has a disproportionately large impact on freshwater ecosystems, and in some cases as much as 40% of a river's aquatic species can be lost as a result.[9] Of the world's 177 largest rivers, only one-third are free flowing, and just 21 rivers longer than 1000 kilometers retain an unobstructed connection to the sea.

At least three of the projects examined are proposed on unobstructed, free-flowing rivers. Of greatest concern are plans - currently on hold - for China Three Gorges to construct the Mong Ton dam on the Salween River in Myanmar. The Salween, also called the Nu River upstream in China, is the longest undammed river in mainland Southeast Asia and supports the livelihoods of over ten million people, sustaining the rich fisheries and fertile farmland central to the lives of indigenous and ethnic minority communities living along its banks. Myanmar and China Three Gorges have been unable to proceed with dam construction on the Salween largely due to broad-based community resistance. Efforts to keep the Salween free flowing all the way to its source were bolstered in 2016 when China's Yunnan government decided to stop all dam construction in the Nu Valley.

> **Recommendation:** Companies should forego projects proposed on a free-flowing river or the mainstem of a major river.

Significant human cost of biodiversity loss, particularly for indigenous peoples. Indigenous peoples, while constituting just 5% of the world's population, serve as stewards of 80% of global biodiversity.[10] In addition to being subjected to forced displacement from their territories, they have also borne the brunt of dams' impacts on species that are often closely bound to indigenous cultures and identities.

At least three of the projects reviewed entail impacts on indigenous peoples. The São Manoel dam is located on Brazil's Teles Pires River in the Tapajós Basin, one of eight areas of Amazonian biological endemism, where many species are found nowhere else on earth. Indigenous groups, including the Munduruku, Kayabi and Apiaká, have long staunchly opposed hydropower development on their lands and on the stretch of river that sustains freshwater species and other species that are integral to their lives, livelihoods and culture. China Three Gorges is one of three companies in the consortium that built and now operates the dam, which has caused a significant decline in freshwater species including the fish and turtles that are central to local indigenous diets. The economic impacts have also been particularly severe to fishermen who have reported fish catches plummeting to as low as 15% of their catch in years before the dam.

> **Recommendation:** Adopt a requirement to secure the Free, Prior and Informed Consent (FPIC) of communities before becoming involved in projects that may impact indigenous peoples and their territories.

Pronounced impacts from the cumulative impacts of multiple dams on a river. Multiple dams on a river basin can cause significant cumulative impacts beyond the direct ones incurred by individual dams, as rivers are altered from their natural flow regimes. These impacts are particularly pronounced on freshwater species that face multiple barriers and find their habitats confined to a short stretch of river, or experience significant fluctuations in

9. Luther Aadland. Barrier Effects on Native Fishes of Minnesota, April 2015.

10. National Geographic, **Can indigenous land stewardship protect biodiversity**, November 2018.

river flows that disrupt fish breeding grounds and aquatic biota that are critical to the food chain.

Several projects examined in this study did not account for nor attempt to mitigate cumulative impacts. In Lao PDR, PowerChina owns the rights to develop and operate a cascade of seven dams on the Nam Ou River, a major tributary of the Mekong. Studies predict that the projects will have a severe impact on the biodiversity in the Nam Ou Basin, in particular for fish species, due to the loss of connectivity and conversion of the river ecosystem from a free-flowing river to a series of reservoirs. A summary of the project's cumulative impacts predicts a loss of 66% of fish biodiversity in the Nam Ou, with additional cumulative impacts on the wider Mekong Basin. Despite this, there is no indication that the company is taking steps to reduce the cascade's cumulative impacts.

> **Recommendation:** Require that cumulative impact assessments are conducted for dams on rivers with multiple dams to fully assess impacts, and that robust mitigation measures are in place to address them.

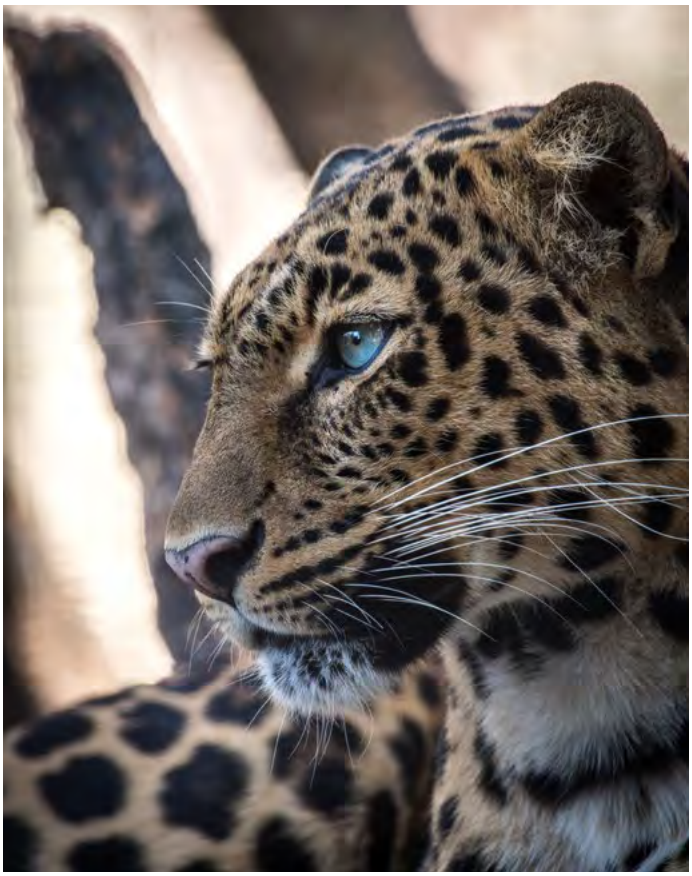
Company policies regarding biodiversity and due diligence fall well below international standards. A recurring issue encountered in the examination of the cases included in this report, as well as in previous assessments, is the lack of sufficient due diligence procedures to screen for destructive projects. This is in part an extension of companies largely lacking clear requirements regarding biodiversity and clearly defined "no go" policies to exclude problematic projects. It is also indicative of a tolerance for impacts and risks, including reputational risks, that many observers deem too high to prevent the most severe impacts, including the extinction of species.

This was particularly true of cases involving PowerChina, and even more specifically its subsidiary Sinohydro. The presence of orangutans known at the time to be "genetically distinct" in the Batang Toru case should have been sufficient to trigger broader assessment and mitigation of impacts before beginning construction. The discovery that the orangutans local to the project area are in fact a new species should have prompted an immediate suspension of works.

Combined with its continued involvement in the Koukoutamba Dam in Guinea and the Julius Nyerere dam in Tanzania over the objections of IUCN and the UNESCO World Heritage Committee, this is indicative of a troubling pattern of complete disregard for biodiversity concerns.

China Three Gorges, for its part, has made commitments to avoid projects impacting protected areas, including World Heritage sites. However, that has been insufficient to screen out destructive projects such as the São Manoel project in Brazil which violated the rights of indigenous peoples, or the Mong Ton dam in Myanmar that would severely impact one of Southeast Asia's last free-flowing rivers.

> **Recommendation:** Adopt and implement due diligence procedures with clear bottom lines aligned to international standards, for example requiring no net biodiversity loss and requiring net biodiversity gain in projects impacting critical natural habitats.



Leopard | Photo courtesy of Uriel Soberanes on Unsplash

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.

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